



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS



# CAREER AND LEADERSHIP DEVELOPMENT HANDBOOKS

2017-2021

# Official Policies and Procedures

for National FFA Career and Leadership  
Development Events for 2017-2021.

*Refer to the National FFA Career Development Event (CDE) and Leadership Development Event (LDE) webpage on [www.FFA.org](http://www.FFA.org) for the most up-to-date edition of the career and leadership development event handbook.*

**Contact:**

Career Development Events Education Specialist  
National FFA Center  
6060 FFA Drive  
P.O. Box 68960  
Indianapolis, IN 46268-0960  
317-802-4225  
[cde@FFA.org](mailto:cde@FFA.org)

**FFA MISSION**

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

**THE AGRICULTURAL EDUCATION MISSION**

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.







## PHILOSOPHY

*The National FFA Organization is dedicated to organizing experiences that will meet the future needs of students while accomplishing the current purposes of agricultural education.*

The primary goal of career and leadership development events is to develop individual college and career readiness skills through personal growth and premier leadership.

Individuals will be challenged to develop critical thinking skills, effective decision making skills, foster teamwork and promote communication while recognizing the value of ethical competition and individual achievement.

### *The activities in each event:*

- Include problem solving, critical thinking and teamwork skills, where appropriate.
- Encourage appreciation for diversity by reducing barriers to participation among members.
- Develop general leadership and recognize individual and team achievement.
- Promote concentrated focus on future needs of members and society.

*The National FFA Organization assumes the leadership role in developing and continuously improving relevant FFA career and leadership development events.*

National events should reflect instruction that currently takes place in the entire agricultural education program, including classroom instruction, laboratory instruction, instruction in leadership and supervised agricultural experience. Events are intended to be an outgrowth of instruction. Also, it is appropriate for the national organization to develop events and awards that stimulate instruction in emerging areas that reflect both current and future community, national and global workforce needs. Those events should be developed with significant input from FFA members, teachers, partners, respective industry sponsors and others involved in agricultural education. The National FFA Organization continues to encourage accessibility and provide opportunities for achievement and recognition for students with diverse backgrounds.

Events that include team activities should be based on cooperation and teamwork while recognizing the value of competition and individual achievement. Where appropriate, team activities will be included that require two or more members from one chapter working cooperatively.





## Agriculture, Food and Natural Resources (AFNR)

# CAREER CLUSTER CONTENT STANDARDS

*The agriculture, food and natural resources (AFNR) industry is a highly technical and ever-changing sector of the global economy upon which everyone is dependent. We will continue to meet national and global demand for a safe and abundant food, fiber and fuel supply if we invest in the growth and development of the human capital for the AFNR industry. Strong, relevant AFNR Career and Technical Education (CTE) programs that are informed by industry and education stakeholders are one way we can meet workforce needs now and in the future.*

The National Council for Agricultural Education has provided permission to the National FFA Organization for the use of the National AFNR Career Cluster Content Standards in the development of their educational resource materials. The National Council for Agricultural Education are the owners and developers of the National AFNR Career Cluster Content Standards © 2016 and reserve all rights to the original material that is used here with permission. In addition, The National Association of State Directors of Career and Technical Education/National Career Technical Education Foundation (NASDCTE/NCTEF) have provided permission to use the Common Career and Technical Core (CCTC) Standards in support of this project. NASDCTE/NCTEF are the owners and developers of the Common Career and Technical Core (CCTC) Standards © 2012 and reserve all rights to the original material that is used here with permission.

The National AFNR Career Cluster Content Standards are a guide to develop well-planned curriculum in agriscience education to be delivered to students throughout the country. For a complete copy of the AFNR Career Cluster Content Standards please visit <https://www.FFA.org/thecouncil/afnr>

The National FFA Organization has adopted the AFNR Career Cluster Content Standards and integrated them into national award and recognition programs for the benefit of the members, school administration and agriculture as a whole. Details outlining the incorporation of the standards in careers and leadership development events can be found at the end of each event in the CDE/LDE handbook.



## 2017-2021 Official CDE/LDE

# POLICIES AND PROCEDURES

*Violations of any of the following rules may be grounds for the event superintendent to disqualify the participants.*

National FFA staff and event superintendents will use the published policies and procedures to organize and implement the National FFA Career and Leadership Development Events. Event activities may not be conducted due to lack of necessary materials, expertise or extreme impact to event budgets. Teams that are certified to compete will receive the current event format in a team orientation packet prior to the convention.



**OFFICIAL DRESS RECOMMENDATIONS, NUMBER OF PARTICIPANTS  
AND NUMBER OF SCORES FOR TEAM TOTAL**

<b>Career Development Event</b>	<b>Official Dress Appropriate</b>	<b>Number of Participants Allowed (per team)</b>	<b>Number of Scores Counted for Team Score</b>
Agricultural Communications	Yes	4	4
Agricultural Technology and Mechanical Systems	No	4	4
Agricultural Sales	Yes	4	4
Agronomy	Yes	4	4
Dairy Cattle Management and Evaluation	Yes	4	4
Dairy Cattle Handlers (Activity only)	Dairy White	1	N/A
Environmental and Natural Resources	No	4	4
Farm and Agribusiness Management	Yes	4	4
Floriculture	Yes	4	4
Food Science and Technology	Yes	4	4
Forestry	No	4	4
Horse Evaluation	Yes	4	4
Livestock Evaluation	Yes	4	4
Marketing Plan	Yes	3	Team Score Event
Meats Evaluation and Technology	No	3	3
Milk Quality and Products	Yes	4	4
Nursery/Landscape	Yes	4	4
Poultry Evaluation	Yes	4	4
Veterinary Science	No	4	4
<b>Leadership Development Event</b>	<b>Official Dress Appropriate</b>	<b>Number of Participants Allowed (per team)</b>	<b>Number of Scores Counted for Team Score</b>
Agricultural Issues Forum	Optional	3-7	Team Score Event
Conduct of Chapter Meetings	Yes	7	Team Score Event
Creed Speaking	Yes	1	N/A
Employment Skills	Yes	1	N/A
Extemporaneous Public Speaking	Yes	1	N/A
Parliamentary Procedure	Yes	6	Team Score Event
Prepared Public Speaking	Yes	1	N/A

## Eligibility of Participants

*Each participant must be a current dues paying FFA member in good standing with the local chapter, state FFA association and the National FFA Organization during the school year in which the participant qualified to participate at the national level.*

*In the event that a participant's name is not on the chapter's official roster for the year in which the dues were owed, a past due membership processing fee, in addition to the dues, must be paid prior to the national event. The National FFA Organization will set the processing fee amount annually.*

*The participant, at the national event, must:*

- Be a secondary education (grades 7-12) FFA member during the school year in which the participant qualified to participate at the national level. A graduating senior is considered eligible to compete in state and national CDE/LDE up to and including his/her first national convention following graduation.
- Have qualified as a 7th, 8th or 9th grade member to participate in the Creed Speaking and Conduct of Chapter Meetings LDE.
- Be enrolled in at least one agricultural education course during the school year in which the participant qualified to participate at the national level and/or follow a planned course of study. Either course must include a supervised agricultural experience program, the objective of which is preparation for the agricultural career.
- Submit, prior to start of event, the proper National FFA Organization Waiver, Release of Liability and Consent to Medical Attention form.

If a student moves to a different chapter or different state once he/she has qualified as a state representative in a CDE/LDE that student may be allowed to compete in the national event with the school he/she qualified with during the qualifying year.

A student may not participate more than once in the same official CDE/LDE.

No student may participate in more than one National FFA CDE/LDE each year.

## Selection and Certification of Participants

*Each state will submit an electronic declaration form by June 1 prior to the National FFA Convention & Expo.*

- An entry processing fee will be charged for participation in each declared event with the exception of the dairy cattle handlers' activity.
- Each team will be composed of the number of members determined by the specific event policies, procedures and format.
- All members of a state team must be from the same chapter.
- Members must qualify in the event in which they are to participate at the national level.
- Teams must be selected at a state or interstate CDE/LDE event held between the immediate previous national FFA convention and prior to the national FFA convention in which they are participating.
- States that qualify more than one year out must request and submit a written waiver for approval by the certification deadline.
- **Online add/delete deadline is Tuesday the week before convention, Noon (Eastern time).**
- If a state's representative withdraws after the online document submission date, a replacement will not be allowed. This includes prepared public speaking, ag issues forum, employment skills, marketing plan and ag communications.
- The state supervisor of agricultural education or the executive secretary must certify that participants are eligible. If an ineligible student participates in any career or leadership development event, the member will be disqualified and may result in the disqualification of the team as well.
- All students must be certified online by September 15. Once original certification has been completed, **no member may be added without first deleting a member.**
- With extenuating circumstances, a teacher/advisor may substitute another student from the chapter who may not have participated at a state qualifying event. **Exception:** Creed speaking, dairy handlers' activity, extemporaneous public speaking, employment skills and prepared public speaking must be submitted and approved by state staff prior to the national convention in which the member is to participate.



## Onsite add/delete process

If a circumstance arises once the chapter has arrived at the convention location, the onsite add/delete process must be used to substitute the member on the team.

Onsite add/delete form(s) must be submitted no later than one hour prior to the team orientation meeting or the first official event activity as listed in the schedule of events. Advisors will need to report to the onsite CDE office to secure and submit the add/delete forms as well as the National FFA Organization Waiver, Release of Liability, Consent to Medical Attention, Authorizations and Certifications form for the member(s) to be added.

Members added to any team during the onsite add/delete process must meet all eligibility and membership requirements as prescribed in the handbook.

## EMERGENCY CONDITIONS

*Under emergency conditions a state team participating in a CDE/LDE may be made up of less than the required members.*

States must still certify teams prior to the national FFA convention, but fewer than the required members could compete if an emergency condition such as illness, death in the family or an act of God would occur. Those individuals competing would still be eligible to qualify for individual awards, if applicable.

## Disqualification

*A member or team may be disqualified from an event if:*

- There is any communication, verbal or non-verbal, between participants during the event. The only exception to this would be communications between team members during the team activity portion of a given event.
- Teams or participants arrive after the event.
- Any assistance is given to a team member from any source other than the event officials or assistants.
- Event superintendents stop any participants for manners they deem to be hazardous to themselves or others. Such action shall deem the individuals disqualified for that section of the event.
- Participants start the event and do not complete the event without notifying event officials at the time of departure. This can affect the overall team rank and position. In some events this will also disqualify the entire team.
- Participants utilize personal electronic communication devices, other than those approved by the event officials, during the entire course of the event. Participants who access personal electronic communication devices without prior approval of the event officials will be disqualified.
- Participant, team, advisor or coach gains access to real materials that will be utilized by the event committee during competition. Any team, participant, advisor or coach reported and proven to do so will be disqualified from the national event.

## Appeal Process

*Appeals can only be filed if there is a scoring error.*

If a written appeal for scoring issues only is filed within the seven calendar days after results announcement, the national staff will review the appeal.

Upon receiving input from team leader and division director, the national staff will accept or deny the appeal. The national staff's recommendation will be shared with appeals committee, which consists of members from the Awards and Recognition Advisory Committee and FFA chief operating officer for further input, if necessary.

The written appeal must be filed with the National FFA Organization's CDE/LDE education specialist responsible for scoring the event within seven calendar days of the results announcement and accompanied by a \$50 filing fee. The fee will be returned if the appeal is justified.

Appeals should be mailed to:

CDE/LDE Education Specialist  
6060 FFA Drive, P.O. Box 68960  
Indianapolis, IN 46268-0960

The appeals committee will be chaired by the National FFA Awards and Recognition Advisory Committee chairperson who will in turn appoint a representative of each of the following organizations:

- National Association of Supervisors of Agricultural Education (NASAE)
- National Association of Agricultural Educators (NAAE)
- American Association for Agricultural Education (AAAE)
- National FFA Organization CDE/LDE Education Specialist

Any ruling on the appeal provided by the FFA chief operating officer will be considered final.



## Waiver of FFA Rules

*Any local chapter seeking a waiver of a national FFA policy or procedure must submit in writing to the chapter's state FFA association office.*

If the waiver request is approved at the state level, it must be forwarded, under the signature of the state advisor or executive secretary, to the career and leadership development events education specialist.

After study by the appropriate FFA staff, a recommendation to grant or deny the appeal will be forward to the chief operating officer for his/her approval.

The request must be submitted to the national FFA staff at least 30 days prior to the scheduled event or due date for which the waiver is requested.

This policy does not supersede any current FFA policy for appeals already established for a particular FFA program.

## Sanctioning Events

*Sanctioning of non-national FFA competitive events (those competitive events conducted by organizations other than the National FFA Organization) as CDE/LDE should occur when:*

- The highest quality event possible is conducted.
- The organization conducting event and National FFA Organization agree that event can and should be sanctioned.
- The event is recommended by the National FFA CDE/LDE education specialist with input and agreement from the award and recognition advisory committee and approved by the FFA chief operating officer.
- The National FFA Organization is represented by a staff member responsible for CDE/LDE on the planning and implementation committee for each event.

Winners of the national sanctioned event will be recognized in the same manner as national CDE/LDE winners are currently recognized.

## Official Dress

*Participants are expected to observe the National FFA Code of Ethics and the proper use of the FFA jacket during career and leadership development events. (Please reference the latest edition of the Official FFA Manual.)*

Official FFA dress is highly recommended for all participants where appropriate and is recommended for the awards presentation and recognition.

## Accessibility for All Students

*All special needs requests and appropriate documentation as outlined in the special needs request policy must be submitted August 15.*

Special needs policy is posted on the CDE/LDE program page at [FFA.org/cde](http://FFA.org/cde).

## Written Document Penalties

*A penalty of 10 percent of the total points allotted will be assessed for the written documents received after the online submission deadline.*

If the document is still not received seven days after the postmarked deadline, the team/individual may be subject to disqualification.

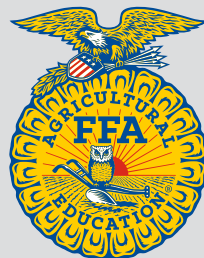
- National FFA staff will mark late entries as such.
- Event officials will be notified of late entries at the time written documents are evaluated and scored.
- Event superintendent will ensure that penalty is applied.





# AGRICULTURAL COMMUNICATIONS

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The purpose of the agricultural communications career development event is to excite and inspire students to develop basic skills relevant to the agricultural communications industry. Students will be equipped with strong communication skills and will have developed the ability to work collaboratively to effectively communicate and advocate for the agriculture industry.*

## Event Rules

- Teams will consist of four members.
- It is highly recommended that participants wear FFA Official Dress for this event.
- Team members will work together to prepare a written media plan prior to national FFA convention. The team will also be responsible for presenting the plan at the national event and completing individual practicums and tests.
- During the practicum portion of the event, one team member will be responsible for completing a web design activity, one team member will be responsible for completing a video production activity, one team member will be responsible for completing a journalistic writing activity and one team member will be responsible for completing an opinion writing activity
- Any participant in possession of an electronic device during the quizzes, is subject to disqualification. Recording devices are not allowed during the press conference.

## Event Format

Each November following the national FFA convention and expo, the agricultural communications CDE committee will release event specifications for the next year. The specifications will outline the scenario to be used for the media plan and presentation as well as the specific practicum activities and software. This information can be found on [FFA.org](https://www.ffa.org).

## Equipment

**Needed:** Students must provide pens and pencils. For practicums, writers and designers are encouraged to bring laptop or other device for word processing or design.

Provided:

- Easel
- Projector screen
- Table

**Note:** Teams may bring additional equipment for the media plan presentation as long as they are able to set up and tear down equipment in the time allowed for the presentation.

For practicums, members may be provided:

- PC computer
- Printer
- Blank paper
- Digital photographs
- Dummy text
- Logos
- Any other necessary materials

## Team Activities

### AGRICULTURE-RELATED MEDIA PLAN (200 POINTS/TEAM)

Teams will play the role of communications consultants and will develop a media plan for an assigned scenario. The scenario will identify a client with a communications need and a budget. Please reference the current event specifications on the CDE webpage. At the national event, the team will make a pitch (oral presentation) of the media plan.

Scenarios are based on the ideas of agricultural advocacy. Teams will develop a media plan from the following rotating topics.

#### Tell a local FFA Story

- The focus could include one of the following:
  - FFA member
  - FFA chapter
  - FFA advisor
  - State FFA Association
  - FFA Alumni/supporter

#### Advocate the agricultural industry to consumers

- The focus could include one of the following:
  - Farmer/rancher
  - Commodity
  - Farmers market
  - Community garden
  - Farm to table
  - Identify a local opportunity for public relations not tied to FFA



**A media plan is a written document that describes the following:**

- **Objectives:** What the group wants to accomplish with the media plan.
- **Target Audience:** Description of who the client is trying to reach, including demographic data.
- **Strategic plan and tactics:** Ways in which the objectives can be accomplished.
- **Timeline:** When the objectives will be accomplished.
- **Evaluation:** How the results will be measured.
- **Budget:** Teams may not go over a maximum of \$5,000.

#### **Guidelines for media plan**

- Eight to 10 typed pages not including cover page, table of contents, references or appendices.
- Double-spaced with 1" margins.
- Paginated (numbered pages not including cover page).
- 12-point Times New Roman font (not including display text or headings).
- Submitted electronically in PDF format to National FFA Organization by the designated deadline at [FFA.org](https://www.ffa.org) on the CDE certification page.
- Formatted and edited according to the Publication Manual of the American Psychological Association (APA) when citing sources.

The media plan must include the following sections (points will be deducted for missing or incomplete sections):

#### **Cover page**

- Must include the title of the media plan, CDE name, state, chapter name, team member names and year.
- May include a creative design.

#### **Table of contents**

#### **Introduction and Overview**

- Two pages maximum.
- Introduction
  - A brief background of the issue/topic and a statement of the problem establishing the need for this media plan.
- Overview
  - A brief preview of what is contained in the plan and how it will benefit the client.

#### **Audience**

- One page maximum.
- Who the client is trying to reach with the media plan.
- The demographic characteristics of the intended audience.
- Note: teams may have a primary and a secondary audience.

#### **Strategic plan**

- Three to four pages maximum.
- Key messages or themes to communicate to the audience.
- Explanation of how the objectives will be met.
- Plan to attract media attention.

**A social media plan is required addressing the following:**

- Social media platforms to be used.
- Plan to gain followers.
- Plan to engage followers.
- General idea for the messages to be posted.
- One page example post must be provided as an appendix (can include Facebook posts, tweets, Instagram photos and others).
- Content of the “About” section of pages.
- Frequency of posts.
- Some plans include occasional posting in the beginning and then very frequent in the end.
- Timeline.
- Evaluation.
- Include three to five examples in the appendices.
- Examples of tactics include but are not limited to:
  - broadcast advertising
  - print advertising
  - press releases
  - fliers
  - brochure
  - web site
  - blogging
  - displays.

**Description of how the plan will be executed.**

- Timeline
  - One page maximum.
- Explanation of the duration of the plan and the timing of the media tactics.

- Evaluation
  - One page maximum.
  - Description of proposed methods to determine if the objectives were met.
  - What are the key performances? (How will you measure that you are successful?)
  - Examples may include number of participants, impressions, likes, shares, retweets, circulation of publications, number of video views.

### **Budget and Justification**

- One page maximum.
- Table of all costs associated with implementing the media plan.
- Explain why you have allocated this amount for each activity.

### **Conclusion**

- One page maximum.
- A final summary of key points related to the strategic plan and a statement persuading the client that the plan is a good solution to the communication problem.
- Not a restatement of the introduction and overview.

### **References**

- Formatted and edited according to the Publication Manual of the American Psychological Association (APA).
- Appendices/Examples.
- One page of social media posts.
- Three to five other communication examples.
- Suggestions include mock up or example of website, links to student created video, press releases, blogs, op-eds.

### **Submission**

An electronic copy of the media plan in PDF format (no larger than 20 megabytes) must be uploaded by Sept. 1, 5 p.m. EST. Upload instructions are on FFA.org. A penalty of 10 percent of available media plan points will be assessed for any late submissions. If the document is not received seven days after the deadline, the team may be subject to disqualification. In addition, no chapter certification changes will be accepted after Sept. 1 for Agricultural Communications. States qualifying after the Sept. 1 deadline will have ten days from state qualifying event date to submit their media plan.

**MEDIA PLAN PITCH – PRESENTATION (175 POINTS/TEAM)**

- The team should present the media plan as if pitching it to the client identified in the scenario.
- The presentation should follow the structure of the written media plan.
- Teams should bring examples of materials that would be used in the execution of the plan (e.g., social media, broadcast advertising, print advertising, press releases, fliers, brochures, website, blogging and displays).
- Each team member must participate in the presentation.
- Each team will be allowed 15 minutes to present its media plan to a panel of judges, who will play the role of the client. Five points will be deducted for each major fraction of a minute over the 15 minutes allowed for the presentation. Following the presentation, judges will be allowed five minutes to ask questions.
- Teams will have a total of 10 minutes for setting-up and tearing-down equipment (e.g., five minutes to set up and five minutes to tear down).
- Provided equipment includes an easel, projector screen and table.
- In the case of equipment failure, the team may be asked to move forward with the presentation. A back-up plan is recommended.
- The team presentation will be conducted in two rounds preliminary (three to five flights) and finals (one flight). The top team from each preliminary flight will advance to the final round.
- Preliminary presentation flights will be seeded by media plan scores. Flights are announced during the team orientation meeting at the start of the event.

**Note:** Teams may bring additional equipment for the presentation as long as they are able to set up and tear down equipment in the time allowed.

## Individual Activities

### TESTS

#### **EDITING EXERCISE (25 POINTS/INDIVIDUAL; 100 POINTS/TEAM)**

Because editing is a critical skill for all communicators, each team member will complete an editing exercise. They will be given a printed document that contains 25 mistakes. In correcting the mistakes, team members will be required to use correct proofreading marks (see Associated Press Stylebook). Style, grammar, punctuation and spelling mistakes will be included. Team members will NOT be able to use the style manual or a dictionary during this exercise.

#### **COMMUNICATIONS QUIZ (25 POINTS/INDIVIDUAL; 100 POINTS/TEAM)**

Each team member will complete a quiz that covers general knowledge of the agricultural communications industry. Questions may come from any section excluding sports guidelines. Team members will NOT be able to use the style manual or a dictionary during this exercise.

#### **PRACTICUMS (100 POINTS/INDIVIDUAL; 400 POINTS/TEAM)**

The practicums will consist of four individual events. Each team must assign a member to one of the following areas prior to arriving at the national event:

- Web design
- Video production
- Journalistic writing
- Opinion writing

All teams will meet in a central location for an orientation and press conference. Teams will be seated by practicum group. All team members will be given an orientation at the beginning of the practicums to last no more than 10 minutes.



The press conference will be held following the orientation meeting. Each team member will receive a press packet with background information on the agricultural topic and expert to use during the event. An expert will speak on a current agricultural topic for 20 minutes. Students will be provided with paper to take notes if they wish. After the 20 minute presentation, the non-writers will be dismissed to a different area to complete their assigned practicums.

The writers will then be involved in a 10 minute question and answer period with the expert (speaker). Each writer will stand to be recognized before asking a question. Writers may ask more than one question; however, the expert will attempt to address questions from as many different participants as possible. No electronic devices of any kind, including tape recorders and cell phones, will be allowed during this portion of the event. Upon completion of the 10 minute question and answer session, remaining participants will be dismissed to complete their assigned practicums.

### **Web design**

Each designer will use the press packet and information that was gathered in the press conference to develop a WordPress site.

The objective is to communicate the press conference speaker's organization through appropriate design, navigation and use of provided photos and graphics. The designer may use the provided WordPress templates or customize the template. Each participant will have 90 minutes to complete the practicum.

### **Video producer**

Students will be given a selection of video clips, photos, and music and will create a 60-90 second video that promotes the client's product or service. Students will not be recording a voice track.

Participants will have 90 minutes to complete the practicum. Students may be provided a laptop and will be working in Adobe Premiere Pro. Students will need to provide own headphones.

### **Journalistic Writers**

Writers are to write a journalistic piece based on the press packet and information that was gathered in the press conference. It should be written for an appropriate audience, have a strong focus and lead (opening paragraph) and include a headline. The story will then be word processed by the student on a computer and turned in to be scored. Participants will have 90 minutes to complete the practicum.

The activity will rotate annually from the following:

- Press release (2017, 2020)
- News story (2018, 2021)
- Feature story (2019)

### **Opinion Writers**

Writers are to write a piece that takes a position and support it with evidence based on the press packet and information that was gathered in the press conference. It should be written for an appropriate audience, have a strong focus and lead (opening paragraph) and include a headline. The story will then be word processed by the student on a computer and turned in to be scored. Participants will have 90 minutes to complete the practicum.

The activity will rotate annually from the following:

- A blog post (250–300 words) (2017, 2020)
- An op-ed (500–750 words) (2018, 2021)
- A letter to the editor (300–500 words) (2019)

## Scoring

Participants will be ranked in numerical order on the basis of the final score to be determined by each judge without consultation. The judge's ranking of each participant then shall be added, and the winner will be that participant whose total ranking is the lowest. Other placings will be determined in the same manner (low point method of selection). Weighted rank scoring will be implemented to maintain point value emphasis between individual and team events. The criteria and points can be found on the scorecards.

Event	Points
Media Plan — Proposal	200
Media Plan Pitch — Presentation	175
<b>Tests- 200 points possible</b>	
Communications Quiz	100 (25 pts/member)
Editing Exercise	100 (25 pts/member)
<b>Practicums- 400 points possible</b>	
Web Design Practicum	100
Video Producer Practicum	100
<b>Journalistic writing practicum 100</b>	
Opinion writing practicum	100
<b>Total individual score possible</b>	<b>200</b>
<b>Total team score possible</b>	<b>975</b>

## TIEBREAKERS

Team tiebreakers will be settled in the following order:

1. Combined individual practicum rank score
2. Proposal rank
3. Presentation rank
4. Media plan

Individuals tiebreakers will be settled in the following order:

1. Practicum score
2. Communications quiz score
3. Editing exercise score



## Awards

Awards will be presented to individuals and/or teams based upon their rankings at the awards ceremony. Specialty awards will be given to the high individual in each practicum area. Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/ or by the general fund of the National FFA Foundation.



NATIONAL FFA  
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DEVELOPMENT EVENTS

## Media Plan — Proposal Scorecard

CHAPTER

STATE

TEAM NUMBER

			Possible Score	Team Score
<b>Plan Includes all Requirements</b> <ul style="list-style-type: none"> <li>Cover page, titles and names on cover page, table of contents, does not exceed page limit, double spaced, one inch margins, page numbers, required headings (-1 point per missing item)</li> </ul>			10	
<b>Proposal is Relevant to Scenario</b> <ul style="list-style-type: none"> <li>Entire narrative focuses on addressing client's specific public communication needs.</li> </ul>			10	
<b>Executive Summary</b> <ul style="list-style-type: none"> <li>Adequately explains the plan without reading the entire document.</li> </ul>			10	
<b>Introduction</b> <ul style="list-style-type: none"> <li>Provides adequate background of the issue; clearly states the problem and need for plan; describes how the plan will benefit the client.</li> </ul>			15	
<b>Description of Audience</b> <ul style="list-style-type: none"> <li>Clearly describes (including demographics) who is targeted with the media plan.</li> </ul>			15	
<b>Detailed Strategic Plan</b> <ul style="list-style-type: none"> <li>Clearly states objectives; explains how objectives will be met; explains why chosen mediums are appropriate to meet objectives; describes how plan will be executed.</li> </ul>			30	
<b>Timeline</b> <ul style="list-style-type: none"> <li>Explains duration of plan and timing of media tactics.</li> </ul>			10	
<b>Method of Evaluation</b> <ul style="list-style-type: none"> <li>Proposes methods to determine if the objectives were met.</li> </ul>			15	
<b>Budget</b> <ul style="list-style-type: none"> <li>Explains all costs associated with implementing the media plan.</li> </ul>			20	
<b>Conclusion</b>			10	
<b>Appendices</b> <ul style="list-style-type: none"> <li>Quality of communications documents. (Three required)</li> </ul>			30	
<b>Quality of writing</b> <ul style="list-style-type: none"> <li>Grammar, spelling, punctuation, capitalization, sentence structure.</li> </ul>			25	
<b>TOTAL POINTS</b>			<b>200</b>	



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Media Plan Pitch — Presentation Scorecard

175 points

CHAPTER

STATE

TEAM NUMBER

INDICATOR	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 1-0 points	Points Earned	Weight	Total Score
Examples	<ul style="list-style-type: none"> <li>Examples are vivid, precise and clearly explained.</li> <li>Examples are original, logical and relevant.</li> </ul>	<ul style="list-style-type: none"> <li>Examples are usually concrete, sometimes needs clarification.</li> <li>Examples are effective, but need more originality or thought.</li> </ul>	<ul style="list-style-type: none"> <li>Examples are abstract or not clearly defined.</li> <li>Examples are sometimes confusing, leaving the listeners with questions.</li> </ul>		X 5	
Confidence in speaking	<ul style="list-style-type: none"> <li>Speaks very articulately.</li> <li>Never has the need for unnecessary pauses or hesitation when speaking.</li> <li>Speaks at the right pace to be clear.</li> <li>Pronunciation of words is very clear and intent is apparent.</li> </ul>	<ul style="list-style-type: none"> <li>Sometimes speaks articulately.</li> <li>Occasionally has the need for a long pause or moderate hesitation when speaking.</li> <li>Speaks at the right pace most of the time, but shows some nervousness.</li> <li>Pronunciation of words is usually clear, sometimes vague.</li> </ul>	<ul style="list-style-type: none"> <li>Rarely articulate.</li> <li>Frequently hesitates or has long, awkward pauses while speaking.</li> <li>Pace is too fast; nervous.</li> <li>Pronunciation of words is difficult to understand; unclear.</li> </ul>		X 3	
Being detail-oriented; provide details	<ul style="list-style-type: none"> <li>Is able to stay fully detail-oriented.</li> <li>Always provides details which support the issue to communicate the key concepts of the plan; is well organized.</li> </ul>	<ul style="list-style-type: none"> <li>Is mostly good at being detail-oriented.</li> <li>Usually provides details which are supportive of the issue to communicate the plan; displays good organizational skills.</li> </ul>	<ul style="list-style-type: none"> <li>Has difficulty being detail-oriented.</li> <li>Sometimes overlooks details that could be very beneficial to the issue; Not enough detail provided lacks organization.</li> </ul>		X 3	
Speaking unrehearsed and natural	<ul style="list-style-type: none"> <li>Speaks unrehearsed with comfort and ease.</li> <li>Is able to speak effectively without losing focus and with organized thoughts and concise answers.</li> </ul>	<ul style="list-style-type: none"> <li>Speaks unrehearsed mostly with comfort and ease, but sometimes seems nervous or unsure.</li> <li>Is able to speak effectively, has to stop and think and sometimes gets off focus.</li> </ul>	<ul style="list-style-type: none"> <li>Shows nervousness or seems unprepared when speaking unrehearsed.</li> <li>Seems to ramble or speaks before thinking.</li> </ul>		X 3	

## Agricultural Communications

## Media Plan Pitch – Presentation Scorecard continued

INDICATOR	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 1-0 points	Points Earned	Weight	Total Score
All team members participated	<ul style="list-style-type: none"> <li>All team members took an active role in the presentation.</li> </ul>	<ul style="list-style-type: none"> <li>Two to three team members took an active role in the presentation.</li> </ul>	<ul style="list-style-type: none"> <li>One team member took an active role in the presentation.</li> </ul>		X 3	
Use of visual aids	<ul style="list-style-type: none"> <li>Visual aids add clarity and support what is being said during the presentation.</li> </ul>	<ul style="list-style-type: none"> <li>Visual aids add some clarity and support to what is being said during the presentation.</li> </ul>	<ul style="list-style-type: none"> <li>Visual aids add little to no clarity and support to what is being said during the presentation.</li> </ul>		X 3	
Media plan	<ul style="list-style-type: none"> <li>Key elements of the media plan are clearly communicated.</li> <li>Strong understanding of chosen media is present.</li> </ul>	<ul style="list-style-type: none"> <li>Key elements of the media plan are vaguely communicated.</li> <li>Vague understanding of chosen media is present.</li> </ul>	<ul style="list-style-type: none"> <li>Key elements of the media plan are not communicated.</li> <li>Little to no understanding of chosen media is present.</li> </ul>		X 3	
Questions and answers	<ul style="list-style-type: none"> <li>Is able to correctly respond to judges' questions.</li> <li>Answers show familiarity with subject matter.</li> </ul>	<ul style="list-style-type: none"> <li>Is somewhat able to correctly respond to judges' questions.</li> <li>Answers show vague familiarity with subject matter.</li> </ul>	<ul style="list-style-type: none"> <li>Is unable to correctly respond to judges' questions.</li> <li>Answers do not reflect any familiarity with subject matter.</li> </ul>		X 12	
TOTAL POINTS						





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DEVELOPMENT EVENTS

## Journalistic Writing Practicum Scorecard

CHAPTER

STATE

TEAM NUMBER

	High 5–4 points	Middle 3–2 points	Low 1–0 points	Weight	Total Points
Lead/focus				x 3	
Accuracy of information and quotes				x 3	
Clarity and conciseness				X 2	
Correct style (AP)				X 2	
Depth of coverage				X 2	
Header/headline				X 2	
Grammar, spelling, punctuation and word choice				X 2	
Organization and format				X 2	
Accomplishment of purpose				X 2	
TOTAL POINTS (100 POINTS POSSIBLE)					



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CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Opinion Writing Practicum Scorecard

CHAPTER

STATE

TEAM NUMBER

	Possible Score	Member Score
Lead/focus	15	
Accuracy of information and quotes	15	
Clarity and conciseness	10	
Correct style (AP)	10	
Takes a position that is supported with evidence	10	
Header/headline	10	
Grammar, spelling, punctuation and word choice	10	
Organization and format	10	
Accomplishment of purpose	10	
<b>TOTAL POINTS</b>	<b>100</b>	



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DEVELOPMENT EVENTS

## Web Page Design Practicum Scorecard

CHAPTER

STATE

TEAM NUMBER

	Possible Score	Member Score
Overall attractiveness of site (color, font choice, readability, font size consistent)	20	
Technical skills specific to activity • Outlined in event specifications	20	
Use of design principles	15	
Neatness and creativity	15	
Choice and placement of photo(s) and graphic(s)	15	
Usability and navigation of site (links work, files named properly, links show up)	15	
<b>TOTAL POINTS</b>	<b>100</b>	



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CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Electronic Media Practicum Promotional Video Scorecard

CHAPTER

STATE

TEAM NUMBER

	Possible Score	Member Score
Solid promotional value	20	
Tells a story	20	
Use of provided materials (Used numerous clips, no repeated shots, chose appropriate clips)	15	
Quality of video editing (no black flashes, jump cuts or other erratic movements)	15	
Audio editing (correct volume, no clipping, correct use of natural sound)	15	
Creativity	10	
Stayed within time limit	5	
<b>TOTAL POINTS</b>	<b>100</b>	



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CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Video Production Practicum Scorecard

CHAPTER

STATE

TEAM NUMBER

	Possible Score	Member Score
Effective use of medium	20	
Technical skills specific to activity • Outlined in event specifications	20	
Power of expression	15	
Creativity	15	
Clarity of communication (writing)	10	
Organization and format	10	
Accuracy of information	10	
<b>TOTAL POINTS:</b>	<b>100</b>	



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CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Web Page Design Practicum Scorecard

CHAPTER

STATE

TEAM NUMBER

	Possible Score	Member Score
Effective use of medium	20	
Technical skills specific to activity • Outlined in event specifications	20	
Power of expression	15	
Creativity	15	
Clarity of communication (writing)	15	
Organization and format	15	
Accuracy of information	15	
<b>TOTAL POINTS</b>	<b>100</b>	





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DEVELOPMENT EVENTS

## Team Scorecard

CHAPTER

STATE

TEAM NUMBER

	Possible Score	Member Score
Practicum scores	400	
Media plan proposal	200	
Media plan presentation	175	
Test scores		
Communications quiz – 100 points (25 points/member)	200	
Editing exercise – 100 points (25 points/member)		
<b>TOTAL POINTS</b>	<b>975</b>	



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CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Agriculture, Food and Natural Resources Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.02.02.</b> Performance Indicator: Assemble, interpret and analyze financial information and reports to monitor AFNR business performance and support decision-making (e.g., income statements, balance sheets, cash-flow analysis, inventory reports, break-even analysis, return on investment, taxes, etc.).		
<b>ABS.02.02.01.b.</b> Prepare and interpret financial reports to describe the performance of AFNR businesses (e.g., efficiency, profitability, net worth, financial ratios, etc.).	Media Plan Proposal Media Plan Presentation Communications Quiz Editing Exercise Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2
<b>ABS.02.02.01.c.</b> Recommend financial reports to assemble to support specific AFNR business decisions (e.g., evaluating efficiency, profitability, net worth, financial ratios, etc.).	Media Plan Proposal Media Plan Presentation	CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2
<b>ABS.02.02.02.b.</b> Use accounting information to prepare financial reports associated with inventory in AFNR businesses (e.g., cost of goods sold, margins on goods, etc.).	Media Plan Proposal Media Plan Presentation	CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2

*Agriculture, Food and Natural Resources Content Standards continued*

<b>ABS.02.02.02.c.</b> Create recommendations to improve management of inventory in AFNR businesses (e.g., maintaining optimal levels, calculating costs of carrying input and output inventory, supply chain management, etc.).	Media Plan Proposal Media Plan Presentation	CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2
<b>ABS.03.01.</b> Performance Indicator: Develop, assess and manage cash budgets to achieve AFNR business goals.		
<b>ABS.03.01.01.b.</b> Examine and interpret cash budgets for AFNR businesses.	Media Plan Proposal Media Plan Presentation	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.03.01.01.c.</b> Develop cash budgets for AFNR businesses.	Media Plan Proposal Media Plan Presentation	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.03.01.02.b.</b> Examine and identify strategies to manage components of cash budgets to minimize liabilities and maximize profit in AFNR businesses (e.g., delayed payment of expenses, prepayment of expenses, etc.).	Media Plan Proposal Media Plan Presentation	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.03.01.02.c.</b> Predict the impact of management decisions on cash budgets in AFNR businesses.	Media Plan Proposal Media Plan Presentation	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.05.01.</b> Performance Indicator: Analyze the role of markets, trade, competition and price in relation to an AFNR business sales and marketing plans.		
<b>ABS.05.01.01.b.</b> Analyze the role of trade and price in the market structure as it relates to AFNR businesses.	Media Plan Proposal Media Plan Presentation Communications Quiz	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13

## Agriculture, Food and Natural Resources Content Standards continued

<b>ABS.05.01.01.c.</b> Evaluate and predict future trends for a specific AFNR product as related to markets, trade and price (e.g., corn, oil, wheat, etc.).	Media Plan Proposal Media Plan Presentation Communications Quiz	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13
<b>ABS.05.01.02.b.</b> Compare and contrast different forms of market competition and how they can be applied to different AFNR businesses.	Media Plan Proposal Media Plan Presentation Communications Quiz	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13
<b>ABS.05.01.02.c.</b> Design and conduct experiments to determine market competition effectiveness of different AFNR businesses.	Media Plan Proposal Media Plan Presentation Communications Quiz	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13
<b>ABS.05.03.</b> Performance Indicator: Assess marketing principles and develop marketing plans to accomplish AFNR business objectives.		
<b>ABS.05.03.03.b.</b> Perform a market analysis to gather information for marketing plans for AFNR businesses (e.g., evaluation of competitors, customers, domestic and international policy, regulations and rules, standards, etc.).	Media Plan Proposal Media Plan Presentation Communications Quiz	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7

## Agriculture, Food and Natural Resources Content Standards continued

<b>ABS.05.03.03.c.</b> Construct comprehensive marketing plans for AFNR businesses.	Media Plan Proposal Media Plan Presentation	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>CS.01.01.</b> Performance Indicator: Examine issues and trends that impact AFNR systems on local, state, national and global levels.		
<b>CS.01.01.01.b.</b> Analyze and document AFNR issues and their impact on local, state, national and global levels.	Entire event	
<b>CS.01.01.01.c.</b> Evaluate and explain AFNR issues and their impacts to audiences with limited AFNR knowledge.	Entire event	
<b>CS.01.01.02.b.</b> Analyze current trends in AFNR systems and predict their impact on local, state, national and global levels.	Entire event	
<b>CS.01.01.02.c.</b> Evaluate emerging trends and the opportunities they may create within the AFNR systems.	Entire event	
<b>CS.02.01.</b> Performance Indicator: Research geographic and economic data related to AFNR systems.		
<b>CS.02.01.02.b.</b> Analyze a set of economic data and analyze how it impacts an AFNR system.	Entire event	
<b>CS.02.01.02.c.</b> Devise a strategy to solve a problem in an AFNR system using a set of economic data.	Entire event	

## Agriculture, Food and Natural Resources Content Standards continued

<b>CS.02.02.</b> Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy.		
<b>CS.02.02.02.b.</b> Assess how people within societies on local, state, national and global levels interact with AFNR systems on daily, monthly or yearly basis.	Entire event	
<b>CS.02.02.03.b.</b> Assess the economic impact of an AFNR system on a local, state, national and global level.	Entire Event	
<b>CS.04.02.</b> Performance Indicator: Assess the natural resource related trends, technologies and policies that impact AFNR systems.		
<b>CS.04.02.01.b.</b> Analyze natural resources trends and technologies and document how they impact AFNR systems (e.g., climate change, green technologies, water resources, etc.).	Entire event	AFNR Career Cluster, Statement 7
<b>CS.04.02.01.c.</b> Defend or challenge natural resources trends and technologies based upon an assessment of their impact on AFNR systems.	Entire event	AFNR Career Cluster, Statement 7
<b>CS.04.02.02.b.</b> Create and propose a hypothetical natural resources policy that will impact current AFNR systems (e.g., for water resources, land use, air quality, etc.).	Entire event	AFNR Career Cluster, Statement 7
<b>CS.04.02.02.c.</b> Design strategies for implementing a new natural resources policy that will positively impact AFNR systems.	Media plan	AFNR Career Cluster, Statement 7
<b>CRP.01.02</b> Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.		
<b>CRP.01.02.02.b.</b> Analyze the pros and cons of professional decisions based upon impact on employers and community.	Media plan Media presentation	
<b>CRP.01.02.02.c.</b> Make and defend professional decisions after evaluating their near- and long-term impacts on employers and community.	Media plan Media presentation Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	
<b>CRP.02.01.</b> Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.		
<b>CRP.02.01.01.b.</b> Assess workplace problems and identify the most appropriate academic knowledge and skills to apply.	Media plan Media presentation	



## Agriculture, Food and Natural Resources Content Standards continued

CRP.02.01.02.b. Assess community problems and identify the most appropriate academic knowledge and skills to apply.	Media plan Media presentation Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	
CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.		
CRP.02.02.01.b. Assess workplace problems and distinguish the most appropriate technical concepts to apply.	Media plan Media presentation	
CRP.02.02.02.b. Assess community problems and identify the most appropriate technical concepts to apply.		
CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.		
CRP.04.01.01.b. Analyze use of verbal and non-verbal communication strategies in workplace situations.	Media plan Media presentation Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Media presentation	
CRP.04.01.02.c. Evaluate personal strengths and areas for growth with regard to speaking formally and informally with clarity, logic, purpose and professionalism, and identify ways to improve.	Media presentation	
CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.		
CRP.04.02.01.b. Compare and contrast the structure of different forms of written communication.	Media plan Media presentation Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	
CRP.04.02.01.c. Evaluate the effectiveness of different forms of written communication for achieving their intended purpose.	Media plan Media presentation Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	

## Agriculture, Food and Natural Resources Content Standards continued

<b>CRP.04.02.02.b.</b> Apply techniques for ensuring clarity, logic and coherence to edit written communications (e.g., emails, reports, presentations, technical documents, etc.).	Media plan Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	
<b>CRP.04.02.02.c.</b> Compose clear and coherent written documents (e.g., agendas, audio-visuals, drafts, forms, etc.) for formal and informal settings.	Media plan Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	
<b>CRP.04.03.</b> Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.		
<b>CRP.04.03.01.b.</b> Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Media presentation	
<b>CRP.04.03.01.c.</b> Evaluate personal effectiveness and devise a plan to improve active listening skills.	Media presentation	
<b>CRP.04.03.02.b.</b> Assess active listening strategies by observing others in formal and informal settings.	Media presentation	
<b>CRP.04.03.02.c.</b> Model active listening strategies in formal and informal settings.	Media presentation	
<b>CRP.05.01.</b> Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.		
<b>CRP.05.01.01.b.</b> Analyze how the process of decision making is used in workplace and community situations.	Media plan	
<b>CRP.05.01.01.c.</b> Evaluate workplace and community decision-making processes and devise strategies for improvement.	Media plan	
<b>CRP.05.01.02.b.</b> Analyze past workplace and community situations to determine if appropriate information and resources were used to make an effective decision.	Media plan	
<b>CRP.05.01.02.c.</b> Evaluate workplace and community situations and recommend the information and resources needed to support good decisions.	Media plan	
<b>CRP.05.01.03.b.</b> Analyze workplace and community decisions and assess the information and resources used to make those decisions.	Media plan	

## Agriculture, Food and Natural Resources Content Standards continued

CRP.05.01.03.c. Synthesize information and resources and apply to workplace and community situations to make positive decisions.	Media plan	
<b>CRP.05.02.</b> Performance Indicator: Make, defend and evaluate decisions at work and in the community using information about the potential environmental, social and economic impacts.		
CRP.05.02.01.b. Apply a structured decision-making process to improve workplace and community situations.	Media plan	
CRP.05.02.02.b. Assess past decisions made in workplace and community and analyze their effects on environmental, social and economic situations.	Media plan	
<b>CRP.06.01.</b> Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.		
CRP.06.01.01.b. Synthesize information, knowledge and experiences to generate ideas for workplace and community situations.	Media plan	
CRP.06.01.01.c. Evaluate workplace and community situations and devise strategies to apply original ideas.	Media plan	
CRP.06.01.02.b. Analyze how assumptions can impact outcomes in a variety of workplace and community situations.	Media plan	
CRP.06.01.02.c. Devise strategies (e.g., ask questions, brainstorm ideas, present facts and information etc.) to challenge common assumptions in workplace and community situations.	Media plan	
<b>CRP.06.02.</b> Performance Indicator: Assess a variety of workplace and community situations to identify ways to add value and improve the efficiency of processes and procedures.		
CRP.06.02.02.b. Predict and communicate potential gains in efficiency and value-added from implementing an improved process or procedure.	Media plan	
CRP.06.03.01.b. Assess and communicate the risks and benefits of applying new ideas and innovations to the workplace and community.	Media plan	

*Agriculture, Food and Natural Resources Content Standards continued*

<b>CRP.06.03.01.c.</b> Design a plan of action to introduce a new idea or innovation into the workplace and community.	Media plan	
<b>CRP.06.03.02.c.</b> Evaluate and execute strategies for using stakeholder input and feedback to improve a plan of action for introducing a new idea or innovation into the workplace or community.	Media plan	
<b>CRP.07.01.</b> Performance Indicator: Select and implement reliable research processes and methods to generate data for decision-making in the workplace and community.		
<b>CRP.07.01.01.b.</b> Analyze how different research methods are used to generate data in a variety of situations.	Media plan	
<b>CRP.07.01.01.c.</b> Evaluate business' and organizations' use of research methods and processes and propose recommendations for improvement.	Media plan	
<b>CRP.07.01.02.b.</b> Assess the positives and negatives of using different research strategies and methods to generate data for workplace and community decisions.	Media plan	
<b>CRP.07.01.02.c.</b> Design plans for use and implementation of reliable research methods to generate data for decision making in workplace and community situations.	Media plan	
<b>CRP.07.02.</b> Performance Indicator: Evaluate the validity of sources and data used when considering the adoption of new technologies, practices and ideas in the workplace and community.		
<b>CRP.07.02.01.b.</b> Assess data sources for reliability and validity.	Media plan	
<b>CRP.07.02.01.c.</b> Propose valid and reliable data sources to use when considering the adoption of new technologies, practices and ideas.	Media plan	
<b>CRP.07.02.02.b.</b> Assimilate data to assist in making a decision about the adoption of a new technology, practice or idea by workplaces and community organizations.	Media plan	
<b>CRP.07.02.02.c.</b> Create and defend proposals for new technologies, practices and ideas using valid and reliable data sources.	Media plan Media presentation	

## Agriculture, Food and Natural Resources Content Standards continued

<b>CRP.08.01.</b> Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.		
<b>CRP.08.01.01.b.</b> Apply steps for critical thinking to a variety of workplace and community situations.	Media plan	
<b>CRP.08.01.01.c.</b> Evaluate how applying critical thinking skills can impact workplace and community situations.	Media plan	
<b>CRP.08.01.02.b.</b> Assess solutions to workplace and community problems for evidence of reason, logic and consideration of multiple perspectives.	Media plan	
<b>CRP.08.01.02.c.</b> Devise strategies to apply reason, logic and input from multiple perspectives to solve workplace and community problems.	Media plan	
<b>CRP.08.03.</b> Performance Indicator: Establish plans to solve workplace and community problems and execute them with resiliency.		
<b>CRP.08.03.01.b.</b> Analyze and determine the best problem-solving model to apply to workplace and community problems.	Media plan	
<b>CRP.08.03.02.b.</b> Create plans to solve workplace and community problems.	Media plan	
<b>CRP.11.01.</b> Performance Indicator: Research, select and use new technologies, tools and applications to maximize productivity in the workplace and community.		
<b>CRP.11.01.01.b.</b> Analyze advantages and disadvantages of new technologies, tools and applications to maximize productivity in the workplace and community.	Media plan Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	
<b>CRP.11.01.01.c.</b> Construct effective communications to explain the features, benefits and risks of new technologies, tools and applications in the workplace and community.	Media plan Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	
<b>CRP.11.01.02.b.</b> Select, apply and use new technologies, tools and applications in workplace and community situations to maximize productivity.	Media plan Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	

*Agriculture, Food and Natural Resources Content Standards continued*

<b>CRP.11.01.02.c.</b> Evaluate effectiveness and make recommendations for using new technologies, tools and applications in the workplace and community.	Media plan Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	
<b>CRP.12.01.</b> Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.		
<b>CRP.12.01.01.b.</b> Formulate action plans to complete team-oriented projects in the workplace and community, including plans for personal contributions.	Media plan Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	
<b>CRP.12.01.02.b.</b> Apply consensus building techniques to accomplish results in team-oriented situations.	Media plan Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	
<b>CRP.12.01.03.b.</b> Assess the need and benefit for cultural and global competency in team settings at work and in the community.	Media plan Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	
<b>CRP.12.02.</b> Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).		
<b>CRP.12.02.01.b.</b> Assess team dynamics and match strategies to increase team member engagement.	Media plan Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	
<b>CRP.12.02.02.b.</b> Select strategies to engage team members and apply in a variety of situations.	Media plan Web design practicum Video producer practicum Journalistic writing practicum Opinion writing practicum	



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# AGRICULTURAL ISSUES FORUM

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## **Purpose**

*The purpose of the agricultural issues forum is to present a current issue to a public audience; therefore, professional ethics and standards are to be considered. Ignoring truthful information, falsifying needed information, using unreliable sources and plagiarism are violation examples which could result in disqualification.*

## **Objectives**

This event will provide the participant with the ability to:

- Investigate a variety of local, state, national and international issues facing agriculture through classroom instruction.
- Engage students in the selection, research, planning and presentation of a local, state, national or international agricultural issue with relevance to the local community.
- Demonstrate through the portfolio, presentation and questioning an understanding of the principles and fundamentals of agricultural issue analysis.
- Connect agriculture students with professionals in the industry as they research and present their forum.
- Increase the awareness of an agricultural issue at the local, state or national level through presentations of the forum.
- Apply teamwork, leadership and communication skills for career success.

## Event Rules

A team should be composed of a minimum of three and a maximum of seven students who are actively participating, orally presenting and available to answer the judges' questions. To be eligible for awards, each student must take an active role in the presentation. This includes active participation in the presentation and making themselves available for questions from the judges in all rounds of competition. Only the certified team members can take an active role in the presentation of materials and use of technology during the presentation.

Presentations may include official FFA dress, costumes, props, skits and other creative paraphernalia. Costumes, props, skits and other paraphernalia must be professional in nature and used to showcase respect of all cultures. The event committee reserves the right to remove any team whose presentation, props, skits or other actions are disrespectful of others or shows lack of good judgement.

### USE OF TECHNOLOGY AND PROPS

Teams are encouraged to be creative in the approach used to develop their team presentations including the use of technology and other props. Teams are cautioned that the use or over use of any technology or prop that reduces the focus on the content provided by the team and team's presentation of the content can result in a lower presentation score.

### SHOWCASE RESPECT OF ALL CULTURES

The agricultural Issues LDE respects and promotes the practice of one's first amendment rights; however, respect should always be demonstrated to cultures different from the speaker. In no manner should a team provide a forum that could be considered offensive to a culture different from themselves. Answers to questions should be answered with facts rather than opinions or stereotypes. The definition

of culture is broadly defined, therefore, it is recommended to consider all cultures as professionals. It is further recommended that teams present their forums to diverse audiences, including the dynamic of cultures represented in the presentation. By completing this task, written and verbal feedback should provide a quality measure on the cultural sensitivity of the forum.

If there is not a state qualifying event, the date on which the state appoints the team to be the representative to the National FFA Agricultural Issues Forum will be considered as the state qualifying date. This must be substantiated by the state FFA advisor or other authorized individual from the state FFA association.

A minimum of three competent and unbiased judges will be provided. They will be instructed not to take sides on the issue(s). Professors and industry representatives are recommended. The superintendent of this LDE will adequately prepare the judges before the event.

Seeding of teams in the preliminary rounds will be determined based on portfolio scores.

## Event Format

*Each team will conduct a presentation on the issue developed and presented at the local level.*

A front projection screen will be provided. Other equipment is allowed, but the presenting team must provide any other equipment they may need.

The agricultural issue could come from one of the following eight agricultural issue topic areas as listed in the Focusing on Agricultural Issues Instructional Materials ([www.FFA.org/resources/ag-issues](http://www.FFA.org/resources/ag-issues))

- Environmental Issues
- Agricultural Technology Issues
- Animal Issues
- Agricultural Career Issues
- Economy and Trade Issues
- Agricultural Policy Issues
- Food Safety Issues
- Biotechnology Issues

The same general agricultural issue topic, based on categories listed above, will not be used in the following three years by the same chapter and/or advisor.

Research on the topic must be current and students must be involved in all the research of the topic and development of the portfolio.

## Portfolio

The portfolio will be limited to ten single-sided pages or five double-sided 8 ½ x 11 pages maximum, not including cover page. Margins are to be set at a minimum of 1" top and bottom.

A maximum of ten points will be deducted for exceeding the maximum amount of pages and/or for not including the cover page containing required information.

Agricultural issues portfolios must be uploaded to the certification page on or before the annual designated deadline. See Agricultural Issues CDE/LDE website for specific upload instruction.

## COVER

Required information on the cover to avoid score deductions:

- Title of the issue stated as a question
- Date of the state qualifying event
- Name, address, state and phone number of the chapter

## SUMMARY

A maximum of two pages of the portfolio will include a summary of the issue.

- The summary pages should be written using a font no smaller than Times New Roman 10.
- The purposes of the summary are to provide an overview of the issue and to demonstrate understanding of the principles and fundamentals of agricultural issue analysis.
- The summary needs to include the course(s) in which instruction occurred and the number of students involved in the instruction on agricultural issues.
- Summary must include in text citations where appropriate.



- Citations to conform to most current edition of the American Physiological Association (APA) publication manual.
- The summary may also include, but is not limited to, responses to the following questions:
  - Why is this issue important now?
  - What is the nature of the issue?
  - Who is involved in the issue?
  - How can the issue be defined?
  - What is the historical background of the issue?
  - What caused the issue?
  - What are the risks?
  - What are the benefits?

For additional background on these questions, refer to the resource “Focusing on Agricultural Issues Instructional Materials” and review the PowerPoint “Agricultural Issues Analysis” in the Teaching Materials section at: [FFA.org/resources/ag-issues](https://www.ffa.org/resources/ag-issues)

- A bibliography of all resources and references cited which should include personal interviews, when appropriate, and any other supporting material. Bibliography to conform to most current edition of the American Physiological Association (APA) publication manual.

## DOCUMENTATION

In order for a forum to be awarded points, it must have occurred prior to the state qualifying event, and there must be independent verification of the forum presentation date. “Independent” means that verification needs to be provided by someone in the organization or the group to whom the presentation was made. The independent documentation needs to state when, where and to whom the forum was presented.

Documentation can include:

- Letters from organizations
- News articles, that also include the date of the presentation and/or the date the article is printed
- Photos showing attendance at forums, but also need independent documentation of the date of the forum presentation
- If more than one forum is held on the same day, the starting times of the multiple forums held on the same day also must be independently documented

## FORUM PRESENTATIONS

A chapter must have a minimum of five high quality public forums presentations prior to their state qualifying event in order to receive the maximum of 15 points. In most cases, the date of the state competition is the date of the qualifying event. Forum presentations given after the state qualifying event are encouraged, but will not count toward the portfolio score.

- Multiple organizations attending the same forum will count as one forum.
- Portfolio judges may take into consideration the quality and quantity of presentations made to audiences outside of the school. No points will be awarded for presenting to other classes or teacher at the schools or neighboring schools. In addition, no points will be awarded for forums presented as any part of a local or state FFA competition.

- High quality forums are those presentations made to community groups that would have an interest in the issue. Suggested procedures for setting up these presentations and examples of community groups have been provided in the Agricultural Issues Forum Presenter's Guide. High quality forums can also be with smaller numbers of individuals who hold elected, appointed or some other official position that will be making decisions on the issue.
- Examples of low quality forums would be dropping in at a local business and giving a presentation to the workers or going to the home of one of the parents to make a presentation. Low quality forums will receive zero or minimal points.

### **TIME LIMITS**

- Five minutes will be allowed for set-up.
- The presentation will be a maximum of 15 minutes in length.
- The presenters will receive a signal at 10 minutes and 14 minutes.
- At 15 minutes the timekeeper will announce that time is up, and the presentation will end.
- Seven minutes for questions and answers will be allotted in both the preliminary and semifinal rounds.
- Ten minutes for questions and answers will be allotted in the final round. Questions and answers will terminate at the end of allotted time.
- Three minutes will be allowed for take-down.
- The presentations will be designed to be viewed by the judges.
- The audience at-large will not be of concern to the presenters.
- The judges may ask questions of all individuals of the presenting team.
- Each individual is encouraged to respond to at least one question from the judges.

## Scoring

### PORTFOLIO

#### TEN SINGLE-SIDED PAGES OR FIVE DOUBLE-SIDED PAGES MAXIMUM (THREE PARTS, 25 POINTS TOTAL)

1. Summary of the issue, two pages maximum (5 points).
2. Bibliography (5 points).
3. Documentation of local forums (15 points).
  - All forums, require independent verification of when, where and to whom forums were presented, and independent verification of presentation times if more than one forum is held on the same day.

Maximum of ten points will be deducted for exceeding the maximum number of pages and/or not including cover page containing required information.

Prior to the event, the portfolios will be judged and scored by qualified individuals using the portfolio scorecard. Portfolio scores will be averaged and supplied to the presentation judges after they have scored the presentation. Portfolio comment cards will be provided. Comments will be available after the event results have been announced.

Proper grammar, correct spelling and proper editing of text are important. The most current edition of The American Psychological Association (APA) style guide should be used for all research citations. Adherence to these editorial guidelines is expected to receive maximum points for the portfolio score.

## TEAM PRESENTATION

### INTRODUCTION, PRO, CON AND SUMMARY OF PRO AND CON (20 POINTS EACH, 80 POINTS TOTAL)

#### EFFECTIVENESS OF PRESENTATION (20 POINTS)

- Participation of each team member.
- Creative in how main points are made. (It makes no difference, for the “creativity” score, if team is in costume or official FFA dress.)
- Quality and power of the presentations.
- Speaks at the right pace to be clear.
- Pronunciation of words is clear and intent apparent.
- No distracting mannerisms that affect effectiveness.
- Gestures are purposeful and effective.
- Well poised with good stage presence.
- Use or overuse of any technology or prop that reduces the focus on the content provided by the team and team’s presentation of the content can result in a lower presentation score.

#### QUESTIONS (25 POINTS)

- Appropriate response and knowledge of the issue will be evaluated from team members’ responses.
- There will be a five point deduction from the scorecard of any team that draws a conclusion supporting a pro or con viewpoint during the formal presentation. During the question period, students may draw a conclusion supporting a pro or con viewpoint if asked to do so by a judge.
- Presentation comment cards will be completed by presentation judges and presented to the teams at the awards function.

## **RANKING**

Judges' ranking will be used to place teams. Teams will be ranked in numerical order on the basis of the final score to be determined by each judge without consultation. The judges' ranking of each team then shall be added, and the winner will be that team whose total ranking is the lowest. (Low rank method of selection where a rank of "1" is assigned to the highest place team, "2" to the second place team, etc.)

## **TIEBREAKERS**

Ties will be broken based on the greatest number of low ranks. Teams' low ranks will be counted and the team with the greatest number of low ranks will be declared the winner. If a tie still exists, then the event superintendent will rank the team's response to questions. The team with the greatest number of low ranks from the response to questions will be declared the winner. If a tie still exists then the team's raw scores will be totaled. The team with the greatest total of raw points will be declared the winner.



## Awards

*Awards will be presented to teams based upon their rankings at the awards ceremony.*

Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

## References

*This list of references is not intended to be all-inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

- National FFA Core Catalog—Past CDE Material ([www.shop.FFA.org](http://www.shop.FFA.org))
- National FFA Core Catalog—Power of Demonstration DVD ([www.shop.FFA.org](http://www.shop.FFA.org))
- Updated Focusing on Agricultural Issues Instructional Materials ([FFA.org/resources/ag-issues](http://FFA.org/resources/ag-issues))
- “Helpful hints to give your students the best opportunity to do well in the Agricultural Issues Forum Career Development Event at the State and National FFA Conventions” can be found on the Agricultural Issues Instructional Materials website listed above and the National FFA website ([FFA.org/documents/cde\\_agissues\\_resources.pdf](http://FFA.org/documents/cde_agissues_resources.pdf))





NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Portfolio Scorecard

25 points

CHAPTER

STATE

TEAM NUMBER

The portfolio should include items described in the event format guidelines and is limited to ten single-sided pages or five double-sided pages maximum.

Agricultural Issues portfolio must be uploaded to the declaration/certification site by the designated deadline prior to the National FFA Convention & Expo at which the issue is to be presented.

	Possible points	15-11 Points	10-6 Points	5-1 Points	Total score
Summary of the issue (2 pages maximum)	5				
Bibliography	5				
Documentation of local forums	15				
Subtotal:					
<b>Deductions</b>					
• Late submission to the National FFA Organization			-2.5 points		( )
• For exceeding maximum number of pages • Cover page not stating title in form of a question, date of state qualifying event, chapter name, address, state and phone number			-10 points		( )
<b>TOTAL POINTS</b>					

JUDGE'S NAME

JUDGE'S SIGNATURE

DATE



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Team Presentation Scorecard

125 points

CHAPTER \_\_\_\_\_

STATE \_\_\_\_\_

TEAM NUMBER \_\_\_\_\_

Circle One: Preliminaries Semifinals Finals

	Possible points	25-21 points	20-15 points	14-10 points	9-5 points	4-0 points	Total score
<b>Introduction</b> <ul style="list-style-type: none"> <li>Statement of the issue</li> <li>Why issue is important</li> </ul>	20						
<b>Pro view point</b> <ul style="list-style-type: none"> <li>Identification of positive points</li> <li>Points addressed are relevant</li> </ul>	20						
<b>Con view point</b> <ul style="list-style-type: none"> <li>Identification of negative points</li> <li>Points addressed are relevant</li> </ul>	20						
<b>Summary of pro/con view points</b>	20						
<b>Effectiveness of presentation</b> <ul style="list-style-type: none"> <li>Participation, creativity, quality and power, clear with right pace and word pronunciation, no distractions, appropriate gestures, poised</li> </ul>	20						
<b>Questions</b> <ul style="list-style-type: none"> <li>Appropriate response</li> <li>Knowledge of issue</li> </ul>	25						
<b>Subtotal</b>							
<b>Portfolio Score</b>							
Deduction for presenting a conclusion during the 15 minute presentation (-5 points)							( )
<b>TOTAL POINTS</b>							

Use or overuse of any technology or prop that reduces the focus on the content provided by the team and team's presentation of the content can result in a lower presentation score.

JUDGE'S NAME \_\_\_\_\_

JUDGE'S SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Agricultural, Food and Natural Resources Content Standards

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>CS.01.01. Performance Indicator: Examine issues and trends that impact AFNR systems on local, state, national and global levels.</b>		
CS.01.01.01.c. Evaluate and explain AFNR issues and their impacts to audiences with limited AFNR knowledge.	Portfolio Presentation	
<b>CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.</b>		
CRP.01.01.02.c. Model personal responsibility in workplace and community situations.	Presentation	
CRP.01.02.01.b. Assess the pros and cons of personal decisions based on their anticipated impact on self and others.	Presentation	
<b>CRP.01.02 Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.</b>		
CRP.01.02.01.b. Assess the pros and cons of personal decisions based on their anticipated impact on self and others.	Presentation	
CRP.01.02.02.b. Analyze the pros and cons of professional decisions based upon impact on employers and community.	Presentation	
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Presentation	
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
CRP.05.01.03.c. Synthesize information and resources and apply to workplace and community situations to make positive decisions.	Portfolio Presentation	

*Agricultural, Food and Natural Resources Content Standards continued*

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
CRP.06.01.01.b. Synthesize information, knowledge and experiences to generate ideas for workplace and community situations.	Portfolio	
CRP.06.01.02.b. Analyze how assumptions can impact outcomes in a variety of workplace and community situations.	Portfolio Presentation	
<b>CRP.06.03. Performance Indicator: Create and execute a plan of action to act upon new ideas and introduce innovations to workplace and community organizations.</b>		
CRP.06.03.01.b. Assess and communicate the risks and benefits of applying new ideas and innovations to the workplace and community.	Portfolio Presentation	
<b>CRP.07.02. Performance Indicator: Evaluate the validity of sources and data used when considering the adoption of new technologies, practices and ideas in the workplace and community.</b>		
CRP.07.02.01.c. Propose valid and reliable data sources to use when considering the adoption of new technologies, practices and ideas.	Portfolio Presentation	
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.01.b. Assimilate and prioritize potential solutions to solve problems in the workplace and community.	Portfolio Presentation	
CRP.08.02.02.b. Apply decision-making processes to generate possible solutions to solve workplace and community problems.	Portfolio	



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# AGRICULTURAL SALES

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS



## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The purpose of the National FFA Agricultural Sales Career Development Event is to evaluate and demonstrate skills that are essential for an individual to be successful in the agricultural sales career. Students will also develop an understanding of the opportunities available in the sales industry. The process of selling agricultural products is essential for production and marketing of agricultural products.*

## Objectives

The Agricultural Sales Career Development Event provides the opportunity for the participant to:

- Develop verbal, written and interactive communication skills.
- Demonstrate skills to build rapport with customers.
- Discuss features and benefits of a product.
- Identify potential customer objections.
- Introduce the product to prospective customers.
- Develop a sales call that determines and addresses customers' needs and objections.
- Attempt to close the sale by asking for customer's buying decision.
- Identify and demonstrate the use of questions throughout the sales process.
- Develop active listening skills.



## Event Rules

- The team will be composed of four students, and all four individual scores will count toward the team total.
- It is highly recommended that participants wear FFA Official Dress for this event.
- Any participant in possession of an electronic device in the event area is subject to disqualification.
- Business cards are not permitted and will not contribute to the individual or team scores.

## Event Format

*The event will be composed of three parts. Individual scores will be comprised of the written exam and individual sales activity. The team score will be comprised of the team activity and all individual scores.*

The product(s) utilized in the event and activity examples will be announced during the summer prior to convention on the CDE webpage. Provided product information may include appropriate company information and price list.

Each participant will be allowed to bring a one-inch binder to the event containing the provided product information and any other information gathered by the participant.

### INDIVIDUAL WRITTEN EXAM (100 POINTS)

The written exam is designed to evaluate an individual's knowledge of sales skills. The listed resources will be used as a basic resource but the questions will be generated based on basic sales concepts. The test will not exceed 30 questions and 45 minutes. The questions will consist of multiple choice, fill in the blank, short answer and essay format. Point values will be assigned to each question based on the skill level of the question.

**TEAM ACTIVITY (150 POINTS)**

- Team members will work together to demonstrate teamwork, group dynamics, problem solving, data analysis, decision making and oral communications.
- Teams will be allowed to use their 1" binder for the event.

The following information will be provided to the team at the event as if they were a group of salespeople working together to develop the pre-call planning prior to conducting a sales call.

- Product information (before event)
- Profile of one or two customers
- The team will be provided with paper and pencils. No presentation equipment such as laptops, flipcharts or dry erase boards will be allowed.

The team will then develop the pre-call plan (for the product(s) provided prior to the event) necessary to sell the product(s) in a face-to-face sales call. This pre-call plan should include:

- Potential questions to build rapport for the scenario.
- Common interests that team members have with the customers.
- Identify questions that help determine the wants and needs of the customer.
- Identify active listening skills or techniques for determining needs and wants.
- Identify and match potential needs and wants of the customer to the products' features and benefits.
- Identify potential objections of the customer.
- Identify potential concerns of each customer.
- Teamwork and involvement of team members will be judged during this event.
- Students are expected to explain their decisions for the pre-call plan based on selling principles.

- The team will be given 15 minutes to analyze the information and prepare to answer questions about the pre-call plan. During this 15 minutes, the team will be judged using the team activity scorecard.
- At the conclusion of the 15 minutes, team members will have an additional 15 minutes to individually answer questions from the judges and they will answer without assistance from their team members.

**INDIVIDUAL SALES ACTIVITY (150 POINTS)**

Participants will directly sell the product(s) to judge(s). Students will be given a preliminary customer profile and will have at least five minutes to review the preliminary customer profile prior to meeting with the judge(s). The judge(s) will act as the customer which may include not buying the product. Participants will have to establish rapport, ask probing questions to ensure they meet the customer's needs, and clarify customer information as a part of the sales call. Participants will have 20 minutes to interact with the judge(s). Participants are allowed to use their one-inch product information binder during the individual activity.

## Scoring

Activities	Individual Points	Team Points
Written Exam	100	400
Team Activity		150
Individual Sales Call	150	600
Maximum Points	<b>250</b>	<b>1,150</b>

## TIEBREAKERS

### INDIVIDUAL

In the event of a tie in individualized scores, the following events will be used in order to determine award recipients:

1. Written Exam
2. Individual Sales Call
3. Team Activity

### TEAM

In the event of a tie in team scores, the following events will be used in order to determine award recipients:

1. Written Exam
2. Team Activity
3. Total Individual Sales Activity



## Awards

*Awards will be presented to individuals and/or teams based upon their rankings at the awards ceremony.*

Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/ or by the general fund of the National FFA Foundation.

## References

*This list of references is not intended to be all inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. Make sure to use discretion when selecting website references by only using reputable, proven sites. The following list contains references that may prove helpful during event preparation. The most current edition of resources will be used.

- Past CDE materials and other resources are available by logging in to: [FFA.org](http://FFA.org)
- ProSelling: A Professional Approach to Selling in Agriculture and Other Industries, W. Scott Downey, ISBN-13: 978-0978895211
- Professional Selling, Rebecca L. Morgan, ISBN 0-931961-42-4
- Sales Training Basics, Elwood N. Chapman, ISBN 1-56052-119-8
- Closing, Virden J. Thorton, ISBN 1-56052-318-2
- Ditzenberger and Kidney, Selling-Helping Customers Buy, South-Western Publishing Company, Cincinnati, Ohio, 1992, 1-800-543-7972, ISBN 0538605316.
- Understanding Ag Sales, [FFA.org](http://FFA.org)





NATIONAL FFA  
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DEVELOPMENT EVENTS

# Team Preparation Rubric

75 points

INDICATOR	Very strong evidence of skill is present	Moderate evidence of skill is present	Strong evidence of skill is not present	Points Possible	Points Eared
Effective listening	7–10 points	4–6 points	0–3 points	10	
	Clearly evident that all team members are listening.	Listening occurs but distraction is evident.	Not listening to each other and/or talking over each other		
Oral communication	5–7 points	3–4 points	0–2 points	7	
	Clearly evident that all team members are discussing the topic.	Communication occurs but side conversations are occurring or two to three members dominating.	One member dominating conversation.		
Demonstrated cooperation	7–10 points	4–6 points	0–3 points	10	
	Clearly all team members completing tasks, sharing written and oral solutions.	Tasks primarily completed by two to three members, other members assist occasionally.	Tasks primarily completed by no member.		
	8–12 points	5–11 points	0–4 points	12	
	Clearly all team members respected the input of other team members.	Most team members respected the input of other team members.	The team members did not respect the input of other team members.		
Participated in the team preparation	6–8 points	3–5 points	0–2 points	8	
	Clearly all team members are engaged, attentive, and making notes for the full term of event.	Members are engaged and attentive with two to three making notes, participation fades over time.	No members form the primary team, no other members participate.		
Product knowledge	5–7 points	3–4 points	0–2 points	7	
	Clearly all team members demonstrated knowledge of the product.	Most team members demonstrate knowledge of product.	None of the team members demonstrate knowledge of product.		

## Team Preparation Rubric continued

Completing team goal					
INDICATOR	Very strong evidence of skill is present 3 points	Moderate evidence of skill is present 2 points	Weak evidence of skill is present 0–1 point	Points Possible	Points Eared
	Team identified at least four potential questions to build rapport for the scenario.	Team identified at least two potential questions to build rapport for the scenario.	Team identified no potential question to build rapport for the scenario.	3	
	Team identified at least four common interests that they have with the customer.	Team identified at least two common interests that they have with the customer.	Team identified no common interests that they have with the customer.	3	
	Team identified at least four questions to identify the wants and needs of customer.	Team identified at least two questions to identify the wants and needs of customer.	Team identified no questions to identify the wants and needs of customer	3	
	Team identified four active listening skills or techniques to determine wants and needs.	Team identified two active listening skills or techniques to determine needs and wants.	Team identified no active listening skills or technique to determine wants and needs.	3	
	Team identified at least four potential needs and wants of the customer and how the product meets those needs and wants.	Team identified at least two active potential needs and wants of the customer and how the product meets those needs and wants.	Team identified no potential needs and wants of the customer and how the product meets those needs and wants.	3	
	Team identified at least two potential objections of customer	Team identified at least one potential objection of customer	Team identified no potential objections of customer	3	
	Team identified two concerns of customer.	Team identified at least one concern of customer.	Team identified no concerns of customer.	3	
TOTAL POINTS					



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## Team Questions Rubric

75 points

INDICATOR	Very strong evidence of skill is present	Moderate evidence of skill is present	Strong evidence of skill is not present	Points Possible	Points Earned
Rapport	3–4 points	1–2 points	0 point	4	
	All team members questioned provided a different question to build rapport.	Half of team members questioned provided a different question to build rapport.	None of the team members questioned were able to provide question to build rapport.		
	5–7 points	3–4 points	0–2 points	7	
	All questions for building rapport were appropriate and pertinent to the scenario.	Most questions for building rapport were appropriate and pertinent to the scenario.	Questions for building rapport were not appropriate or pertinent to the scenario.		
Common interests	3–4 points	1–2 points	0 point	4	
	All team members questioned contributed common interests that team members have with the customer.	Half of team members questioned contributed common interests that team members have with the customer.	No team members contributed common interests that team members have with the customer.		
	5–7 points	3–4 points	0–2 points	7	
	All identified common interests were appropriate and pertinent to the scenario.	Most identified common interests were appropriate and pertinent to the scenario.	Identified common interests were not appropriate or pertinent to the scenario.		
Questions to identify wants and needs	3–4 points	1–2 points	0 point	4	
	All team members questioned contributed questions to identify the wants and needs of the customer and identified the active listening technique.	Half of team members questioned contributed questions to identify the wants and needs of the customer and identified the active listening technique.	No team members contributed questions to identify the wants and needs of the customer nor did they identify the active listening technique.		
	5–7 points	3–4 points	0–2 points	7	
	All questions and active listening techniques for identifying needs and wants were appropriate and pertinent to the scenario.	Most questions and active listening techniques for identifying needs and wants were appropriate and pertinent to the scenario.	Questions and active listening techniques for identifying needs and wants were not appropriate or pertinent to the scenario.		

Team Questions Scorecard continued

INDICATOR	Very strong evidence of skill is present	Moderate evidence of skill is present	Strong evidence of skill is not present	Points Possible	Points Earned
Determine wants and needs	3–4 points	1–2 points	0 point	4	
	All team members questioned contributed potential needs and wants for the customer and how the product meets those needs and wants.	Half of team members questioned contributed a potential need and want of the customer and how the product meets those needs and wants.	No team members provided potential needs or wants of the customer or how the product meets those needs and wants.		
	5–7 points	3–4 points	0–2 points	7	
	All potential needs and wants and how the product meets those needs were appropriate and pertinent to the scenario.	Most potential needs and wants and how the product meets those needs were appropriate and pertinent to the scenario.	Potential needs and wants and how the product meets those needs were not appropriate and pertinent to the scenario.		
Objections and concerns	5–7 points	3–4 points	0–2 points	4	
	All team members questioned contributed potential objections and potential concerns for the customer.	Half of team members questioned contributed potential objections and potential concerns for the customer.	No team member contributed potential objections or potential concerns for the customer.		
	5–7 points	3–4 points	0–2 points	7	
	All potential objections and concerns identified are appropriate and pertinent to the scenario.	Most potential objections and concerns identified are appropriate and pertinent to the scenario.	Potential objections and concerns identified are not appropriate and pertinent to the scenario.		
TOTAL POINTS					



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# Individual Sales Call Rubric

150 points

INDICATOR	Very strong evidence of skill is present	Moderate evidence of skill is present	Strong evidence of skill is not present	Points Possible	Points Earned
First impression	4–5 points	2–3 points	0–1 points	5	
	Individual identifies themselves with a good first impression.	Individual mostly identifies themselves with a good first impression.	Individual poorly identifies themselves with a good first impression.		
Personal rapport	8–10 points	4–6 points	0–3 points	10	
	Individual asks questions and utilizes information from answers in an attempt to build personal rapport.	Individual mostly asks questions and utilizes information from answers in an attempt to build personal rapport.	Individual poorly asks questions and utilizes information from answers in an attempt to build personal rapport.		
Clarifying questions	11–15 points	6–10 points	0–5 points	15	
	Individual asks questions to learn about the customer's business.	Individual asks mostly questions to learn about the customer's business.	Individual poorly asks questions to learn about the customer's business.		
	8–10 points	4–6 points	0–3 points	15	
	Individual asks questions to confirm preliminary customer information.	Individual mostly asks questions to confirm preliminary customer information.	Individual poorly asks questions to confirm preliminary customer information.		
Needs and wants	8–10 points	4–6 points	0–3 points	10	
	Individual confirmed and discovered customer needs and wants.	Individual mostly confirmed and discovered customer needs and wants.	Individual poorly confirmed and discovered customer needs and wants.		
Features and benefits	8–10 points	4–6 points	0–3 points	10	
	Individual applied features and benefits of their product to the customer's needs/wants to their product features.	Individual mostly applied features and benefits of their product to the customer's needs/wants to their product features.	Individual poorly applied features and benefits of their product to the customer's needs/wants to their product features.		

## Individual Sales Call Rubric continued

INDICATOR	Very strong evidence of skill is present	Moderate evidence of skill is present	Strong evidence of skill is not present	Points Possible	Points Earned
Matching needs and wants	11–15 points	6–10 points	0–5 points	15	
	Individual allows customer to participate in matching their wants/needs to the product features.	Individual mostly allows customer to participate in matching their wants/needs to the product features.	Individual poorly allows customer to participate in matching their wants/needs to the product features.		
Trial close	8–10 points	4–6 points	0–3 points	10	
	Individual uses appropriate sales technique to confirm customer understanding and/ or identify buying signals.	Individual mostly uses appropriate sales technique to confirm customer understanding and/ or identify buying signals.	Individual poorly uses appropriate sales technique to confirm customer understanding and/ or identify buying signals.		
Objections	11–15 points	6–10 points	0–5 points	15	
	Student listens and clarifies customers objections.	Student mostly listens and clarifies customers objections.	Student poorly listens and clarifies customers objections.		
Addressing objections	11–15 points	6–10 points	0–5 points	15	
	Individual applies and discusses the features/ benefits of the product to address the customers objections.	Individual mostly applies and discusses the features/benefits of the product to address the customers objections.	Individual poorly applies and discusses the features/benefits of the product to address the customers objections.		
Close or advance sale	11–15 points	6–10 points	0–5 points	15	
	Student closes or attempts to close the sale.	Student mostly closes or attempts to close the sale.	Student poorly closes or attempts to close the sale.		
Active listening	11–15 points	6–10 points	0–5 points	15	
	Individual actively listens to comments and answers from the customer.	Individual mostly listens to comments and answers from the customer.	Individual poorly listens to comments and answers from the customer.		
TOTAL POINTS					



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## Agriculture, Food and Natural Resources Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.01.01. Performance Indicator: Apply micro- and macroeconomic principles to plan and manage inputs and outputs in an AFNR business.</b>		
<b>ABS.01.01.01.b.</b> Apply microeconomic principles to calculate values associated with different inputs and outputs in AFNR businesses (e.g., price, point of equilibrium, opportunity costs, marginal costs, etc.).	Exam	CCSS.ELA-Literacy.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 Financial Investing: Benchmarks: Grade 12, Statement 9
<b>ABS.01.01.01.c.</b> Create strategies to maximize the efficiency of AFNR business inputs and outputs using microeconomic principles.	Individual sales activity Team sales activity	CCSS.ELA-Literacy.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 Financial Investing: Benchmarks: Grade 12, Statement 9
<b>ABS.04.02. Performance Indicator: Develop production and operational plans for an AFNR business.</b>		
<b>ABS.04.02.01.b.</b> Compare and contrast the strengths and weaknesses of operational plans from different AFNR businesses to determine best practices.	Exam Individual sales activity Team sales activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.04.02.01.c.</b> Make recommendations to improve operational plans for an AFNR business based on best practices.	Exam Individual sales activity Team sales activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.04.02.02.b.</b> Identify and assess alternative production systems for a specific agricultural product.	Exam Individual sales activity Team sales activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.04.02.02.c.</b> Create strategies to improve the production process of an agricultural product for an AFNR facility (e.g., SWOT- strengths, weaknesses, opportunities and threats, supply chain management, etc.).	Exam Individual sales activity Team sales activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.05.01. Performance Indicator: Analyze the role of markets, trade, competition and price in relation to an AFNR business sales and marketing plans.</b>		
<b>ABS.05.01.01.b.</b> Analyze the role of trade and price in the market structure as it relates to AFNR businesses.	Exam Individual sales activity Team sales activity	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13
<b>ABS.05.01.01.c.</b> Evaluate and predict future trends for a specific AFNR product as related to markets, trade and price (e.g., corn, oil, wheat, etc.).	Exam Individual sales activity Team sales activity	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13
<b>ABS.05.01.02.b.</b> Compare and contrast different forms of market competition and how they can be applied to different AFNR businesses.	Exam Individual sales activity Team sales activity	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13
<b>ABS.05.02. Performance Indicator: Assess and apply sales principles and skills to accomplish AFNR business objectives.</b>		
<b>ABS.05.02.01.a.</b> Identify and explain components of the sales process for AFNR businesses (e.g., understanding needs, develop solutions, close sale, etc.).	Entire event	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5



## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.05.02.01.b.</b> Apply the sales process to AFNR businesses and communicate ways of accomplishing the businesses' goals and objectives.	Exam Individual sales activity Team sales activity	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5
<b>ABS.05.02.01.c.</b> Analyze the sales process of AFNR businesses and create methods to suggest improvements.	Exam Individual sales activity Team sales activity	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5
<b>ABS.05.02.02.a.</b> Research and summarize examples of different types of sales calls used in AFNR businesses (e.g., cold calls, face-to-face meetings, follow up calls, etc.).	Entire event	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5
<b>ABS.05.02.02.b.</b> Assess different responses/customer reactions that could be presented during different types of sales calls used in AFNR businesses (e.g., competitor prices, competing products, post-sale service, complaints about product, etc.).	Exam Individual sales activity Team sales activity	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5
<b>ABS.05.02.02.c.</b> Create strategies to develop plans for different types of sales calls used in AFNR businesses.	Exam Individual sales activity Team sales activity	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.05.03. Performance Indicator: Assess marketing principles and develop marketing plans to accomplish AFNR business objectives.</b>		
<b>ABS.05.03.01.a.</b> Identify and explain marketing principles used in AFNR businesses (4 P's-product, place, price, promotion; attention, interest, desire, action, etc.).	Entire event	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>ABS.05.03.01.b.</b> Assess alternative marketing strategies as related to marketing principles for AFNR businesses (e.g. value-adding, branding, niche marketing, etc.).	Individual sales activity Team sales activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>ABS.05.03.02.b.</b> Compare and contrast the strategies of marketing for products and services used in AFNR businesses (e.g., direct marketing, commodities, etc.).	Individual sales activity Team sales activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.05.03.02.c.</b> Devise plans to implement and evaluate marketing strategies for products and services used in AFNR businesses.	Individual sales activity Team sales activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>ABS.05.03.03.b.</b> Perform a market analysis to gather information for marketing plans for AFNR businesses (e.g., evaluation of competitors, customers, domestic and international policy, regulations and rules, standards, etc.).	Individual sales activity Team sales activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>CS.02.01.02.c.</b> Devise a strategy to solve a problem in an AFNR system using a set of economic data.	Entire event	
<b>CS.06.01. Performance Indicator: Explain foundational cycles and systems of AFNR.</b>		
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
<b>CRP.02.02.</b> Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.	Entire event	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
CRP.02.02.01.b. Assess workplace problems and distinguish the most appropriate technical concepts to apply.	Entire event	
CRP.02.02.01.c. Apply technical concepts to solve problems in the workplace and reflect upon the results achieved.	Entire event	
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.01.b. Analyze use of verbal and non-verbal communication strategies in workplace situations.	Individual sales activity Team sales activity	
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Individual sales activity Team sales activity	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Individual sales activity Team sales activity	
CRP.04.03.02.a. Identify use of active listening strategies in formal (e.g., speeches, presentations, etc.) and informal (e.g., conversations, meetings, etc.) settings.	Entire event	
CRP.04.03.02.b. Assess active listening strategies by observing others in formal and informal settings.	Individual sales activity Team sales activity	
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	Individual sales activity Team sales activity	
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
CRP.05.01.01.b. Analyze how the process of decision making is used in workplace and community situations.	Individual sales activity Team sales activity	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
CRP.05.01.03.b. Analyze workplace and community decisions and assess the information and resources used to make those decisions.	Individual sales activity Team sales activity	
<b>CRP.05.02. Performance Indicator: Make, defend and evaluate decisions at work and in the community using information about the potential environmental, social and economic impacts.</b>		
CRP.05.02.01.b. Apply a structured decision-making process to improve workplace and community situations.	Individual sales activity Team sales activity	
CRP.05.02.01.c. Evaluate and defend decisions applied in the workplace and community situations.	Individual sales activity Team sales activity	
CRP.05.02.02.b. Assess past decisions made in workplace and community and analyze their effects on environmental, social and economic situations.	Individual sales activity Team sales activity	
CRP.05.02.02.c. Evaluate workplace and community situations and propose decisions to be made based upon the positive impact made on environment, social and economic areas.	Individual sales activity Team sales activity	
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
CRP.06.01.01.b. Synthesize information, knowledge and experiences to generate ideas for workplace and community situations.	Individual sales activity Team sales activity	
CRP.06.01.02.b. Analyze how assumptions can impact outcomes in a variety of workplace and community situations.	Individual sales activity Team sales activity	
CRP.06.01.02.c. Devise strategies (e.g., ask questions, brainstorm ideas, present facts and information etc.) to challenge common assumptions in workplace and community situations.	Individual sales activity Team sales activity	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Individual sales activity Team sales activity	
CRP.08.01.02.b. Assess solutions to workplace and community problems for evidence of reason, logic and consideration of multiple perspectives.	Individual sales activity Team sales activity	
CRP.08.01.02.c. Devise strategies to apply reason, logic and input from multiple perspectives to solve workplace and community problems.	Individual sales activity Team sales activity	
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.01.b. Assimilate and prioritize potential solutions to solve problems in the workplace and community.	Individual sales activity Team sales activity	
CRP.08.02.02.b. Apply decision-making processes to generate possible solutions to solve workplace and community problems.	Individual sales activity Team sales activity	
CRP.08.02.02.c. Evaluate and select solutions with greatest potential for success to solve workplace and community problems.	Individual sales activity Team sales activity	
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
CRP.12.01.01.b. Formulate action plans to complete team-oriented projects in the workplace and community, including plans for personal contributions.	Team sales activity	
CRP.12.01.02.b. Apply consensus building techniques to accomplish results in team-oriented situations.	Team sales activity	
<b>CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).</b>		
CRP.12.02.01.b. Assess team dynamics and match strategies to increase team member engagement.	Team sales activity	



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# AGRICULTURAL TECHNOLOGY AND MECHANICAL SYSTEMS

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS



## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*Technological advances in America continue to influence the way students must prepare for their futures.*

Students entering the workforce need a strong knowledge base and the ability to comprehend the interaction of complex systems. Employers want productive workers and managers that can access and use a broad range of information. The most sought after employees are those who communicate effectively, continue to stay current with modern technology and work successfully and effectively as individuals and as team members. Students with these skills and abilities are more competitive in the job market, receive financial rewards and are selected for advancement.

Agricultural technology and mechanical systems is comprised of strong technical content and complimented by the development of practical, hands-on skills. The subject matter areas and skill development practices have been grouped into five 'systems' areas, so named because of the complex interaction and synergistic

*Agricultural Technology and Mechanical Systems*

processes common to agriculture. The term ‘system’ is used to emphasize the interactive relationship between each area of agricultural technology and mechanical systems. These five systems areas are described and examples appear on the pages that follow.

Each agricultural technology and mechanical systems activity is in response to a problem or need encountered in the workplace. The solving of such problems is dependent upon how each decision or solution, imposed on one component, will influence the other system components. Solving one component of a problem without using a ‘systems approach’ can, and often does, result in additional problems. An example of where this has occurred is observed in the many obstacles that agricultural producers currently face regarding environmental pollution, ground water contamination and stricter governmental regulations. Decisions and solutions made in the past 100 years have impacted the environment negatively and resulted in a new set of problems.

The National FFA Agricultural Technology and Mechanical Systems Career Development Event recognizes students with agricultural technology and mechanical systems competencies important to the modern workplace. The technical content and required skills continue to include all traditional areas of agricultural technology and mechanical systems. Additionally, the operation of modern equipment, the application of new management strategies and the mastering of advanced technologies are increasingly emphasized.

This career development event selects and awards those students and teams that demonstrate:

- Mastery of the subject matter and skills common to the systems areas.
- Effective communication skills.
- Superior problem solving techniques.
- An understanding of modern technology.
- The ability to function as individuals and as team members working together.

## Event Rules and Format

### TEAM MAKE-UP

Teams will consist of four members. Team ranking is determined by combining the scores of all students from each team.

### EQUIPMENT

#### SAFETY MATERIALS STUDENTS MUST PROVIDE.

Each event participant must adhere to the safe practices and work habits appropriate when performing required activities. Participants are responsible and must provide all personal safety equipment including:

##### Eye protection:

Each team member must wear eye protection. Safety glasses must have the Z87+ rating. Individuals with prescription glasses will need either prescription safety glasses or safety glasses that can be worn over prescription glasses. Do not bring tinted safety glasses.

##### Individuals Must Wear Style B

Industrial-quality eye protection should be used during the team activity and the skill/problem solving activities. Safety glasses do not have to be worn while completing the written exam. Those with prescription eyewear that is not Style B must also wear safety glasses or goggles while participating in this event. Acceptable spectacles or goggles must adhere to the American National Standard Practice for Occupational and Education Eye and Face Protection, Z87.1-1979 (or Z87.1-1968) and revisions approved by ANSI.

Descriptions of style A, B and C Industrial Quality Eye Protection are as follows:



**Style A:** Not acceptable for use in the event. These are safety spectacles without side shields. They are for limited-hazard use requiring only frontal protection. The addition of accessory side shields that are not firmly secured does not upgrade style A to a style B or C.



**Style B:** Acceptable—Safety spectacles with wire mesh, perforated plastic or non-perforated side shields. The side shields shall be tapered, with an anatomical periphery extending at least half-way around the circumference of the lens frame. Industrial-quality eye protection for those not wearing prescription glasses shall be style B.



**Style C:** Not acceptable for use in the event. Safety spectacles with semi- or flat-fold shield that must be firmly secured to the frame. Style C glasses do not provide maximum protection from the top and bottom angles.

### Clothing

Each individual shall furnish and wear appropriate clothing such as long pants and long sleeved cotton shirt, coveralls, etc., for this event. Clothing must be in good repair and fit properly. Oversized or loose fitting clothing is dangerous around agricultural equipment and is not allowed. Long-sleeves must be worn when welding or oxy-fuel cutting. No open-toed footwear shall be worn during the event.

### Other Materials

Each participant must have a clipboard, two sharpened No. 2 pencils and an electronic calculator. Calculators used in this event should be battery operated and silent.

### Computers

Each state team is required to provide a computer. Bringing a printer is not required for the team activity but will be beneficial. Minimum computer specifications will be determined and posted on the event webpage and in the team orientation packet prior to the event.

Computers must be Microsoft Office<sup>®</sup> compatible and must be able to read .pdf files. Go to the event web site ([web.missouri.edu/schumacher/natcon/html](http://web.missouri.edu/schumacher/natcon/html)), download the practice document to determine if it works with your computer. You must be able to download activity instructions and turn in your document to the officials in a form readable by a Windows based system to be judged.

## SPECIALIZED SAFETY EQUIPMENT PROVIDED

- Necessary equipment such as basic welding helmets or goggles as required for welding, shields, gloves, welding leathers, hearing protection devices, etc., will be provided by the National FFA Agricultural Technology and Mechanical Systems Career Development Event committee.
- All required tools and equipment will be furnished for the event. Teams/individuals may choose to use their own equipment subject to approval by the event superintendent.
- If a team member needs modified equipment due to physical size and stature, the student must supply this equipment. The team member or coach must present the student-supplied equipment to the event superintendent prior to the start of the event for approval. Team members who need specialized or modified equipment due to disability as defined by the American Disabilities Act must submit the appropriate special needs request form and documentation at the time of the team's certification.

## Event Areas

The National FFA Agricultural Technology and Mechanical Systems Career Development Event is divided into the following areas. Each area includes a set of competencies common to agriculture. Students will be assessed on their proficiency as individuals and as a team. Specific competencies will be identified annually from the following areas:

- **Machinery and Equipment:** Repair and maintenance, materials handling, processing, adjustments, metal fabrication
- **Electricity:** AC/DC power, electrical safety, electrical standards, sensing devices, electrical wiring, controls, electronics, motors and other electrical loads, operating instructions, and manufacturer's recommendations
- **Compact Equipment:** Mechanical power, electrical power, hydraulic power, engine operation, maintenance, trouble-shooting, repair
- **Structures:** Structures, storage, concrete, masonry, plumbing, electrical, fabrication, construction, building materials, ventilation, heating, air conditioning
- **Environment and Natural Resources:** Water quality, sustainable agricultural practices, soil and water conservation, surveying, biological waste handling

## Team Activities

*The individuals on each state team will work together and be evaluated as a team while solving multi-system agricultural problem(s) selected from the skills and problem solving of the five system competency areas.*

The specific problem scenario is presented to the team on the day of the event. Team members will utilize the materials and equipment provided to solve the problem(s) and prepare a computer generated report. Teams will organize themselves, assign duties and complete tasks together or separately depending on individual skills and abilities. Each team will receive a score, and each team member will receive one-quarter of the total team activity score. The team activity score will be based on the finished product, the process including teamwork, and the written report.

The team activity will be evaluated as follows:

- **Teamwork process:** 100 points
- **Team report:** 50 points
- **Finished product:** 250 points
- **Total for team activity:** 400 points

## Individual Activities

### FIVE PRACTICUM AREAS

Each student is individually evaluated in each of the five areas. The specific activities occurring in each event are not publicized prior to the event. Each student is allowed 25 minutes to complete each of the five activities.

### WRITTEN EXAMINATION

Each student completes an examination that consists of 25 problem solving/multiple-choice questions. There are five questions from each of the five agricultural technology and mechanical systems areas. Students will have 60 minutes to complete this portion of the career development event.

### ANNUAL EVENT ANNOUNCEMENTS

Agricultural Technology and Mechanical Systems (ATMS) CDE focus is published and distributed by the National FFA Organization and posted at the following web site: <http://web.missouri.edu/~schumacherl/natcon.html>

Specific information and event updates generally occur following each year's event during November, June and August. The schedule for announcing event information and details on equipment selection is governed by equipment availability and changes by equipment manufacturers, dealers and contributors.



## Scoring

Event participants are evaluated as follows:

INDIVIDUAL SCORING	
Written examination	50
Individual activities (5 at 30 points each)	150
Team activity (1/4 of total team activity score)	100
<b>TOTAL POSSIBLE INDIVIDUAL SCORE</b>	<b>300</b>

TEAM SCORING	
Written examinations	200
All individual activities	600
Team activity	400
<b>TOTAL POSSIBLE TEAM SCORE</b>	<b>1,200</b>

## TIEBREAKERS

### TEAM

The team activity scores will be used to break a tie associated with the team rankings. If a tie still exists, the combined written exam scores will be used to break the tie.

### INDIVIDUAL

If a tie exists between individuals, the combined highest individual/activities scores will break the tie(s). If still tied, the highest written examination score will be used to break the tie.



## Awards

*Awards will be presented at the awards ceremony.*

Awards are presented to teams as well as individuals based upon their rankings. Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation. Special recognition awards to individuals or teams by a sponsor(s) will be at the sole discretion of the sponsor(s).

The high scoring individual in each of the five system skill/problem solving areas and the high scoring team in the team activity will be recognized with a certificate. The scores used to award this recognition include the exam questions and individual problem-solving/skill activity associated with each system area.

## References and resources

*This list of references is not intended to be all-inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

The goal of the National FFA Agricultural Technology and Mechanical Systems Career Development Event is to guide and promote quality instructional programs in agricultural technology and mechanical systems. The following list contains references that may prove helpful during event preparation. The multiple-choice test questions are written to be generic in nature and are selected from a variety of sources. It is the intent of the national event committee to reflect current technological practices common to the agricultural production industry. Refer to the CDE website for additional references and resources.

- National FFA Core Catalog—Past CDE Material (<http://shop.ffa.org/cde-qas-c1413.aspx>)
- Information specific to each annual event is available on the National FFA Agricultural Technology and Mechanical Systems Career Development Event web page at <http://web.missouri.edu/~schumacherl/natcon.html>. Specific information and event updates generally occur following each year's event during November, June and August.
- FOS. John Deere.
- FMO. John Deere.
- Agricultural Power and Machinery. (CD format) CEV Multimedia. LTD.
- Agricultural Engineering Technology. (ASABE) Springer Science + Business Media, LLC.
- Mechanics in Agriculture. Prentice Hall.
- Agricultural Mechanics Fundamentals and Applications. Delmar and Thompson

- Modern Agricultural Mechanics, V3. Prentice Hall
- Developing Shop Safety Skills. American Association for Vocational Instructional Materials
- Power Tool Safety and Operation. Hobar Publications
- Practical Farm Buildings. Prentice Hall
- National Electrical Code (latest edition). NFPA
- Ag Wiring Handbook. Rural Electricity Resource Council
- Mechanical Technology in Agriculture. Prentice Hall
- Agricultural Technical Systems and Mechanics by Koel, Maur, Moniz & Radcliff, American Technical Publishers (ATP)
- Industry websites
  - Briggs and Stratton
  - Case IH
  - John Deere
  - New Holland
  - Lincoln Electric

## Event Related Competencies

*The following list of statements with specific understandings and performances are provided as examples for the systems areas identified. Examination questions are primarily developed from problem solving categories.*

The skills categories are the basis for performance activities. Problem solving activities are developed from both problem solving and skills categories. In each systems area, the requirements for effective communication, problem solving activities and the application of modern technology — specifically computers and computer software — are strongly emphasized. Industry has identified important skills, abilities and competencies needed by new employees. These important attributes are described following the list of system competencies.

### **MACHINERY/EQUIPMENT SYSTEMS COMPETENCIES**

- Identify safe machinery operational practices.
- Identify the recommended service and maintenance operations from the operator's manual.
- Identify and use Nebraska Tractor Test or PAMI results.
- Select lubricants for machinery and equipment.
- Identify functions of machinery components.
- Identify parts and functions of hydraulic systems.
- Identify and compute harvest losses.
- Identify safe adjustment [level] on power equipment.
- Select pipe sizes to meet pressure and flow requirements.
- Identify repair procedures, techniques and materials.
- Match tractors to implement.
- Check and adjust driveline components.

- Adjust equipment hitches and drives.
- Install, adjust and service belt and chain drives.
- Select and use test equipment including meters, tachometers and timing devices to determine proper machine operation.
- Adjust and/or calibrate chemical application, seeding, fertilizing, harvesting, processing and materials handling machinery.
- Install, operate, maintain, adjust and evaluate machine systems for field conditions.
- Inflate tires to proper air pressure (e.g., load inflation tables).
- Join metals with appropriate fasteners.
- Select tools and materials for specific repair jobs.
- Select and use appropriate safety equipment.
- Identify safe machinery operation practices for field and highway conditions.
- Identify the recommended service and maintenance operations from the operator's manual.
- Select fuels, lubricants, hydraulic fluids and coolants for proper operation.
- Operation and interpretation of circuit diagrams and flowcharts for electrical, hydraulic, fuel, oil, cooling, intake and exhaust systems.
- Identify the function and operating principles of clutches, transmissions, control devices and brakes.
- Describe principles of power transmission.
- Identify the parts and functions of electrical, hydraulic, lubrication, cooling, governor and fuel systems.
- Select proper ballast for machinery weighting.
- Conduct a pre-operation inspection of a tractor or implement.
- Start, stop and operate machinery/engines.
- Perform recommended periodic service jobs (as found in operator's manuals).
- Conduct on-board tractor monitor checks as identified in operator's manual.

- Select and use engine overhaul equipment, including valve, cylinder, piston, seal and bearing tools.
- Service and maintain fuel, air intake and exhaust, cooling and lubrication systems.
- Operate engine and adjust or check ignition timing, engine speed and carburetor adjustments.

## **ELECTRICAL SYSTEMS COMPETENCIES**

- Use appropriate standards for agricultural applications, including the National Electrical Code (NEC), Electrical Testing Laboratory (ETL), Factory Mutual, Underwriters Laboratory (UL), Canadian Standard Association (CSA) and/or OSHA standards.
- Identify the characteristics of single and three-phase circuits.
- Plan and evaluate proper grounding systems and ground-fault protection.
- Determine volt, amp and ohm relationships (Ohm's and other application laws).
- Select adequate and appropriate lighting fixtures.
- Select motors based upon type of application.
- Interpret electric motor nameplate data.
- Identify electric motors and motor parts.
- Identify methods of providing electric motor protection.
- Interpret power (horsepower, kilowatt), power factor, torque and other motor selection criteria.
- Calculate heating and cooling loads.
- Identify and describe basic principles of controls including thermostats; humidistats; photoelectric; magnetic relays; programmable controllers; proximity switches and sensors; ultrasonics; timers and other time-delay equipment and pressure, motion, limit, float and sail switches.
- Select controls from supply catalogs/websites.

- Select appropriate wire sizes and protection devices for specific loads and lengths of circuits.
- Use low-voltage electrical control equipment.
- Use electrical test instruments such as: VOA (volt-ohm-amp) meter, DMM (digital multimeter) and tachometer.
- Read schematics and sketch wiring circuits.
- Install service entrance for single phase 120/240V service or three-phase power.
- Connect and operate electrical motors to power source.
- Change the direction of electric motor rotation.
- Select and mount an electric motor on a machine.

## **COMPACT EQUIPMENT SYSTEMS COMPETENCIES**

Compact Equipment is defined here as being 30 horsepower or less.

- Interpret horsepower, torque and other power measurement criteria.
- Compare costs of alternative machine uses.
- Describe operating principles of two-stroke and four-stroke spark or compression ignition engines.
- Evaluate engine/electric motor performance under load and no-load operation.
- Determine hydraulic cylinder force and speed.
- Interpret wiring diagrams/schematics.
- Identify and select devices for automated systems.
- Match tractors to implements.
- Select energy efficient equipment and materials.
- Identify energy conservation measures to reduce costs and operation(s).
- Determine energy consumption and cost savings of alternatives.
- Conduct equipment pre-operation inspection.



- Start, stop and operate machinery and engines.
- Perform recommended periodic service jobs (as found in operator's manuals).
- Use measuring tools and test instruments such as: Micrometer and telescoping gauges, dial indicator, compression tester, torque wrench, VOA (volt-ohm-amp)meter, DMM (digital multi-meter), timing devices, tachometer and dynamometer for determining test procedures.
- Remove, service and replace electrical components.
- Test and service batteries, charging, lighting, warning and cranking systems.
- Select and use engine overhaul equipment, including valve, cylinder, piston, seal and bearing tools.
- Service and maintain fuel, air intake and exhaust, cooling and lubrication systems.
- Operate engine and adjust or check ignition timing, engine speed and carburetor adjustments.
- Measure energy output from or consumption of devices and cost savings of alternatives.

## **ENVIRONMENTAL AND NATURAL RESOURCES SYSTEMS COMPETENCIES**

- Identify environmental problems in livestock and crop handling and processing buildings.
- Read and interpret maps including conservation, land use, soils, topographic, aerial and remote sensing and geological surveys.
- Describe principles involved in appropriate conservation and/or land use planning.
- Interpret legal land descriptions and determine land area.
- Conduct land surveying practices
- Select terracing and water diversion options for soil conservation.
- Selecting strip-cropping principles and practices.

- Select water management techniques including grassed waterways, parallel terrace outlets, tile outlet systems and erosion control structures.
- Determine types of vegetative cover and mulch for erosion stabilization.
- Determine and select appropriate cultural tillage or mechanical practices of equipment for specific soil type and residue management.
- Calculate soil loss using universal equations and determine effects of the components of the equations.
- Determine appropriate types, locations and uses of erosion and sedimentation control basins.
- Describe and/or calculate surface and subsurface drainage and irrigation techniques.
- Determine land shaping and grading requirements.
- Select irrigation systems for specific conditions.
- Select irrigation equipment and techniques.
- Determine power requirements and pump size for specific applications.
- Apply water pressure, flow and head concepts.
- Select pumps and power sources and compare efficiencies.
- Interpret pump characteristics curves.
- Utilize GPS systems and components.
- Lay out grade stakes for cut/fills.
- Determine soil types and select appropriate structures or practices.
- Use water-testing equipment.
- Lay out and map contour lines.
- Measure crop residue on the land.
- Identify soil limitations and determine the effects on land use.
- Assemble turf irrigation equipment.
- Install drainage systems or components.
- Install components of irrigation systems for specific applications.

## STRUCTURES SYSTEMS COMPETENCIES

- Determine the size, specifications and layout of building.
- Develop a bill of materials.
- Interpret plans and working drawings.
- Select and plan concrete construction.
- Interpret lumber and manufactured wood product grade stamps.
- Determine ventilation air requirements for intake and exhaust fan capacity.
- Select alternative construction styles and components (stud frame, post frame, rigid arch and stressed skin).
- Select arc welding machines and accessories.
- Read drawings and welding symbols.
- Test weld quality.
- Select, assemble and check welding equipment and supplies.
- Operate welding equipment and accessories for metal joining operations.
- Select tools and perform operations for cold metal working.
- Read metal working plans and prints.
- Select paint and other finishing materials.
- Use and maintain concrete and masonry tools and equipment.
- Fabricate and install reinforcing steel bar and welded wire mesh.
- Select and apply appropriate roofing, insulation and vapor barrier materials.
- Identify types of metals.
- Recommend metals based on load bearing strength.
- Fuse and braze welding basic joints on mild steel and cast iron.
- Estimate and calculate welding materials costs.
- Cut metal with plasma cutting unit.
- Operate power tools such as nibblers, drills and saws.
- Operate hand tools such as saws and files.

- Select appropriate metals for projects (strength).
- Cut and assemble plastic pipe.
- Solder copper fittings, tubing and copper wire.

## **GENERAL CLUSTER SKILLS**

- Demonstrate strong interpersonal communication abilities.
- Knowledge combined with leadership qualities and the ability to delegate responsibilities.
- Use people skills to deal with customers, the public and large groups.
- Identify and interpret the correct resources to make an educated decision.
- Understand and apply principles of mathematics, economics, biology and physics.
- Have a high level of common sense, logic and critical thinking skills.
- Think independently and analytically.
- Ability to understand and follow detailed instruction - written and oral.
- Motivated to learn from various methods of instruction.
- Utilize current technologies - computers, electronics, mechanical systems, etc.
- Calculate cost per units, per hour, per bushel, per acre, etc.
- Estimate value of equipment and recommend future buying decisions.
- Use technology to eliminate waste of time and resources.
- Use computer hardware, software, Internet, etc.
- Productively use time, money and people.
- Be knowledgeable of global agriculture - encompassing planning, production, marketing and finance.
- Use cash flow for critical business planning and operation.

- Measure and estimate costs and develop plans for business/industry improvements.
- Write annual goals with specific objectives and measurement tools for review.
- Demonstrate skills in business operations and management.
- Use a systematic approach to diagnose equipment problems.
- Service and maintain equipment to maintain optimum productivity.
- Use on-board computerized systems that monitor, test, store and report equipment operation.
- Be familiar with computerized recognition of crop productivity and quality, field conditions and pests.
- Understand electrical circuits - amperage, watts, voltage, resistance and transistors.
- Understand hydraulic system operation - flow, resistance and temperature.
- Understand mechanical system operation - mechanical advantage, material specifications and gear design.
- Read schematics, replace components – including control modules.
- Diagnosis electrical, computer, mechanical and hydraulic systems.
- Analyze mechanical system failures.



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Safety Rubric

25 points

	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 0-1 points	Points earned	Weight	Total Points
<b>Safety glasses</b>	Safety glasses are worn by all team members at all times with one or no reminders.	Safety glasses are worn by team members most of the time with two to three reminders.	Safety glasses are worn seldom by team members with four or more reminders.		X2	
<b>Safety practices</b>	Safety practices used at all times.	Safety practices used most of the time with minor violations.	Moderate to major violations of safety practices observed.		X1	
<b>Injuries</b>	No injuries occurred during the activity.	Minor injuries occurred during the activity requiring no medical attention.	Moderate to severe occurred during the activity.		X2	
<b>TOTAL POINTS</b>						



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Team Activity Process Rubric

50 points

	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 0-1 points	Points earned	Weight	Total Points
<b>Communications</b>	All team members effectively communicate with each other throughout the entire activity.	Most team members communicate fairly effectively with each other during most of the activity.	Communication between team members is ineffective and sporadic during the activity.		X2	
<b>Work distribution</b>	Work was evenly distributed between all team members and all team members were employed at all times.	Work was distributed between two to three team members and these members were employed most of the time.	Work was completed by only one team member with little employment of the other members.		X4	
<b>Time management</b>	All team members managed their time efficiently.	Most team members managed their time fairly efficiently.	One (or no) team member managed their time efficiently.		X2	
<b>Team organization</b>	Team started right away, had no down time, was not rushed at the end of the task.	Team was delayed in starting, had down time, and was somewhat rushed at the end of the task.	Team delayed starting, had long down times, and did not complete all tasks during the time allotted.		X2	
<b>TOTAL POINTS</b>						



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Team Activity Writing Summary Rubric

50 points

	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 0-1 points	Points earned	Weight	Total Points
<b>Introduction</b> <i>Written in narrative form</i>	Concise and brief overview of the team activity, written in narrative form that accurately described the activity.	Somewhat elaborate and lengthy overview of the team activity, partially written in narrative form and somewhat described the activity.	Introduction rambled without describing the activity or was too brief to adequately describe the activity. Narrative form was not used.		X1	
<b>Delegation of tasks</b> <i>Begins with an introductory sentence. The remainder can be written with bullet points.</i>	Fully explains how the labor and responsibilities were divided and how the group worked as a team. Identifies the division of labor and management.	Partially explains how the labor and responsibilities were divided and how the group worked as a team. Partially identifies the division of labor and management.	Vaguely explains how the labor and responsibilities were divided and how the group worked as a team. Vaguely identifies the division of labor and management.		X2	
<b>Discussion and success or challenges</b> <i>Begin with an introductory sentence. The remainder can be written with bullet points.</i>	Fully identifies portions of the activity where the team succeeded and portions of the activity where the team struggled.	Partially identifies successes and challenges by only including successes or only including challenges. Partially describes successes and challenges.	Omits success and challenges or rambles without clearly identifying what portions of the activity were successful for the team or what portions were struggles.		X1	
<b>Steps to designing the product</b> <i>Use this section to briefly describe the process you went through to design the product</i>	All needed steps are included for designing the product constructed. All steps were clear described.	Most steps are included for designing the product constructed. Some steps included were not clearly described.	A few or none of the steps are included for designing the product constructed. Steps included were and did not describe the steps to designing the product.		X1	



## Agricultural Technology and Mechanical Systems

## Team Activity Writing Summary Rubric continued

	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 0-1 points	Points earned	Weight	Total Points
<b>Steps to construction</b> <i>Explain to another group the process of constructing the product built in this activity.</i> <i>Begin with an introductory sentence. The remainder can be presented in numbered statements.</i> <i>This part of the report can be an opportunity to make suggestions that would improve the process where you experienced particular challenges.</i>	Complete and thorough steps are listed including suggestions to improve the process. Steps provide clarity so another team could follow the steps and construct the same product.	A partial list of steps are listed and suggestions to improve the process. Steps provide moderate clarity for another team to construct the same product.	Few if any steps are listed with minimum suggestions to improve the process. Steps are vague and another team would struggle to construct the same product using these steps.		X2	
<b>Annual team activity details</b> <i>Each year this will vary depending on activity details</i>	A complete description related to the annual team activity.	A partial description related to the annual team activity.	Few if any details are related to the team activity.		X1	
<b>Safety</b>	A complete list of safety practices are included in the report	A partial list of safety practices are included in the report.	Few if any safety practices are included in the report.		X1	
<b>Conclusion</b>	Concise, complete description of what team learned, and benefits of completing activity.	Somewhat elaborate and lengthy, incomplete description of what team learned and benefits of completing activity. Or very briefly written conclusion only partially describes what the team learned.	Elaborate and lengthy, with little or no description of what team learned and benefits of completing activity. Or missing or extremely brief conclusion does not describe what the team learned.		X1	



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Agriculture, Food and Natural Resources Content Standards

Performance Measurement Levels	Event Activities Addressing	Performance Measurement Levels
<b>CS.01.02. Performance Indicator: Examine technologies and analyze their impact on AFNR systems.</b>		
CS.01.02.01.b. Apply appropriate use of technologies in AFNR workplace scenarios.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
CS.01.02.01.c. Solve problems in AFNR workplaces or scenarios using technology.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
CS.01.02.02.b. Analyze how technology is used in AFNR systems to maximize productivity.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
CS.01.02.02.c. Evaluate the importance of technology use and how it impacts AFNR systems.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
<b>CS.03.02. Performance Indicator: Develop a plan to maintain and improve health, safety and environmental compliance and performance.</b>		
CS.03.02.01.b. Analyze health and safety performance plans of an AFNR business.	Entire event	AFNR Career Cluster, Statement 6
CS.03.02.01.c. Create a plan to improve safety, health and environmental management regulations in an AFNR business.	Entire event	AFNR Career Cluster, Statement 6
CS.03.02.02.b. Develop plans to improve environmental compliance and performance within an AFNR system.	Entire Event	AFNR Career Cluster, Statement 6
CS.03.02.02.c. Devise a strategy to educate employees on environmental compliance and performance in an AFNR business.	Entire event	AFNR Career Cluster, Statement 6

## Agricultural Technology and Mechanical Systems

## Agriculture, Food and Natural Resources Content Standards continued

<b>CS.03.03. Performance Indicator: Apply health and safety practices to AFNR worksites.</b>		
<b>CS.03.03.01.b.</b> Analyze and summarize current health and safety practices of AFNR business.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
<b>CS.03.03.01.c.</b> Create a health and safety policy plan for AFNR business.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
<b>CS.03.03.02.b.</b> Assess various emergency response plan requirements for an AFNR worksite and/or facility.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
<b>CS.03.03.02.c.</b> Create a plan to communicate appropriate responses for health and safety situations within an AFNR business.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
<b>CS.03.03.03.b.</b> Assess first aid knowledge and procedures relevant to AFNR worksites.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
<b>CS.03.03.03.c.</b> Conduct a survey and evaluate results of AFNR businesses to identify structure of health and safety practices and number of employees certified in first aid training.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
<b>CS.03.03.04.b.</b> Assess the safety priorities and appropriate responses for different levels of contamination or injury at an AFNR worksite.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
<b>CS.03.03.04.c.</b> Create a plan to mitigate the level of contamination or injury identified as a risk in the workplace.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	

## Agriculture, Food and Natural Resources Content Standards continued

<b>CS.03.04. Performance Indicator: Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.</b>		
<b>CS.03.04.01.b.</b> Analyze and summarize protective equipment requirements on various AFNR tools and equipment.	Entire event	
<b>C3.03.04.01.c.</b> Design plans to ensure the use of appropriate protective equipment when using various AFNR tools and equipment.	Entire event	
<b>CS.03.04.02.b.</b> Complete the set up and adjustment for tools and equipment related to AFNR tasks	Entire event	
<b>C3.06.04.02.c.</b> Evaluate and select appropriate tools and equipment to complete AFNR tasks.	Entire event	
<b>CS.03.04.03.b.</b> Assess and demonstrate appropriate operation, storage and maintenance techniques for AFNR tools and equipment.	Entire event	
<b>C3.06.04.03.c.</b> Devise operation, storage and maintenance plans or schedules for AFNR tools and equipment.	Entire event	
<b>CS.04.01. Performance Indicator: Identify and implement practices to steward natural resources in different AFNR systems.</b>		
<b>CS.04.01.01.b.</b> Analyze available practices to steward natural resources in AFNR systems (e.g., wildlife and land conservation, soil and water practices, ecosystem management, etc.).	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
<b>CS.04.01.01.c.</b> Devise strategies for stewarding natural resources at home and within community.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
<b>CS.04.01.02.b.</b> Analyze and assess sustainability practices that can be applied in AFNR systems (e.g., energy efficiency, recycle/reuse/repurpose, green resources, etc.).	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
<b>CS.04.01.02.c.</b> Evaluate sustainability policies and plans and prepare summary of potential improvements for AFNR businesses or organizations.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3

Agriculture, Food and Natural Resources Content Standards continued

<b>ESS.01.01. Performance Indicator: Analyze and interpret laboratory and field samples in environmental service systems.</b>		
<b>ESS.01.01.01.b.</b> Determine the appropriate sampling techniques needed to generate data.	Entire event	CCSS.ELA-LITERACY.SL.11-12.5 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3 CCSS.MATH.CONTENT.HSS.ID.A.2 CCSS.MATH.CONTENT.HSS.ID.B.5 HS-ESS2-2
<b>ESS.01.01.01.c.</b> Collect and prepare sample measurements using appropriate data collection techniques.	Entire event	CCSS.ELA-LITERACY.SL.11-12.5 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3 CCSS.MATH.CONTENT.HSS.ID.A.2 CCSS.MATH.CONTENT.HSS.ID.B.5 HS-ESS2-2
<b>ESS.01.01.02.b.</b> Summarize the purpose of statistical analysis methods commonly used in environmental service systems research and explain examples of their use in practice.	Entire event	CCSS.ELA-LITERACY.SL.11-12.5 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3 CCSS.MATH.CONTENT.HSS.ID.A.2 CCSS.MATH.CONTENT.HSS.ID.B.5 HS-ESS2-2
<b>ESS.01.01.02.c.</b> Utilize data analysis to identify trends in a data sample and assess the confidence that can be drawn from those conclusions.	Entire event	CCSS.ELA-LITERACY.SL.11-12.5 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3 CCSS.MATH.CONTENT.HSS.ID.A.2 CCSS.MATH.CONTENT.HSS.ID.B.5 HS-ESS2-2
<b>ESS.01.02. Performance Indicator: Properly utilize scientific instruments in environmental monitoring situations (e.g., laboratory equipment, environmental monitoring instruments, etc.).</b>		
<b>ESS.01.02.01.b.</b> Demonstrate the proper use and maintenance of basic laboratory equipment.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
<b>ESS.01.02.01.c.</b> Calibrate and use laboratory equipment according to standard operating procedures	Entire event	

## Agricultural Technology and Mechanical Systems

## Agriculture, Food and Natural Resources Content Standards continued

ESS.01.02.02.b. Demonstrate the proper use and maintenance of environmental monitoring instruments.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
ESS.01.02.02.c. Calibrate and use environmental monitoring instruments according to standard operating procedures.	Entire event	
<b>ESS.03.01. Performance Indicator: Apply meteorology principles to environmental service systems.</b>		
ESS.03.01.01.b. Differentiate how components of the atmosphere (e.g., weather systems and patterns, structure of the atmosphere, etc.) affect environmental service systems.	Entire event	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-6 HS-ESS3-5
ESS.03.01.01.c. Utilize meteorological data to assess the impact of atmospheric conditions on environmental service systems.	Entire event	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-6 HS-ESS3-5
<b>ESS.03.02. Performance Indicator: Apply soil science and hydrology principles to environmental service systems.</b>		
ESS.03.02.01.b. Use a soil survey to determine the land capability classes for different parcels of land in an area.	Entire event	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6

Agriculture, Food and Natural Resources Content Standards continued

<b>ESS.03.02.01.c.</b> Design a master land-use management plan for a given area that utilizes land capability classes in order to minimize erosion and flooding, maximize development and preservation of topsoil, et cetera.	Entire event	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.02.02.b.</b> Differentiate rock types and relate the chemical composition of mineral matter in soils to the parent material.	Entire event	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.02.02.c.</b> Evaluate the soil composition in order to predict the impact of that soil on environmental service systems.	Entire event	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.02.03.b.</b> Assess the physical qualities of the soil that determine its potential for filtration of groundwater supplies and likelihood for flooding.	Entire event	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.02.03.c.</b> Conduct tests of soil to determine its potential for filtration of groundwater supplies and likelihood for flooding.	Entire event	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6

*Agricultural Technology and Mechanical Systems*

*Agriculture, Food and Natural Resources Content Standards continued*

ESS.03.02.04.b. Assess precautions taken to prevent or reduce contamination of groundwater supplies.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
ESS.03.02.04.c. Evaluate the methods used in a given example to protect groundwater supplies.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.04.02. Performance Indicator: Manage safe disposal of all categories of solid waste in environmental service systems.</b>		
ESS.04.02.01.b. Analyze environmental hazards created by different types of solid waste, solid waste accumulation and solid waste disposal.	Environment and natural resources Team activity	HS-ETS1-2
ESS.04.02.01.c. Develop a plan for solid waste disposal for a given situation that considers the environmental hazards, economic realities and social concerns associated with this task.	Environment and natural resources Team activity	HS-ETS1-2
ESS.04.02.02.b. Analyze and document basic sanitary landfill operating procedures and design.	Environment and natural resources Team activity	HS-ETS1-2
ESS.04.02.02.c. Evaluate sanitary landfill procedures for environmental, economic and social sustainability.	Environment and natural resources Team activity	HS-ETS1-2
ESS.04.02.03.b. Apply scientific principles to explain the benefits and processes of composting.	Environment and natural resources Team activity	HS-ETS1-2
ESS.04.02.03.c. Evaluate the appropriateness of composting methods in different situations.	Environment and natural resources Team activity	HS-ETS1-2
ESS.04.02.04.b. Analyze and document different recycling methods and classify materials that can be recycled.	Environment and natural resources Team activity	HS-ETS1-2
ESS.04.02.04.c. Survey and evaluate recycling programs and procedures.	Environment and natural resources Team activity	HS-ETS1-2



Agriculture, Food and Natural Resources Content Standards continued

<b>ESS.04.04. Performance Indicator: Compare and contrast the impact of conventional and alternative energy sources on the environment and operation of environmental service systems.</b>		
<b>ESS.04.04.02.b.</b> Identify advantages and disadvantages of alternative energy sources as they pertain to environmental service systems.	Electricity Environment and natural resources Team activity	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.ELA-LITERACY.WHST 11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ETS1-2 HS-ETS1-4
<b>ESS.04.04.02.c.</b> Evaluate the impact alternative energy sources have on environmental conditions.	Electricity Environment and natural resources Team activity	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.ELA-LITERACY.WHST 11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ETS1-2 HS-ETS1-4
<b>ESS.04.04.03.b.</b> Analyze and document the main categories of energy consumption.	Entire event	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.ELA-LITERACY.WHST 11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ETS1-2 HS-ETS1-4

## Agricultural Technology and Mechanical Systems

## Agriculture, Food and Natural Resources Content Standards continued

ESS.04.04.03.c. Evaluate strategies for reducing energy consumption to determine the most effective course of action based on the needs of environmental service systems.	Entire event	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.ELA-LITERACY.WHST 11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ETS1-2 HS-ETS1-4
<b>ESS.05.01. Performance Indicator: Use technological and mathematical tools to map land, facilities and infrastructure for environmental service systems.</b>		
ESS.05.01.01.b. Apply surveying and mapping principles to a situation involving environmental service systems and identify and explain the use of equipment for surveying and mapping.	Entire event	HS-ETS1-4
ESS.05.01.01.c. Demonstrate surveying and cartographic skills to make site measurements in order to address concerns and needs within an environmental service systems situation.	Entire event	HS-ETS1-4
ESS.05.01.02.b. Apply GIS skills to a situation specific to environmental service systems.	Entire event	HS-ETS1-4
ESS.05.01.02.c. Interpret and evaluate GIS data to come to a conclusion about a scenario specific to environmental service systems.	Entire event	HS-ETS1-4
ESS.05.01.03.b. Analyze and document examples of utilization of breaking technology in environmental service systems.	Entire Event	HS-ETS1-4
ESS.05.01.03.c. Evaluate trends in technology and develop predictions about how these advancements will change environmental service systems	Entire event	HS-ETS1-4
<b>ESS.05.02. Performance Indicator: Perform assessments of environmental conditions using equipment, machinery and technology.</b>		
ESS.05.02.01.b. Assess different measurements of water quality to determine their effectiveness and limitations.	Environment and natural resources Team activity	HS-ETS1-4 HS-ETS1-2
ESS.05.02.01.c. Evaluate a sample of water to determine its quality and if it has been contaminated.	Environment and natural resources Team activity	HS-ETS1-4 HS-ETS1-2

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## Agriculture, Food and Natural Resources Content Standards continued

ESS.05.02.02.b. Assess different measurements of soil quality (e.g., soil horizons, soil texture, organic matter, soil respiration, etc.) to determine their effectiveness and limitations.	Environment and natural resources Team activity	HS-ETS1-4 HS-ETS1-2
ESS.05.02.02.c. Evaluate a sample of soil to determine its quality and if it has been contaminated.	Environment and natural resources Team activity	HS-ETS1-4 HS-ETS1-2
ESS.05.02.03.b. Assess different measurements of air quality (e.g., ozone, carbon monoxide, particulate matter, etc.) to determine their effectiveness and limitations.	Environment and natural resources Team activity	HS-ETS1-4 HS-ETS1-2
ESS.05.02.03.c. Perform an evaluation of air quality to determine and assess its impact of human and ecological populations.	Environment and natural resources Team activity	HS-ETS1-4 HS-ETS1-2
ESS.05.02.04.b. Assess different measurements of assessing ecological health (e.g., quadrat biodiversity assessments, transect surveys, population counts, detection of disease and invasive species, etc.) to determine their effectiveness and limitations.	Environment and natural resources Team activity	HS-ETS1-4 HS-ETS1-2
ESS.05.02.04.c. Evaluate a habitat to determine its ecological quality and if it is threatened.	Environment and natural resources Team activity	HS-ETS1-4 HS-ETS1-2
<b>FPP.01.01. Performance Indicator: Analyze and manage operational and safety procedures in food products and processing facilities.</b>		
FPP.01.01.01.b. Analyze and document attributes and procedures of current safety programs in food products and processing facilities.	Electricity Compact equipment Structures Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3

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<p><b>FPP.01.01.01.c.</b> Construct plans that ensure implementation of safety programs for food products and processing facilities.</p>	<p>Electricity Compact equipment Structures Environment and natural resources Team activity</p>	<p>AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3</p>
<p><b>FPP.01.01.02.b.</b> Assess equipment and facility maintenance used in food products and processing systems (e.g., specifications for machines, sanitation procedures, repair protocol, etc.).</p>	<p>Electricity Compact equipment Structures Environment and natural resources Team activity</p>	<p>AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3</p>
<p><b>FPP.01.01.02.c.</b> Devise strategies to maintain equipment and facilities for food products and processing systems.</p>	<p>Electricity Compact equipment Structures Environment and natural resources Team activity</p>	<p>AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3</p>
<p><b>FPP.01.02. Performance Indicator: Apply food safety and sanitation procedures in the handling and processing of food products to ensure food quality.</b></p>		
<p><b>FPP.01.02.01.b.</b> Outline procedures to eliminate possible contamination hazards associated with food products and processing.</p>	<p>Electricity Compact equipment Structures Environment and natural resources Team activity</p>	<p>AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2</p>

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## Agriculture, Food and Natural Resources Content Standards continued

<b>FPP.01.02.01.c.</b> Identify sources of contamination in food products and/or processing facilities and develop ways to eliminate contamination.	Electricity Compact equipment Structures Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.02.b.</b> Construct plans that ensure implementation of safe handling procedures on food products.	Electricity Compact equipment Structures Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.02.c.</b> Examine, interpret and report outcomes from safe handling procedures and results from quality assurance tests.	Electricity Compact equipment Structures Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.03.b.</b> Design and construct experiments for quality assurance tests on food products.	Electricity Compact equipment Structures Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.03.c.</b> Interpret and evaluate results of quality assurance tests on food products and examine steps to implement corrective procedures.	Electricity Compact equipment Structures Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.04.b.</b> Assess the procedures of microbiological tests used to detect food-borne pathogens.	Electricity Compact equipment Structures Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.04.c.</b> Conduct and interpret microbiological tests for food-borne pathogens.	Electricity Compact equipment Structures Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>NRS.01.04. Performance Indicator: Apply ecological concepts and principles to aquatic natural resource systems.</b>		
<b>NRS.01.04.02.b.</b> Analyze how different classifications of ground and surface water affect ecosystem function.	Environment and natural resources	
<b>NRS.01.04.02.c.</b> Devise strategies to manage, protect, enhance or improve sources of groundwater or surface water based on its properties.	Environment and natural resources	
<b>NRS.01.04.03.b.</b> Assess techniques used in the creation, enhancement and management of riparian zones and riparian buffers.	Environment and natural resources	

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NRS.01.04.03.c. Devise strategies for the creation, enhancement and management of riparian zones and riparian buffers.	Environment and natural resources	
<b>NRS.01.05. Performance Indicator: Apply ecological concepts and principles to terrestrial natural resource systems.</b>		
NRS.01.05.04.b. Analyze a plot of land in order to determine which soil management techniques would be most applicable.	Machinery and equipment Compact equipment Structures Environment and natural resources Team activity	
NRS.01.05.04.c. Devise a soil management plan to minimize erosion and maximize biodiversity, plant productivity, and the formation of topsoil.	Machinery and equipment Compact equipment Structures Environment and natural resources Team activity	
<b>NRS.02.04. Performance Indicator: Examine and explain how economics affects the use of natural resources.</b>		
NRS.02.04.01.b. Assess whether economic value increases or decreases the conservation, protection, improvement and enhancement of natural resources.	Environment and natural resources	
NRS.02.04.01.c. Devise a plan to improve the conservation, protection, improvement and enhancement of natural resources based on economic value and practices	Environment and natural resources	
NRS.02.04.02.b. Assess the importance of the use of natural resources on local, state and national economies.	Environment and natural resources	
NRS.02.04.02.c. Anticipate and predict how changes to the availability of natural resources because of human activity may impact a local, state and national economy.	Environment and natural resources	
NRS.02.04.03.b. Analyze and document how the adoption of green technology and/or alternative energy affected a local, state or national economy.	Environment and natural resources	
NRS.02.04.03.c. Anticipate and predict the economic impact green technology and alternative energy.	Environment and natural resources	
<b>NRS.03.02. Performance Indicator: Demonstrate cartographic skills, tools and technologies to aid in developing, implementing and evaluating natural resource management plans.</b>		
NRS.03.02.01.b. Apply cartographic skills and tools (e.g., land surveys, geographic coordinate systems, etc.) to locate natural resources.	Environment and natural resources	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
NRS.03.02.01.c. Evaluate the availability of and threats to natural resources using cartographic skills (e.g., spread of invasive species, movement of wildlife populations, changes to biodiversity of edge of habitat versus interior, etc.).	Environment and natural resources	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3

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NRS.03.02.02.b. Analyze how an area's natural resources could be assessed using GIS technology.	Environment and natural resources	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
NRS.03.02.02.c. Use GIS data for a given area to devise a management plan for the management, conservation, improvement, and enhancement of its natural resources.	Environment and natural resources	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>PS.01.03. Performance Indicator: Develop and implement a fertilization plan for specific plants or crops.</b>		
PS.01.03.03.b. Interpret laboratory analyses of soil and tissue samples.	Machinery and equipment Compact equipment Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
PS.01.03.03.c. Prescribe fertilizer applications based on the results of a laboratory analysis of soil and plant tissue samples.	Machinery and equipment Compact equipment Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
PS.01.03.04.b. Calculate the amount of fertilizer to be applied based on nutrient recommendation and fertilizer analysis.	Machinery and equipment Compact equipment Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
PS.01.03.04.c. Calibrate application equipment to meet plant nutrient needs.	Machinery and equipment Compact equipment Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
PS.01.03.05.b. Assess production methods for their short- and long-term effects on soil.	Machinery and equipment Compact equipment Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
PS.01.03.05.c. Devise a plan for soil management for a selected production method.	Machinery and equipment Compact equipment Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
PS.01.03.06.b. Assess environmental factors on a crop.	Machinery and equipment Compact equipment Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
PS.01.03.06.c. Devise a plan to meet plant nutrient needs based on environmental factors present.	Machinery and equipment Compact equipment Environment and natural resources Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>PS.03.02. Performance Indicator: Develop and implement a management plan for plant production.</b>		
PS.03.02.02.b. Prepare soil and growing media for planting with the addition of amendments.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9



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<b>PS.03.02.02.c.</b> Analyze how mechanical planting equipment performs soil preparation and seed placement.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RI.9–10.1 CCSS.ELA-Literacy.RI.9–10.8 CCSS.ELA-Literacy.RST.9–10.3 CCSS.ELA-Literacy.WHST.9–10.2 CCSS.ELA-Literacy.WHST.9–10.4 CCSS.ELA-Literacy.WHST.9–10.9
<b>PS.03.02.03.b.</b> Apply pre-plant treatments required of seeds and plants and evaluate the results.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RI.9–10.1 CCSS.ELA-Literacy.RI.9–10.8 CCSS.ELA-Literacy.RST.9–10.3 CCSS.ELA-Literacy.WHST.9–10.2 CCSS.ELA-Literacy.WHST.9–10.4 CCSS.ELA-Literacy.WHST.9–10.9
<b>PS.03.02.03.c.</b> Adjust and calibrate mechanized seeding and/or planting equipment for desired seed application rate.	Entire event	CCSS.ELA-Literacy.RI.9–10.1 CCSS.ELA-Literacy.RI.9–10.8 CCSS.ELA-Literacy.RST.9–10.3 CCSS.ELA-Literacy.WHST.9–10.2 CCSS.ELA-Literacy.WHST.9–10.4 CCSS.ELA-Literacy.WHST.9–10.9
<b>PS.03.02.04.b.</b> Monitor the progress of plantings and determine the need to adjust environmental conditions.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RI.9–10.1 CCSS.ELA-Literacy.RI.9–10.8 CCSS.ELA-Literacy.RST.9–10.3 CCSS.ELA-Literacy.WHST.9–10.2 CCSS.ELA-Literacy.WHST.9–10.4 CCSS.ELA-Literacy.WHST.9–10.9
<b>PS.03.02.04.c.</b> Prepare and implement a plant production schedule based on predicted environmental conditions and desired market target (e.g., having plants ready to market on a specific day such as Mother’s Day, organic production, low maintenance landscape plants, etc.).	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RI.9–10.1 CCSS.ELA-Literacy.RI.9–10.8 CCSS.ELA-Literacy.RST.9–10.3 CCSS.ELA-Literacy.WHST.9–10.2 CCSS.ELA-Literacy.WHST.9–10.4 CCSS.ELA-Literacy.WHST.9–10.9
<b>PS.03.02.05.b.</b> Demonstrate proper techniques to control and manage plant growth through mechanical, cultural or chemical means.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RI.9–10.1 CCSS.ELA-Literacy.RI.9–10.8 CCSS.ELA-Literacy.RST.9–10.3 CCSS.ELA-Literacy.WHST.9–10.2 CCSS.ELA-Literacy.WHST.9–10.4 CCSS.ELA-Literacy.WHST.9–10.9
<b>PS.03.02.05.c.</b> Prepare plant production schedules utilizing plant growth knowledge to get plants to their optimal growth stage at a given time.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RI.9–10.1 CCSS.ELA-Literacy.RI.9–10.8 CCSS.ELA-Literacy.RST.9–10.3 CCSS.ELA-Literacy.WHST.9–10.2 CCSS.ELA-Literacy.WHST.9–10.4 CCSS.ELA-Literacy.WHST.9–10.9
<b>PS.03.02.06.b.</b> Compare and contrast the types of technologies used for controlled atmosphere production.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RI.9–10.1 CCSS.ELA-Literacy.RI.9–10.8 CCSS.ELA-Literacy.RST.9–10.3 CCSS.ELA-Literacy.WHST.9–10.2 CCSS.ELA-Literacy.WHST.9–10.4 CCSS.ELA-Literacy.WHST.9–10.9



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<b>PS.03.02.06.c.</b> Research, select and defend technology for use in controlled atmosphere production.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
<b>PS.03.02.07.b.</b> Compare and contrast the types of systems used in hydroponic and aquaponic plant production.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
<b>PS.03.02.07.c.</b> Research, select and defend the use of a hydroponic or aquaponic plant system.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
<b>PS.03.05. Performance Indicator: Harvest, handle and store crops according to current industry standards.</b>		
<b>PS.03.05.01.b.</b> Assess the stage of growth to determine crop maturity or marketability and demonstrate proper harvesting techniques	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
<b>PS.03.05.01.c.</b> Analyze the processed used by mechanical harvesting equipment.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
<b>PS.03.05.02.b.</b> Evaluate crop yield and loss data and make recommendations to reduce crop loss.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
<b>PS.03.05.02.c.</b> Implement and evaluate the effectiveness of plants to reduce crop loss.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a

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<b>PS.03.05.03.b.</b> Research and analyze practices used to maintain a safe product through harvest, processing, storage and shipment (e.g., Food Safety Modernization Act, Good Agricultural Practices, etc.).	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
<b>PS.03.05.03.c.</b> Research laws and apply regulations to ensure the production of plants and plant products that are safe for distribution and use.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
<b>PS.03.05.04.b.</b> Analyze the proper conditions required to maintain the quality of plants and plant products held in storage and during shipping.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
<b>PS.03.05.04.c.</b> Monitor and evaluate environmental conditions in storage facilities for plants and plant products.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
<b>PST.01.02. Performance Indicator: Apply physical science and engineering principles to design, implement and improve safe and efficient mechanical systems in AFNR situations.</b>		
<b>PST.01.02.01.b</b> Perform mathematical calculations to determine the mechanical advantage of simple machines in AFNR related mechanical systems.	Entire event	HS-PS3-1 HS-PS3-3
<b>PST.01.02.01.c.</b> Apply the scientific method to devise strategies to improve the efficiency of operation of AFNR related mechanical systems.	Team activity	HS-PS3-1 HS-PS3-3
<b>PST.01.02.02.b.</b> Calculate the maintenance and purchase cost of tools, machines and equipment used in AFNR.	Entire event	HS-PS3-1 HS-PS3-3
<b>PST.01.02.02.c.</b> Devise and document processes to safely implement and evaluate the safe use of AFNR related tools, machinery and equipment.	Machinery and equipment Electricity Compact equipment Structures Team activity	HS-PS3-1 HS-PS3-3
<b>PST.01.02.03.b.</b> Select, maintain and demonstrate the proper use of tools, machines and equipment used in different AFNR related mechanical systems.	Entire event	HS-PS3-1 HS-PS3-3

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PST.01.02.03.c. Conduct a safety inspection of tools, machines and equipment used in different AFNR related mechanical systems.	Machinery and equipment Electricity Compact equipment Structures Team activity	HS-PS3-1 HS-PS3-3
<b>PST.01.03. Performance Indicator: Apply physical science principles to metal fabrication using a variety of welding and cutting processes (e.g., SMAW, GMAW, GTAW, fuel-oxygen and plasma arc torch, etc.).</b>		
PST.01.03.01.b. Analyze the situation and determine the best welding and cutting process to be used in metal fabrication.	Machinery and equipment Compact equipment Structures Team activity	
PST.01.03.01.c. Evaluate the quality of metal fabrication procedures (e.g., SMAW, GMAW, GTAW, fuel-oxygen and plasma arc torch, etc.).	Machinery and equipment Compact equipment Structures Team activity	
PST.01.03.02.b. Assess and select the proper electrode for use in various shielded metal arc welding situations.	Machinery and equipment Compact equipment Structures Team activity	
PST.01.03.02.c. Construct and/or repair metal structures and equipment using metal fabrication procedures.	Machinery and equipment Compact equipment Structures Team activity	
<b>PST.02. Performance Element: Operate and maintain AFNR mechanical equipment and power systems.</b>		
PST.02.01.01.b. Develop a preventative maintenance schedule for equipment, machinery and power units used in AFNR power, structural and technical systems.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
PST.02.01.01.c. Devise a strategy to communicate to different audiences, preventative maintenance and service schedule for equipment, machinery and power units used in AFNR power, structural and technical systems.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
PST.02.01.02.b. Service filtration systems and maintain fluid levels on equipment, machinery and power units in accordance with operator's manuals.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	

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PST.02.01.02.c. Assess and adjust equipment (e.g., belts and drives, chains, sprockets, etc.) and maintain fluid conveyance components (e.g., hoses, lines, nozzles, etc.) to ensure proper functioning.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
<b>PST.02.02. Performance Indicator: Operate machinery and equipment while observing all safety precautions in AFNR settings.</b>		
PST.02.02.01.b. Analyze and calculate the cost of using equipment, machinery, and power units for AFNR power, structural and technical systems.	Entire event	
PST.02.02.01.c. Perform pre-operation inspections, start-up & shut-down procedures on equipment, machinery and power units as specified in owner's manuals.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
PST.02.02.02.b. Apply safety principles and applicable regulations to operate equipment, machinery and power units used in AFNR power, structural and technical systems.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
PST.02.02.02.c. Adjust equipment, machinery and power units for safe and efficient operation in AFNR power, structural and technical systems.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
<b>PST.03.01. Performance Indicator: Troubleshoot, service and repair components of internal combustion engines using manufacturers' guidelines.</b>		
PST.03.01.01.b. Analyze and explain how the components of internal combustion engines interrelate during operation.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
PST.03.01.01.c. Evaluate service and repair needs for internal combustion engines using a variety of performance tests (e.g., manuals, computer-based diagnostics, etc.).	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
PST.03.01.02.b. Utilize technical manuals and diagnostic tools to determine service and repair needs of spark-and-compression internal combustion engines used in AFNR power, structural and technical systems.	Entire event	

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PST.03.01.02.c. Inspect, analyze and repair spark-and-compression internal combustion engines used in AFNR power, structural and technical systems.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
<b>PST.03.02. Performance Indicator: Service electrical systems and components of mechanical equipment and power systems using a variety of troubleshooting and/or diagnostic methods.</b>		
PST.03.02.01.b. Assess the tools used to measure the basic units of electrical circuits in AFNR power, structural and technical systems, and perform the measurements.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
PST.03.02.01.c. Analyze and design electrical circuits for AFNR power, structural and technical systems using knowledge of the basic units of electricity	Electricity Compact equipment Structures Environment and natural resources Team activity	
PST.03.02.02.b. Analyze and interpret electrical system symbols and diagrams.	Entire event	
PST.03.02.02.c. Conduct testing procedures to evaluate and repair malfunctioning electrical components and systems used in AFNR power, structural and technical systems.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
PST.03.02.03.b. Distinguish and select materials and tools used in electrical control circuit installation.	Electricity Structures Environment and natural resources Team activity	
PST.03.02.03.c. Plan and install electrical control circuits and/or circuit boards to assure proper operation within AFNR power, structural and technical systems.	Electricity Structures Environment and natural resources Team activity	
<b>PST.03.03. Performance Indicator: Utilize manufacturers' guidelines to diagnose and troubleshoot malfunctions in machinery, equipment and power source systems (e.g., hydraulic, pneumatic, transmission, steering, suspension, etc.).</b>		
PST.03.03.01.b. Analyze and interpret hydraulic and pneumatic system symbols and diagrams used in AFNR power, structural and technical systems.	Machinery and equipment Compact equipment Structures Team activity	
PST.03.03.01.c. Inspect, analyze and repair hydraulic and pneumatic system components used in AFNR power, structural and technical systems	Machinery and equipment Compact equipment Structures Team activity	

## Agricultural Technology and Mechanical Systems

## Agriculture, Food and Natural Resources Content Standards continued

<b>PST.03.03.02.b.</b> Utilize speed, torque and power measurements to calculate efficiency in power transmission systems used in AFNR power, structural and technical systems.	Machinery and equipment Compact equipment Structures Team activity	
<b>PST.03.03.02.c.</b> Inspect, analyze and repair the components of power transmission systems used in AFNR power, structural and technical systems.	Machinery and equipment Compact equipment Structures Team activity	
<b>PST.03.03.03.b.</b> Assess and analyze vehicle and machinery performance related to suspension and steering systems used in AFNR power, structural and technical systems.	Machinery and equipment Compact equipment Structures Team activity Exam	
<b>PST.03.03.03.c.</b> Inspect, analyze and repair vehicle suspension and steering systems used in AFNR power, structural and technical systems.	Machinery and equipment Compact equipment Team activity	
<b>PST.04.01. Performance Indicator: Create sketches and plans for AFNR structures.</b>		
<b>PST.04.01.01.b.</b> Apply scale measurement and dimension to develop sketches of agricultural structures.	Structures Team activity Exam	
<b>PST.04.01.01.c.</b> Create sketches of an agricultural structure by applying principles of design.	Structures Team Activity	
<b>PST.04.01.02.c.</b> Evaluate, plan and design functional and efficient facilities for use in AFNR power, structural and technical systems.	Structures Team activity Exam	
<b>PST.04.02. Performance Indicator: Determine structural requirements, specifications and estimate costs for AFNR structures</b>		
<b>PST.04.02.01.b.</b> Analyze a project plan to prepare a bill of materials and an estimate of material costs.	Team activity Exam	
<b>PST.04.02.01.c.</b> Create a project cost estimate, including materials, labor and management for an AFNR structure.	Team activity Exam	
<b>PST.04.02.02.b.</b> Assess and analyze local building code requirements for agriculture structures.	Electricity Structures Team Activity	
<b>PST.04.02.02.c.</b> Design and conduct a building functionality and safety assessment on an agricultural structure using knowledge of industry standards and local code requirements.	Electricity Structures Team Activity	
<b>PST.04.03. Performance Indicator: Follow architectural and mechanical plans to construct, maintain and/or repair AFNR structures (e.g., material selection, site preparation and/or layout, plumbing, concrete/masonry, etc.).</b>		
<b>PST.04.03.01.b.</b> Analyze and assess samples of materials or products for quality and efficiency of workmanship.	Structures Team Event	

## Agricultural Technology and Mechanical Systems

## Agriculture, Food and Natural Resources Content Standards continued

PST.04.03.01.c. Select materials for a project based upon an analysis of the project and the quality of the materials.	Structures Team Event	
PST.04.03.02.b. Complete a building site analysis checklist to select an ideal building site.	Structures Team Event	
PST.04.03.02.c. Assess site characteristics, identify adjustments, and demonstrate procedures for preparing a building site.	Structures Team Event	
PST.04.03.03.b. Calculate costs associated with the repair and replacement of wood and/or metal components an AFNR structure.	Structures Team Event Exam	
PST.04.03.03.c. Construct AFNR structures using wood and/or metal materials.	Structures Team Event	
PST.04.03.04.b. Calculate the cost of a water system in an AFNR structure (e.g., copper, PVC, etc.).	Structures Team Event Exam	
PST.04.03.04.c. Install and/or repair pipes and plumbing equipment and fixtures in AFNR structures.	Structures Team Event	
PST.04.03.05.b. Measure and calculate the cost of fencing materials.	Structures Team Event Exam	
PST.04.03.05.c. Construct, maintain, and/or repair fencing, including wood, static wire, electrical wire and other fencing materials.	Structures Team Event	
PST.04.03.06.b. Calculate volume for concrete projects.	Structures Team Event Exam	
PST.04.03.06.c. Construct, maintain and/or repair AFNR structures with concrete, brick, stone or masonry.	Structures Team Event	
PST.04.03.07.b. Calculate BTU loss in an AFNR structure.	Structures Team Event Exam	
PST.04.03.07.c. Insulate a structure and estimate reduced BTU loss.	Structures Team Event	
<b>PST.04.04. Performance Indicator: Apply electrical wiring principles in AFNR structures.</b>		
PST.04.04.01.b. Assess and analyze the electrical requirements of an AFNR structure.	Electricity Structures Team Event	HS-PS3-5
PST.04.04.01.c. Install and/or repair fixtures following appropriate codes and standards.	Electricity Structures Team Event	HS-PS3-5
PST.04.04.02.b. Calculate the cost of operating an electrical motor.	Electricity Structures Team Event Exam	HS-PS3-5



## Agricultural Technology and Mechanical Systems

## Agriculture, Food and Natural Resources Content Standards continued

PST.04.04.02.c. Plan and wire electrical circuits (i.e., single pole switch, three-way switch, duplex outlet, etc.).	Electricity Structures Team Event	HS-PS3-5
<b>PST.05.02. Performance Indicator: Prepare and/or use electrical drawings to design, install and troubleshoot electronic control systems in AFNR settings.</b>		
PST.05.02.01.b. Analyze schematic drawings for electrical control systems used in AFNR systems.	Machinery and equipment Team event Exam	
PST.05.02.02.c. Troubleshoot electrical control system performance problems found in AFNR power, structural and technical systems.	Electricity Team event	
PST.05.02.03.c. Develop and implement AFNR power, structural and technical control systems using programmable logic controllers (PLC) and/or other computer-based systems.	Electricity Compact equipment Team event	
<b>PST.05.03. Performance Indicator: Apply geospatial technologies to solve problems and increase the efficiency of AFNR systems.</b>		
PST.05.03.01.b. Assess and analyze data collected utilizing geospatial technologies.	Machinery and equipment Compact equipment Environment and natural resources Team activity Exam	HS-ESS3-4 HS-ETS1-3 HS-ESS3-2
PST.05.03.01.c. Collect data and create maps utilizing geospatial technologies.	Machinery and equipment Compact equipment Environment and natural resources Team activity	HS-ESS3-4 HS-ETS1-3 HS-ESS3-2
PST.05.03.02.b. Analyze and calculate the economic impact of utilizing precision technologies (e.g., GPS/GIS) in AFNR systems.	Machinery and equipment Compact equipment Environment and natural resources Team activity Exam	HS-ESS3-4 HS-ETS1-3 HS-ESS3-2
PST.05.03.02.c. Install, maintain and service instrumentation and equipment used for precision technologies (i.e., GPS receivers, yield monitors, remote sensors, etc.) used in AFNR systems.	Machinery and equipment Compact equipment Environment and natural resources Team activity	HS-ESS3-4 HS-ETS1-3 HS-ESS3-2
<b>AS.05.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.</b>		
AS.05.01.01.b. Critique designs for an animal facility and prescribe alternative layouts and adjustments for the safe, sustainable and efficient use of the facility.	Electricity Structures Team Event	AFNR Career Cluster – Animal Systems Pathway, Statement 2 STEM Career Cluster, Statement 4 STEM Career Cluster, Statement 5
AS.05.01.01.c. Design an animal facility focusing on animal requirements, economic efficiency, sustainability, safety and ease of handling.	Electricity Structures Team Event	AFNR Career Cluster – Animal Systems Pathway, Statement 2 STEM Career Cluster, Statement 4 STEM Career Cluster, Statement 5



## Agricultural Technology and Mechanical Systems

## Agriculture, Food and Natural Resources Content Standards continued

<b>AS.05.01.02.b.</b> Analyze the use of modern equipment, technology and handling facility procedures and determine if they enhance the safe, economic and sustainable production of animals.	Electricity Structures Team Event Exam	AFNR Career Cluster – Animal Systems Pathway, Statement 2 STEM Career Cluster, Statement 4 STEM Career Cluster, Statement 5
<b>AS.05.01.02.c.</b> Select, use and evaluate equipment, technology and handling procedures to enhance sustainability and production efficiency.	Electricity Structures Team Event	AFNR Career Cluster – Animal Systems Pathway, Statement 2 STEM Career Cluster, Statement 4 STEM Career Cluster, Statement 5
<b>AS.05.02. Performance Indicator: Comply with government regulations and safety standards for facilities used in animal production.</b>		
<b>AS.05.02.01.b.</b> Analyze animal facilities to determine if standards have been met.	Structures Environmental and natural resources Team event Exam	CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b
<b>AS.05.02.01.c.</b> Evaluate facility designs and make recommendations to ensure that it meets standards for the legal, safe, ethical, economical and efficient production of animals.	Structures Environmental and natural resources Team event Exam	CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
<b>CRP.02.01.01.b.</b> Assess workplace problems and identify the most appropriate academic knowledge and skills to apply.	Entire event	
<b>CRP.01.01.01.c.</b> Evaluate past workplace and community situations and determine how personal responsibility positively or negatively impacted outcomes	Entire event	
<b>CRP.02.01.02.b.</b> Assess community problems and identify the most appropriate academic knowledge and skills to apply.	Entire event	
<b>CRP.01.01.02.c.</b> Model personal responsibility in workplace and community situations.	Entire event	
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
<b>CRP.02.02.01.b.</b> Assess workplace problems and distinguish the most appropriate technical concepts to apply.	Entire event	
<b>CRP.02.02.01.c.</b> Apply technical concepts to solve problems in the workplace and reflect upon the results achieved.	Entire event	
<b>CRP.02.02.02.b.</b> Assess community problems and identify the most appropriate technical concepts to apply.	Entire event	
<b>CRP.02.02.02.c.</b> Apply technical concepts to solve problems in the community and reflect upon results achieved.	Entire event	

## Agriculture, Food and Natural Resources Content Standards continued

<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.01.b. Analyze use of verbal and non-verbal communication strategies in workplace situations.	Team event	
CRP.04.01.01.c. Evaluate other's verbal and non-verbal communications (e.g., speeches, presentations, oral reports, etc.) and propose recommendations for improvement in clarity, logic, purpose and professionalism.	Team event	
<b>CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.</b>		
CRP.04.02.02.b. Apply techniques for ensuring clarity, logic and coherence to edit written communications (e.g., emails, reports, presentations, technical documents, etc.).	Team event	
CRP.04.02.02.c. Compose clear and coherent written documents (e.g., agendas, audio-visuals, drafts, forms, etc.) for formal and informal settings.	Team event	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Team event	
CRP.06.03.02.b. Elicit and assimilate input and feedback from individuals and organizations about new ideas or innovations for the workplace or community.	Team event	
CRP.07.02.02.c. Create and defend proposals for new technologies, practices and ideas using valid and reliable data sources.	Team event	
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Team event	
CRP.08.01.02.b. Assess solutions to workplace and community problems for evidence of reason, logic and consideration of multiple perspectives.	Team event	
CRP.08.01.02.c. Devise strategies to apply reason, logic and input from multiple perspectives to solve workplace and community problems.	Team event	

## Agriculture, Food and Natural Resources Content Standards continued

<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community</b>		
CRP.08.02.01.b. Assimilate and prioritize potential solutions to solve problems in the workplace and community.	Team event	
CRP.08.02.01.c. Devise strategies to evaluate the effectiveness of solutions for resolving workplace and community problems.	Team event	
CRP.08.02.02.b. Apply decision-making processes to generate possible solutions to solve workplace and community problems.	Team event	
CRP.08.02.02.c. Evaluate and select solutions with greatest potential for success to solve workplace and community problems.	Team event	
<b>CRP.08.03. Performance Indicator: Establish plans to solve workplace and community problems and execute them with resiliency.</b>		
CRP.08.03.01.b. Analyze and determine the best problem-solving model to apply to workplace and community problems.	Team event Exam	
CRP.08.03.01.c. Evaluate the effectiveness of different problem-solving models for reaching a solution to workplace and community issues.	Team event Exam	
CRP.08.03.02.b. Create plans to solve workplace and community problems.	Team event Exam	
CRP.08.03.02.c. Implement and evaluate plans to solve workplace and community problems.	Team event Exam	
<b>CRP.11.01. Performance Indicator: Research, select and use new technologies, tools and applications to maximize productivity in the workplace and community.</b>		
CRP.11.01.01.b. Analyze advantages and disadvantages of new technologies, tools and applications to maximize productivity in the workplace and community.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
CRP.11.01.02.b. Select, apply and use new technologies, tools and applications in workplace and community situations to maximize productivity.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	
CRP.11.01.02.c. Evaluate effectiveness and make recommendations for using new technologies, tools and applications in the workplace and community.	Machinery and equipment Electricity Compact equipment Structures Environment and natural resources Team activity	

## Agriculture, Food and Natural Resources Content Standards continued

<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
<b>CRP.12.01.01.b.</b> Formulate action plans to complete team-oriented projects in the workplace and community, including plans for personal contributions.	Team activity	
<b>CRP.12.01.01.c.</b> Evaluate the effectiveness of team-oriented projects at work and in the community and make recommendations for future improvements	Team activity	
<b>CRP.12.01.02.b.</b> Apply consensus building techniques to accomplish results in team-oriented situations.	Team activity	
<b>CRP.12.01.02.c.</b> Devise and implement methods to obtain feedback from team members on their experiences after completing workplace and community projects.	Team activity	
<b>CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).</b>		
<b>CRP.12.02.02.b.</b> Select strategies to engage team members and apply in a variety of situations.	Team event	
<b>CRP.12.02.01.c.</b> Create novel strategies to engage team members based on the situation.	Team event	



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

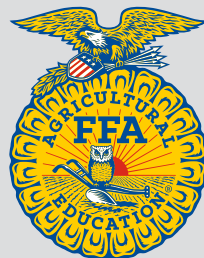
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# AGRONOMY

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

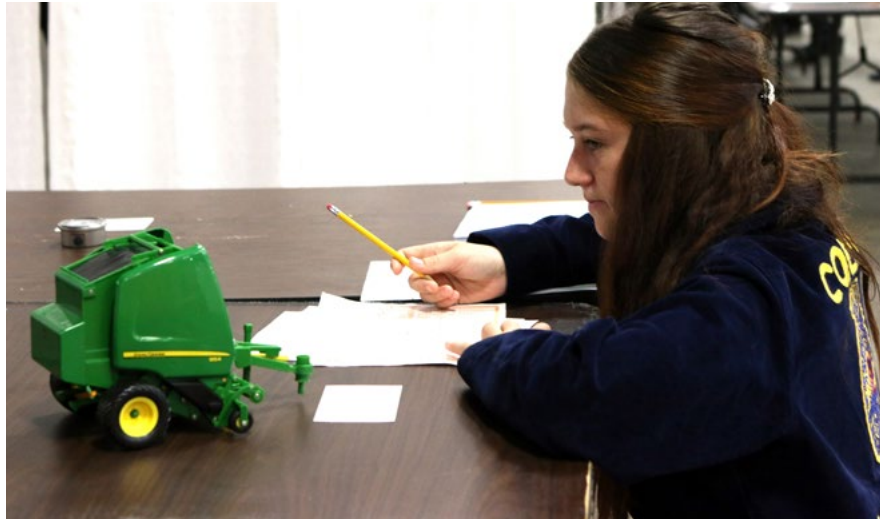
## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The purpose of the National FFA Agronomy Career Development Event is to create interest and promote understanding in agronomy by providing opportunities for recognition through the demonstration of skills and proficiencies. It also gives students an opportunity to explore career opportunities available in agronomy and encourage students to pursue careers in agronomy.*



## Objectives

Through participation in the National event, participants will be able to:

- To demonstrate knowledge and skills used in agronomic sciences.
- To explore career opportunities, skills and proficiencies in the agronomy industry.
- To determine the ability to identify agronomic:
  - Crops
  - Weeds
  - Seeds
  - Insects
  - Diseases
  - Plant nutrient deficiencies
  - Plant disorders
  - Crop grading and pricing
  - Equipment
  - Agronomy – Local, state and global issues
- To evaluate a scenario and develop a crop management plan including crop selection, production and marketing.
- To demonstrate understanding of sustainable agriculture and environmental stewardship through the use of integrated pest management and best management practices.



## Event Rules

### TEAM MAKE-UP

- Four members will be on each team. All four members will be scored, and all four scores will count toward the team total.
- It is highly recommended that participants wear official FFA dress for each event.
- All participants will be given an identification number by which they will be designated throughout the event.
- Under no circumstances will a participant be allowed to destroy any of the items in the identification portion of the practicums. Any infractions of this rule will be sufficient to eliminate a team from the event.
- Participants will be assigned to group leaders who will escort them to various event-staging sites. Each participant is to stay with his or her assigned group leader throughout the event or until told to change leaders by the event superintendent.

### WRITTEN MATERIAL

- All written material will be furnished for the event. No written materials such as tests, problems and worksheets should be removed from the site.
- Any participant in possession of an electronic device in the event area is subject to disqualification.



## Event Format

Materials students must provide:

- Clean, free of notes clipboard
- Two sharpened No. 2 pencils
- Non-programmable electronic calculator
  - The calculators used during the event are to be battery operated, non-programmable, silent with large keys and large displays. The calculators should only have these functions: addition, subtraction, multiplication, division, equals, percent, square root, +/- key and one memory register. No other calculators are allowed to be used during the event.
- One laptop computer per team
  - Laptops must have USB port, be flash drive compatible and have Microsoft Word and Excel. The laptop will be used for budgets and final reporting for the team activity only. Laptops must be fully-charged and be capable of continuous activity for 90 minutes.

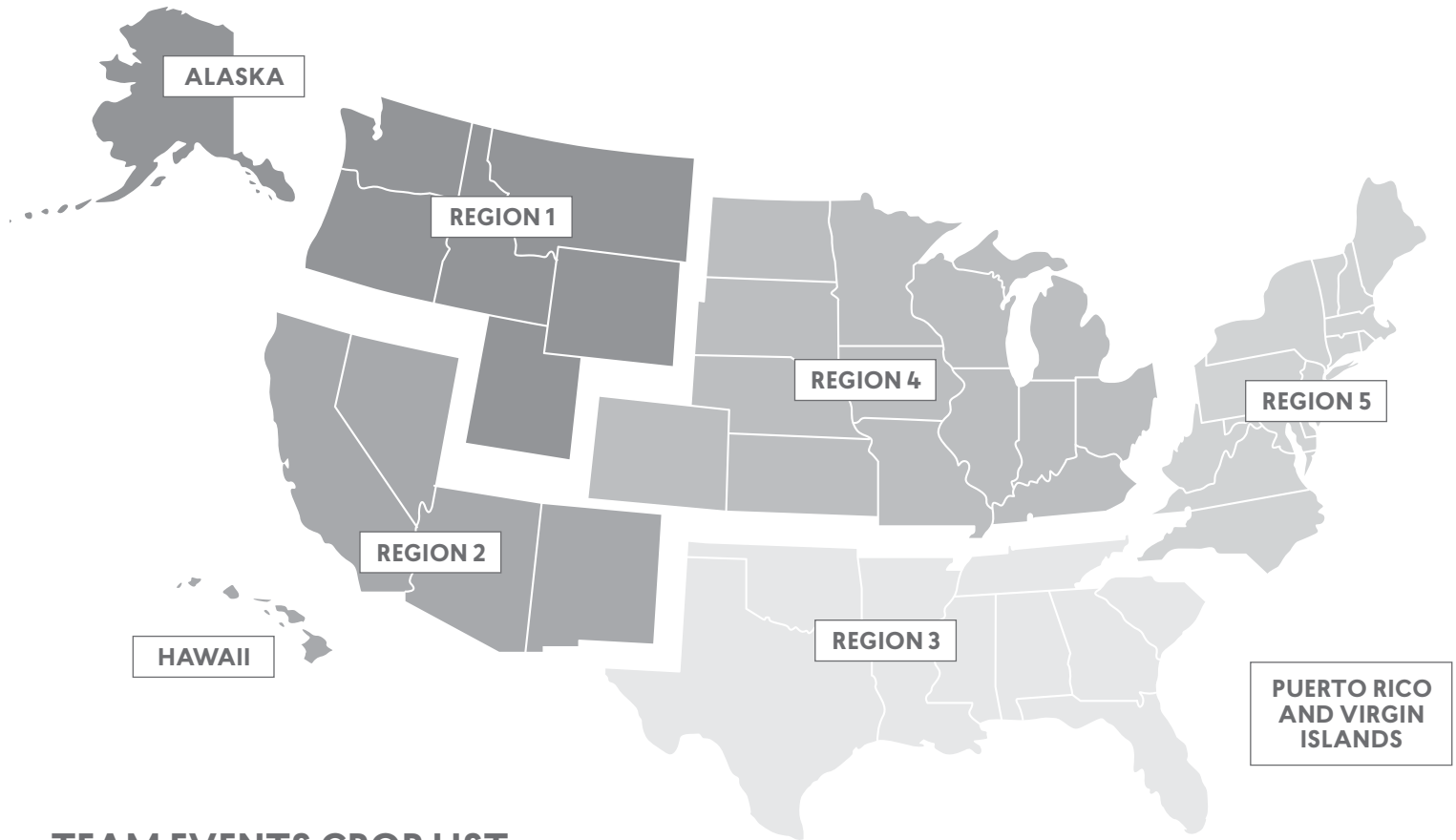
**TEAM ACTIVITY (1,000 POINTS)**

- The team will be provided with a scenario of an agronomic situation and will be asked to develop a management plan in 70 minutes. Teamwork will be assessed during the management plan development time. The team will be required to develop both an oral presentation and a written plan that addresses the question in the scenario. The team will submit their written plan at the end of their oral presentation.
- After preparation, the team will be required to give an oral presentation justifying decisions made by the team (eight minutes maximum in length). All team members are expected to participate in the presentation. The team will then be required to answer questions from judges in regards to the decisions reached by their team (five minutes maximum).
- Each year the team event scenario will be chosen from a cropping region of the country. The rotation and crops list follows. Cost information may be utilized for various practices such as irrigation, machinery, harvesting, seedbed preparation, storage and loan interest rates, as well as fertilizers and chemicals. (This list is not inclusive.) The students may be asked to figure profit or loss based on this information.
- Resources provided for the team activity may include cost sheets, seed tag information, tillage practices, pesticide labels, extension bulletins, fertility reports, tissue analysis, contract information, water management, seeding rates, variety information, trial data and application information including nozzle selection, chemigation, fertigation and aerial application.



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## National FFA Agronomy CDE Regional Areas



### TEAM EVENTS CROP LIST

#### REGION 1

2021

Alfalfa  
Barley  
Canola  
Chickpea/Garbanzo  
Corn  
Dry edible beans  
Fescue  
Hops  
Lentil  
Peas  
Potatoes  
Ryegrass  
Safflower  
Sugarbeet  
Wheat

#### REGION 2

2017

Alfalfa  
Bermudagrass  
Brassica  
Corn  
Cotton  
Lettuce  
Melons  
Onion  
Pepper  
Rice  
Safflower  
Sorghum  
Spinach  
Strawberry  
Sundangrass  
Tomato  
Wheat

#### REGION 3

2018

Bermudagrass  
Brassica  
Corn  
Cotton  
Cucumber  
Fescue  
Melon  
Peanuts  
Rice  
Sod  
Sorghum  
Soybean  
Sucarcane  
Tomato  
Wheat

#### REGION 4

2019

Alfalfa  
Barley  
Canola  
Corn  
Dry edible beans  
Flax  
Peas  
Rye  
Sorghum  
Soybean  
Sugarbeet  
Sunflower  
Tomato  
Wheat  
Safflower

#### REGION 5

2020

Alfalfa  
Clover  
Corn  
Cranberry  
Fescue  
Lima bean  
Melon  
Orchardgrass  
Peas  
Potatoes  
Sorghum  
Soybean  
Squash  
Strawberry  
Tobacco  
Tomato  
Wheat

## Individual Practicums

### GENERAL KNOWLEDGE EXAMINATION (100 POINTS)

Fifty objective multiple choice questions will be given to each participant. Questions may include, but are not limited to, the following areas: general agronomy questions, plant and soils science, cost sheets, seed tag information, tillage practices, pesticide labels, extension bulletins, fertility reports, tissue analysis, contract information, water management, seeding rates, variety information, trial data and application/calibration information for nozzle selection, chemigation, fertigation and aerial application.

### IDENTIFICATION (150 POINTS)

Students will identify 50 weed and/or crop plants and/or seeds. Plants may be presented in any stage of growth following emergence. The list of possible specimens is in the reference section of the handbook.

### SOILS (100 POINTS)

Each participant will be responsible for the following activities related to soils:

- Identify various soil structures: web soil survey, custom soil resource report, soil maps.
- Analyze web soil survey data and answer questions related to:
  - Relative drainage (e.g., poor, moderate, well)
  - Relative topographic position (e.g., summit, slope, depression)
  - Depth to water table
  - Frost free period
- Identify the USDA land capability classes and answer problem solving questions related to various classes.
- Use soil survey to locate specific sites, use of suggested soil spots and questions related to the soil survey map.

## COMMODITY EVALUATION (250 POINTS)

Participants will evaluate the quality of four different crops. These evaluations will be broken down into three different categories representing different aspects of quality: variety selection, marketability and usability.

### Variety selection (50 points)

Participant will be given multiple seed tags and they must select most appropriate and economical choice for the given scenario. A written reason must be given for the selection. Necessary information will be provided, including soil type, maturity information, germination rate, and percent of weed seeds and cost of seed.

### Marketability (Grain Grading) (100 points)

Participants will determine factors and conditions that will determine the grade of various crops. Grain grading will be done in accordance with the Official U.S. Standards for Grain. Information on grain grading can be found in the laws and regulations section of [www.gipsa.usda.gov](http://www.gipsa.usda.gov).

Two samples will be graded in 30 minutes. Each sample is worth 50 points.

Participants will be given two base samples to determine the class and/or subclass of grain. The rotation for the given seed samples are as follows:

- 2017 Region 2: Rice and Corn
- 2018 Region 3: Grain Sorghum and White wheat
- 2019 Region 4: Canola and Durum Wheat
- 2020 Region 5: Red Wheat and Soy Bean
- 2021 Region 1: Barley and Dry Beans

Participants will be provided information about grain samples (i.e., test weight, moisture and special conditions).

Participants will be given representative samples in a sealed package of defected seed. Raw weights of each defect will be given, and

participants calculate the percentage of each based on the flow chart provided.

Participants will complete the Grain Grading Answer Sheet.

Participants will determine market price based on provided discount schedule.

### **Usability (Crop Quality) (100 points)**

Two classes of crop samples, one of a forage, fiber or grain crop and one from another crop (see plant list) will be evaluated in 30 minutes (15 minutes per sample). Each class will consist of four samples of the same crop. Participants will rank each class with a Hormel card (25 points per sample) and provide written justification (25 points per sample).

## **AGRONOMY ISSUES (100 POINTS)**

Each student will discuss an issue that is important to crop production. The student will be provided with articles, social media posts, videos or a combination of these items. Each student will be given 10 minutes to prepare their discussion. The student will then be given five minutes to present their views then asked questions for an additional five minutes. A narrowed list of topics will be provided in the coaches' letter prior to the Event. A topic will be assigned at the event.

Suggested topics may include (list not inclusive):

- Water cost and availability
- Use of robots or drones in agriculture
- Decrease acreages of favorable land (taxes, escalating land values)
- Food safety (good agriculture practices- GAP)
- Minimum wage laws
- GMO/Biotechnology use in agriculture
- Endangered Species Act
- Urban/Agriculture interface (drift, dust, crop dusting, noise, smells, smoke)
- Immigration (H2A, E-verify) foreign labor

- Pollinators/honeybees
- Trade agreements
- Farm Bill
- Research – Food safety and microbiology, plant breeding
- Extension funding – applied research/education
- Conventional crops vs. organic crops
- Invasive species (plants, insects or crop diseases)
- Nutritional/fertility management
- Logistics, transportation and infrastructure
- Food Security- growing populations, reduced resources, increased cost of land and imputes, agro-terrorism,

## **PEST MANAGEMENT (200 POINTS)**

### **Disorders (100 points)**

- Ten samples will be identified according to category, causal agent and damage location. Refer to the Agronomic Disorders Practicum Scorecard for the category, agent and damage location lists.

### **Insect Identification (100 points)**

- Ten samples will be identified according to insect name, life cycle, economic impact and mouth part. Refer to the Insect Identification Practicum Scorecard for additional details.

## **EQUIPMENT AND MACHINERY IDENTIFICATION (100 POINTS)**

- Participants will be required to identify 20 specimens from the list in the reference section of the handbook. Samples may appear as actual equipment, scale models, toys or pictures. Major component that are unique to a certain piece of equipment can also be used.
- Identification samples will be of the complete item. There will be no identification of individual parts/pieces.



## Event Scoring

*Participant scores are the sum of the individual phases of the event, and team scores are the sum of the four participant scores plus the team activity.*

ACTIVITIES	Individual Points	Team Points
Written Exam	100	400
Identification	150	600
Soils	100	400
Commodity	250	1,000
Agronomy Issues	100	400
Pest Management	200	800
Equipment and Machinery Identification	100	400
TEAM ACTIVITY POINTS		1,000
TEAM POINTS	1,000	5,000

## TIEBREAKERS

If ties occur for team awards the following events will be used to determine the placings:

1. Team Activity
2. Total Written Exam

If ties occur for individual awards the following events will be used to determine the placings:

1. Written Exam
2. Plant and Seed Identification
3. Soils



## Awards

*Awards will be presented at an awards ceremony.*

Awards are presented to teams as well as individuals based upon their rankings. Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

## References

*This list of references is not intended to be all inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. Make sure to use discretion when selecting website references by only using reputable, proven sites. The following list contains references that may prove helpful during event preparation. The most current edition of resources will be used.

Past CDE materials and other resources <https://www.FFA.org/participate/cdes/agronomy>

### PLANT IDENTIFICATION

- Flash cards for both seeds and plants are available through Wards Natural Science Establishment [wardsci.com](http://wardsci.com).
- Weeds of the Northeast, Comstock Books, by Richard H. Uva (Author), Joseph C. Neal (Author), Joseph M. Ditomaso (Author).
- Weeds of the Great Plains, Nebraska Department of Agriculture by James L Stubbendieck (Author)
- Weeds of the West, University of Wyoming Extension, by Tom D. Whitson (Editor)
- Common Weed Seedlings of the North Central States, Michigan State University Extension
- Sunset Western Garden Book
- An Illustrated Guide to Arizona Weeds, University of Arizona, <https://www.uapress.arizona.edu/onlinebks/WEEDS/TITLWEED.HTM>
- Weeds of California and Other Western States University of California
- Interactive Encyclopedia of Weeds of North America, North Central Weed Science Society

- <http://plants.usda.gov/>
- <http://www.ppws.vt.edu/weedindex.html>
- [http://www.ipm.ucdavis.edu/PMG/weeds\\_multi.html](http://www.ipm.ucdavis.edu/PMG/weeds_multi.html)
- <http://wssa.net/weed/weed-identification/>

### SEED IDENTIFICATION

- Illustrated Taxonomy Manual of Weed Seeds, North Central Weed Science Society
- Weed Seeds of the Great Plains, University Press of Kansas
- <http://www.oardc.ohio-state.edu/seedid/>
- <http://plants.usda.gov/>

### MACHINERY IDENTIFICATION

Resources for machinery identification can be obtained online from various equipment manufacturers. A visit to an implement dealer in your area would be recommended. Farm toys can also be used.

### GRAIN GRADING

Teaching and CDE samples can be obtained by contacting Northeast Indiana Grain Inspection Service, Mr. Neil Reynolds at 260-341-7497 or [neigi@eawifi.com](mailto:neigi@eawifi.com).

- <https://www.gipsa.usda.gov/fgis/usstandards.aspx>

### HAY EVALUATION

- <http://pods.dasnr.okstate.edu/docushare/dsweb/Get/Document-2556/PSS-2588web2015.pdf>

### VEGETABLE / SEED EVALUATION AND PLACING

- <http://www.wyomingextension.org/agpubs/pubs/70501G.pdf>

**DISEASE / DISORDER**

- [http://plant-disease.ippc.orst.edu/image\\_index.cfm](http://plant-disease.ippc.orst.edu/image_index.cfm)
- <http://plantpathology.tamu.edu/Textlab/index.html>

**INSECTS:**

- [http://pest.ca.uky.edu/EXT/master\\_gardener/entbasics/mouthparts/mouthparts.shtml](http://pest.ca.uky.edu/EXT/master_gardener/entbasics/mouthparts/mouthparts.shtml)

**SOILS:**

- <http://www.nrcs.usda.gov/wps/portal/nrcs/soilsurvey/soils/survey/state/>

**TEAM EVENT**

- [www.cdms.net](http://www.cdms.net).

**WRITTEN EXAM:**

The best resource for the written exam is old exams available from the National FFA Organization. There is no one resource for the exam.

- <http://ohioline.osu.edu/factsheet/HYG-1133>
- <http://www.extension.iastate.edu/Publications/SR48.html>
- <http://extension.agron.iastate.edu/soybean/topicpage1.html>
- <http://gaps.cornell.edu>



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Weeds List

Weeds marked with \* are considered noxious weeds according to the USDA.

ID #	Weed Name	Form	Botanical Name
100	barnyardgrass	plant and seed	<i>Echinochloa crus-galli</i>
101	black nightshade	plant and seed	<i>Solanum nigrum</i> or <i>Solanum ptycanthum</i>
102	broadleaf plantain	plant and seed	<i>Plantago major</i>
103	buckhorn plantain	plant and seed	<i>Plantago lanceolata</i>
104	bull thistle*	plant and seed	<i>Cirsium vulgare</i>
105	Canada thistle*	plant and seed	<i>Cirsium arvense</i>
106	cheat	plant and seed	<i>Bromus secalinus</i>
107	common chickweed	plant and seed	<i>Stellaria media</i>
108	common cocklebur	plant and seed as bur	<i>Xanthium strumarium</i>
109	common lambsquarters	plant and seed	<i>Chenopodium album</i>
110	common mallow	plant and seed	<i>Malva neglecta</i>
111	common milkweed	plant and seed	<i>Asclepias syriaca</i>
112	common purslane	plant and seed	<i>Portulaca oleracea</i>
113	common ragweed *	plant and seed	<i>Ambrosia artemisiifolia</i>
114	common sunflower	plant and seed	<i>Helianthus annuus</i>
115	crabgrass	plant and seed	<i>Digitaria spp.</i>
116	crown vetch	plant and seed	<i>Coronilla varia</i>
117	curly dock *	plant and seed	<i>Rumex crispus</i>
118	dandelion	plant and seed	<i>Taraxacum officinale</i>
119	downy brome	plant	<i>Bromus tectorum L.</i>
120	field bindweed*	plant and seed	<i>Convolvulus arvensis</i>
121	field dodder*	plant and seed	<i>Cuscuta spp.</i>
122	field pennycress	plant and seed	<i>Thlaspi arvense</i>
123	field sandbur	plant and seed	<i>Cenchrus incertus</i>
124	foxtail, giant *	plant and seed	<i>Setaria faberi</i>
125	foxtail, green	plant and seed	<i>Setaria viridis</i>
126	foxtail, yellow	plant and seed	<i>Setaria glauca</i>
127	giant ragweed *	plant and seed	<i>Ambrosia trifida</i>
128	ground cherry	plant and seed	<i>Physalis spp.</i>
129	horsenettle*	plant and seed	<i>Solanum carolinense</i>
130	horseweed* (marestail)	plant only	<i>Conyza canadensis</i>

## Weeds List continued

## Weeds List

Weeds marked with \* are considered noxious weeds according to the USDA.

ID #	Weed Name	Form	Botanical Name
131	jimsonweed	plant and seed	<i>Datura stramonium</i>
132	johnsongrass*	plant and seed	<i>Sorghum halpense</i>
133	knapweed, Russian *	plant only	<i>Centaurea repens</i>
134	kochia *	plant and seed	<i>Kochia scoparia</i>
135	kudzu *	plant only	<i>Pueraria montana var lobata</i>
136	leafy spurge*	plant and seed	<i>Euphorbia esula</i>
137	morningglory	plant and seed	<i>Ipomoea spp.</i>
138	nightshade, silver	plant and seed	<i>Solanum elaeagnifolium</i>
139	nutsedge*	plant and seed as nutlet	<i>Cyperus spp.</i>
140	prickly lettuce	plant and seed	<i>Lactuca serriola</i>
141	prostrate knotweed	plant and seed	<i>Polygonum aviculare</i>
142	prostrate spurge	plant only	<i>Euphorbia supina</i>
143	puncturevine*	plant and seed	<i>Tribulus terrestris</i>
144	quackgrass*	plant and seed	<i>Agropyron repens</i>
145	redroot pigweed	plant and seed	<i>Amaranthus retroflexus</i>
146	Russian thistle	plant and seed	<i>Salsola pestifer</i>
147	shepardspurge	plant and seed	<i>Capsella bursa-pastoris</i>
148	sicklepod	plant and seed	<i>Senna obtusifolia</i>
149	smartweed	plant and seed	<i>Polygonum spp.</i>
150	sowthistle*	plant and seed	<i>Sonchus spp.</i>
151	tansy mustard	plant and seed	<i>Descurainia pinnata</i>
152	velvetleaf *	plant and seed	<i>Abutilon theophrasti</i>
153	wild carrot *	plant and seed	<i>Daucus carota</i>
154	wild mustard	plant and seed	<i>Brassica kaber</i>
155	wild oats	plant only	<i>Avena sativa</i>
156	wild onion/garlic *	plant and seed	<i>Allium spp.</i>



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Crops List

ID #	Weed Name	Form	Botanical Name
200	Alfalfa	plant or seed	<i>Medicago sativa</i>
201	Barley	plant or seed	<i>Hordeum vulgare</i>
202	Bean (dry)	plant only	<i>Phaseolus vulgaris</i>
203	Bermudagrass	plant or seed	<i>Cynodon dactylon</i>
204	Black bean	seed only	<i>Phaseolus vulgaris</i>
205	Broccoli	plant only	<i>Brassica oleracea var. italica</i>
206	Cabbage	plant only	<i>Brassica oleracea capitata</i>
207	Canola	plant or seed	<i>Brassica napus</i>
208	Cantaloupe	plant or seed	<i>Cucumis melo var. cantalupensis</i>
209	Carrot	root provided	<i>Daucus carota</i>
210	Cauliflower	plant only	<i>Brassica oleracea var. botrytis</i>
211	Chickpea/Garbanzo	seed only	<i>Cicer arietinum</i>
212	Chili pepper	plant or seed	<i>Capsicum annuum</i>
213	Corn	plant only	<i>Zea mays</i>
214	Cotton	plant or seed	<i>Gossypium hirsutum</i>
215	Cranberry	plant only	<i>Vaccinium macrocarpon</i>
216	Cucumber	plant or seed	<i>Cucumis sativus var. sativus</i>
217	Dent corn	seed only	<i>Zea mays</i>
218	Durum wheat	seed only	<i>Triticum turgidum</i>
219	Flax	plant or seed	<i>Linum usitatissimum</i>
220	Hops	plant only	<i>Humulus lupulus</i>
221	Kentucky bluegrass	plant or seed	<i>Poa pratensis</i>
222	Lentil	plant or seed	<i>Lens culinaris</i>
223	Lettuce	plant or seed	<i>Lactuca sativa</i>
224	Lima bean	seed only	<i>Phaseolus lunatus</i>
225	Oats	plant or seed	<i>Avena sativa</i>
226	Onion	plant or seed	<i>Allium cepa</i>



## Crops List continued

## Crops List

ID #	Weed Name	Form	Botanical Name
227	Orchardgrass	plant or seed	<i>Dactylis glomerata</i>
228	Peanut	plant or seed	<i>Arachis hypogaea</i>
229	Peas	plant or seed	<i>Pisum Sativum</i>
230	Pinto bean	seed only	<i>Phaseolus vulgaris</i>
231	Popcorn	seed only	<i>Zea mays</i>
232	Potato	plant only	<i>Solanum tuberosum</i>
233	Red bean	seed only	<i>Phaseolus vulgaris</i>
234	Red clover	plant or seed	<i>Trifolium pratense</i>
235	Red wheat	seed only	<i>Triticum aestivum</i>
236	Rice	plant or seed	<i>Oryza sativa</i>
237	Rye	plant or seed	<i>Secale cereale</i>
238	Safflower	plant or seed	<i>Carthamus tinctorius</i>
239	Sorghum	plant or seed	<i>Sorghum bicolor</i>
240	Soybean	plant or seed	<i>Glycine max</i>
241	Spinach	plant or seed	<i>Spinacia oleracea</i>
242	Squash	plant or seed	<i>Curcubita pepo</i>
243	Strawberry	plant only	<i>Fragaria virginiana</i>
244	Sudangrass	plant or seed	<i>Sorghum bicolor</i>
245	Sugar beets	plant or seed	<i>Beta vulgaris</i>
246	Sugarcane	plant only	<i>Saccharum sp.</i>
247	Sunflower	plant or seed	<i>Helianthus annuus</i>
248	Sweet corn	plant only	<i>Zea mays</i>
249	Sweet potato	plant only	<i>Ipomoea batatas</i>
250	Sweetclover	plant or seed	<i>Melilotus albus</i>
251	Tall fescue	plant or seed	<i>Festuca arundinacea</i>
252	Timothy	plant or seed	<i>Phleum pratense</i>
253	Tobacco	plant or seed	<i>Nicotiana tabacum</i>
254	Tomato	plant or seed	<i>Lycopersicon esculentum</i>
255	Watermelon	plant or seed	<i>Citrullus lanatus</i>

*Crops List continued*

## Crops List

ID #	Weed Name	Form	Botanical Name
256	Wheat	plant only	<i>Triticum aestivum</i>
257	White bean	seed only	<i>Phaseolus vulgaris</i>
258	White clover	plant or seed	<i>Trifolium repens</i>
259	White wheat	seed only	<i>Triticum aestivum</i>



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## Machinery List

600. Air compressor/hose
601. Air seeder (tool and air cart together)
602. Anemometer
603. Anhydrous applicator with tank
604. Articulated tractor
605. Auger platform head for combine
606. Back pack sprayer
607. Bale wagon (kick or flat)
608. Baler
609. Bean harvester head
610. Bed mulcher
611. Bed shaper
612. Belt pickup head for combine
613. Broadcast spreader
614. Chemigation unit for irrigation
615. Combine (may be displayed with harvesting head attached)
616. Conveyor/Elevator/Auger
617. Corn head for combine
618. Cotton picker
619. Cotton stripper
620. Cultipacker
621. Disk
622. Disk chisel
623. Draper head for combine or swather
624. Drawn planter
625. Fertilizer density scale (dry fertilizer)
626. Field cultivator
627. Field shovel
628. Forage harvester (maybe displayed with harvesting head attached)

## Machinery List

629. Gauge Wheel
630. GPS receiver
631. Grain bin/leg
632. Grain drill (Includes No-Till)
633. Grain dryer
634. Hand hoe
635. Hay merger
636. Hay mower conditioner (disk or reel/drawn, 3pt, or self-propelled)
637. Hay rake (reel or wheel)
638. Hearing protection
639. Hitch pin
640. Hydraulic cylinder/ hose
641. In-line ripper
642. Integral planter
643. Irrigation - Lateral
644. Irrigation - Traveling Gun
645. Irrigation Pivot
646. Liquid manure tank/applicator (includes draglines)
647. Manure sampling kit
648. Manure spreader
649. Module builder
650. Moldboard plow
651. Nurse tank trailer
652. Pea harvester
653. Peanut digger
654. Plastic layer
655. Potato harvester
656. PPE (all equipment)
657. Press wheel

*Machinery List continued*

## Machinery List

658. Pressure gauge
659. Pressure regulator
660. PTO shaft
661. Rotary hoe
662. Round baler
663. Row crop cultivator
664. Row crop tractor
665. Row Independent Forage Harvester Head (kemper head)
666. Skid steer
667. Soil penetrometer
668. Soil probe
669. Soil sample bag
670. Soil thermometer
671. Specialty tractor (orchard, narrow, low profile, high clearance)
672. Sprayer
673. Sprayer nozzle/nozzle body
674. Square baler (large or small)
675. Strip tiller
676. Sugar beet harvester
677. Swather
678. Sweep net
679. Tensiometer
680. Tissue sample bag
681. Tracked tractor (non articulating)
682. Vegetable transplanter
683. Virtual terminal/monitor/controller
684. V-Ripper
685. Wheel loader



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DEVELOPMENT EVENTS

## National Insect List 2017 Official Guide

	Insect	Economic Impact	Life Cycle	Mouth Parts
1	Alfalfa Weevil	422 - Vegetative Part Destruction	510 - Complete	800 - Chewing
2	aphids	423 - Removal of Plant Fluids	511 - Incomplete	803 - Piercing-Sucking
3	armyworm larva	422 - Vegetative Part Destruction	510 - Complete	070 - Chewing
4	assassin bug	420 -Beneficial	511 - Incomplete	073 - Piercing-Sucking
5	bean leaf beetle	Must put both 421 & 422	510 - Complete	070 - Chewing
6	blister beetle (larvae)	420 -Beneficial	510 - Complete	070 - Chewing
6	blister beetle	422 - Vegetative Part Destruction	510 - Complete	070 - Chewing
7	boll weevil	421 - Fruit/Flower Destruction	510 - Complete	070 - Chewing
8	chinch bug	423 - Removal of Plant Fluids	511 - Incomplete	073 - Piercing-Sucking
9	Colorado potato beetle	422 - Vegetative Part Destruction	510 - Complete	070 - Chewing
10	corn earworm larva	Must put both 421 & 422	510 - Complete	070 - Chewing
11	corn rootworm larva	422 - Vegetative Part Destruction	510 - Complete	070 - Chewing
12	cricket	421 - Fruit/Flower Destruction	511 - Incomplete	070 - Chewing
13	cutworm larva	422 - Vegetative Part Destruction	510 - Complete	070 - Chewing
14	European corn borer larva	Must put both 421 & 422	510 - Complete	070 - Chewing
15	flea beetle	422 - Vegetative Part Destruction	510 - Complete	070 - Chewing
16	grain weevil	421 - Fruit/Flower Destruction	510 - Complete	070 - Chewing
17	grasshopper	422 - Vegetative Part Destruction	511 - Incomplete	070 - Chewing
18	green lacewing	420 -Beneficial	510 - Complete	070 - Chewing
19	honeybee	420 -Beneficial	510 - Complete	071 - Chewing - lapping
20	Japanese beetle	Must put both 421 & 422	510 - Complete	070 - Chewing
21	lady beetle larva	420 -Beneficial	510 - Complete	070 - Chewing
22	leaf skeletonizer	422 - Vegetative Part Destruction	510 - Complete	070 - Chewing
23	leafhopper	423 - Removal of Plant Fluids	511 - Incomplete	073 - Piercing-Sucking
24	lygus	423 - Removal of Plant Fluids	511 - Incomplete	073 - Piercing-Sucking
25	Mexican bean beetle	Must put both 421 & 422	510 - Complete	070 - Chewing

*National Insect List 2017 Official Guide continued*

	<b>Insect</b>	<b>Economic Impact</b>	<b>Life Cycle</b>	<b>Mouth Parts</b>
26	pink bollworm larva	421 - Fruit/Flower Destruction	510 - Complete	070 - Chewing
27	salt marsh caterpillar/wooly worm	422 - Vegetative Part Destruction	510 - Complete	070 - Chewing
28	scale	423 - Removal of Plant Fluids	511 - Incomplete	073 - Piercing-Sucking
29	spider mite	422 - Vegetative Part Destruction	511 - Incomplete	072 - rasping-Sucking
30	spittlebug	423 - Removal of Plant Fluids	511 - Incomplete	073 - Piercing-Sucking
31	spotted cucumber/Southern Corn Rootworm beetle	422 - Vegetative Part Destruction	510 - Complete	070 - Chewing
32	stinkbug	423 - Removal of Plant Fluids	511 - Incomplete	073 - Piercing-Sucking
33	tobacco/tomato hornworm larva	Must put both 421 & 422	001 - Complete	070 - Chewing
34	Western corn rootworm beetle	Must put both 421 & 422	001 - Complete	070 - Chewing
35	Western flower thrip	422 - Vegetative Part Destruction	002 - Incomplete	072 - Rasping-sucking
36	white grub	422 - Vegetative Part Destruction	001 - Complete	070 - Chewing
37	whitefly	422 - Vegetative Part Destruction	001 - Complete	072 - Rasping-sucking
38	wireworm	422 - Vegetative Part Destruction	001 - Complete	070 - Chewing



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DEVELOPMENT EVENTS

# Agronomic Disorders Practicum Scorecard

NAME

MEMBER NUMBER

CHAPTER

STATE

TEAM NUMBER

		Member Answer	Possible Points	Member Score	Possible Answers
1.	Casual Category:		3		<b>Causal Category</b> Biological Cultural Environmental
	Agent:		4		
	Part of Plant Displayed:		3		
2.	Casual Category:		3		<b>Agents</b> Bacteria Chemical Compaction Drought Frost damage Fungus Hail Heat Insect Lightning Mechanical Moisture Nematodes Nutritional Pollution Sun scald Virus Wind damage
	Agent:		4		
	Part of Plant Displayed:		3		
3.	Casual Category:		3		<b>Parts of Plant Displayed</b> Reproductive parts Vegetative parts Vascular Bundles More than one
	Agent:		4		
	Part of Plant Displayed:		3		
4.	Casual Category:		3		
	Agent:		4		
	Part of Plant Displayed:		3		
5.	Casual Category:		3		
	Agent:		4		
	Part of Plant Displayed:		3		
6.	Casual Category:		3		
	Agent:		4		
	Part of Plant Displayed:		3		
7.	Casual Category:		3		
	Agent:		4		
	Part of Plant Displayed:		3		
8.	Casual Category:		3		
	Agent:		4		
	Part of Plant Displayed:		3		
9.	Casual Category:		3		
	Agent:		4		
	Part of Plant Displayed:		3		
10.	Casual Category:		3		
	Agent:		4		
	Part of Plant Displayed:		3		
TOTAL SCORE:			100		



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Insect Identification Rubric

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

		Member Answer	Possible Points	Member Score	Possible Answers
<b>1.</b>	Identification:		4		<p><b>Identificaton</b></p> <p>10. alfalfa weevil 33. lygus</p> <p>11. aphids 34. Mexican bean beetle</p> <p>12. armyworm larva 35. pink bollworm larva</p> <p>13. assassin bug 36. salt marsh caterpillar/wooly worm</p> <p>14. bean leaf beetle 37. scale</p> <p>15. blister beetle 38. spider mite</p> <p>16. boll weevil 39. spittlebug</p> <p>17. chinch bug 40. spotted cucumber beetle/Southern corn rootworm</p> <p>18. Colorado potato beetle 41. stinkbug</p> <p>19. corn ear worm larva 42. tobacco/tomato hornworm larva</p> <p>20. corn rootworm larva 43. Western corn rootworm beetle</p> <p>21. cricket 44. western flower thrip</p> <p>22. cutworm larva 45. white grub</p> <p>23. European corn borer larva 46. whitefly</p> <p>24. flea beetle 47. wireworm</p> <p>25. grain weevil</p> <p>26. grasshopper</p> <p>27. green lacewing</p> <p>28. honeybee</p> <p>29. Japanese beetle</p> <p>30. lady beetle larva</p> <p>31. leaf skeletonizer</p> <p>32. leafhopper</p> <p><b>Economic Impact</b></p> <p>None or predatory: NP</p> <p>Fruit/Flower destruction: F</p> <p>Vegetative Part destruction: V</p> <p>Removal of plant fluids: R</p> <p><b>Life Cycle</b></p> <p>Complete: C</p> <p>Incomplete: I</p> <p>None: N</p> <p><b>Mouth Part</b></p> <p>Chewing: CH</p> <p>Chewing-lapping: CL</p> <p>Rasping-sucking: RS</p> <p>Piercing-sucking: PS</p> <p>Sponging: SP</p> <p>Siphoning: SI</p>
	Economic Impact:		2		
	Life Cycle:		2		
	Mouth Part:		2		
<b>2.</b>	Identification:		4		
	Economic Impact:		2		
	Life Cycle:		2		
	Mouth Part:		2		
<b>3.</b>	Identification:		4		
	Economic Impact:		2		
	Life Cycle:		2		
	Mouth Part:		2		
<b>4.</b>	Identification:		4		
	Economic Impact:		2		
	Life Cycle:		2		
	Mouth Part:		2		
<b>5.</b>	Identification:		4		
	Economic Impact:		2		
	Life Cycle:		2		
	Mouth Part:		2		
<b>6.</b>	Identification:		4		
	Economic Impact:		2		
	Life Cycle:		2		
	Mouth Part:		2		
<b>7.</b>	Identification:		4		
	Economic Impact:		2		
	Life Cycle:		2		
	Mouth Part:		2		
<b>8.</b>	Identification:		4		
	Economic Impact:		2		
	Life Cycle:		2		
	Mouth Part:		2		
<b>9.</b>	Identification:		4		
	Economic Impact:		2		
	Life Cycle:		2		
	Mouth Part:		2		
<b>10.</b>	Identification:		4		
	Economic Impact:		2		
	Life Cycle:		2		
	Mouth Part:		2		
<b>TOTAL SCORE:</b>			<b>100</b>		





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# Team Activity Preparation Rubric

100 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

INDICATOR	Very strong evidence of skill 5-4 points	Moderate evidence of skill 3-2 points	Weak evidence of skill 1-0 points	Weight	Total Points
Effective listening	Team member clearly demonstrated active listening throughout the activity.	Team member demonstrated some active listening, however there was evidence of being distracted throughout the activity.	Team member was not actively listen to teammates and/or talked over others throughout the activity.	X 4	
Oral communication	Team member contributed appropriately in discussing the topic.	Team member somewhat contributed in discussing the topic but engaged in side conversations.	Team member dominated the conversation.	X 4	
Demonstrated cooperation	Team member positively contributed to the team by in completing tasks, sharing written and oral solutions.	Team member contributed to the team by sometimes assisting in completing tasks, sharing written and oral solutions.	Team member did not contribute to the team and did not complete tasks, or share in the written and / or oral solution.	X 4	
Team participation	Team member clearly respected the input of other team members.	Team member sometimes respected the input of other team members.	Team member did not clearly respect the input of other team members.	X 4	
Efficiency	Team member demonstrated efficient use of his/her time in comprising the plan.	Team member sometimes demonstrated efficient use of his/her time in comprising the plan.	Team member did not demonstrate efficient use of his/her time in comprising the plan.	X 4	
TOTAL POINTS					

## Team Activity Preparation Rubric continued

**Written Proposal Analysis of information 150 points**

INDICATOR	Very strong evidence of skill 5–4 points	Moderate evidence of skill 3–2 points	Weak evidence of skill 1–0 points	Weight	Total Points
What level of knowledge did the team demonstrate in their written management plan?	Strong to very strong demonstrated knowledge.	Moderate demonstrated knowledge.	Little or incomplete demonstrated knowledge.	X 10	
Did the team accurately analyze and use the information provided to them?	Accurate analysis of provided information.	Moderately accurate analysis of provided information.	Inaccurate analysis of provided information.	X 10	
How well did the team analyze the scenario?	Accurate scenario analysis.	Moderately accurate scenario analysis.	Inaccurate scenario analysis.	X 10	

**WRITTEN PROPOSAL TOTAL POINTS****Written Plan Quality 350 points**

INDICATOR	Very strong evidence of skill 5–4 points	Moderate evidence of skill 3–2 points	Weak evidence of skill 1–0 points	Weight	Total Points
Introduction	Complete introduction.	Partial introduction.	Little or no introduction.	X 35	
Statement of the problem?	Complete and accurate problem statement.	Partial and mostly accurate.	Little or no problem statement.	X 35	
Did the team identify possible solutions?	Accurate and complete possible solutions.	Partial possible solutions.	Little or no possible solutions.	X 35	
Did the team include a recommendation with measurable goals?	Extensive and accurate recommendations with measurable goals.	Some accurate recommendations with measurable goals.	No or little accurate recommendations with measurable goals.	X 35	
Were sound economic decisions reached by the team?	Accurate economic decisions.	Moderately accurate economic decisions.	Inaccurate economic decisions.	X 35	
Expenses	Complete expenses included.	Some expenses included.	Few if any expenses included.	X 35	
Income	COMPLETE income included.	Some income included.	Little or no income included.	X 35	
Profit or loss amount	Accurate profit or loss amount.	Partially accurate profit or loss amount.	Inaccurate profit or loss amount.	X 35	
Break even analysis	Accurate break even analysis.	Partially accurate break even analysis.	Inaccurate break even analysis.	X 35	
Did the plan include a summary?	Complete summary.	Partial summary.	Little or no summary.	X 35	

**WRITTEN PLAN TOTAL POINTS**

## Team Activity Preparation Rubric continued

Oral Presentation 200 points <i>continued</i>					
INDICATOR	Very strong evidence of skill 5–4 points	Moderate evidence of skill 3–2 points	Weak evidence of skill 1–0 points	Weight	Total Points
Sound agronomic principles	Very sound agronomic principle discussions.	Somewhat sound agronomic principle discussions.	Unsound agronomic principle discussions.	X 20	
Member participation	All members made positive contributions to the presentation.	Some members made positive contributions to the presentation.	Few members made positive contributions to the presentation.	X 20	
ORAL PRESENTATION TOTAL POINTS					

Questions on Presentation 200 points					
INDICATOR	Very strong evidence of skill 5–4 points	Moderate evidence of skill 3–2 points	Weak evidence of skill 1–0 points	Weight	Total Points
Member contribution	All members accurately answered questions.	Some members accurately answered questions.	Few members accurately answered questions.	X 14	
Confident responses	Members were confident with their responses.	Members were somewhat confident with their responses.	Members were not confident with their responses.	X 12	
Accuracy	Members were accurate with their answers.	Members were somewhat accurate with their answers.	Members were not accurate with their answers.	X 14	
QUESTIONS TOTAL POINTS					



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Crop Placing Written Reasons Scorecard

25 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

Placing		Total Points
TOTAL POINTS		

JUDGE'S NAME \_\_\_\_\_ JUDGE'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Interview Rubric

100 points

INDICATOR	POINT VALUE						
	5 points	4 points	3 points	2 points	1 points	Weight	Total Points
Introduction (5 points)	Introduction is clear, well organized and focused; clearly prepares listener for what is to come.	Topic indicated clearly; organized; focused.	Indication of topic somewhat clear; generally organized and focused.	Introduction gives some indication of topic; poorly organized.	No introduction; extremely brief, non-specific, not related to the topic; disorganized.	X1	
Personality/ Confidence (10 points)	Appears friendly and confident; positive attitude; relaxed; defends position without being confrontational.	Fairly calm and non-confrontational; defends with confidence; mostly positive attitude.	Somewhat nervous; confrontational; somewhat defensive.	Nervous; uneasy; shows little confidence in position; confrontational.	Extremely nervous; lacks confidence; confrontational.	X2	
Poise/ Posture (10 points)	Maintains good eye contact; voice projection and speed excellent; good posture and uses hand gestures as appropriate.	Has good eye contact; voice quality is good; posture somewhat rigid.	Breaks eye contact; looks away occasionally; voice quality uneven; poor posture.	Seldom makes eye contact; voice quality uneven; distracting gestures.	Does not make eye contact; difficult to understand; mumbles; generally distracted.	X2	
Response to Questions (15 points)	Responds quickly with complete statements; uses factual information; opinion based on fact; presents information in a logical manner.	Responds with little wait time; uses complete statements most of the time; most answers based on facts; presents information in a somewhat logical order.	Hesitates before answering; speaks in phrases rather than complete statements; repeats information; opinions lack factual basis; random thoughts.	Few facts and basic information; often uses one word answers; many pauses; long response time; no structure to response.	No factual answers; uses one word answers; long delays in responding; answers indicate no understanding of question.	X3	

INDICATOR	POINT VALUE						Weight	Total Points
	5 points	4 points	3 points	2 points	1 points			
Knowledge of Issue (20 points)	Extremely well informed; clearly differentiates between fact and opinion; aware of current issues.	Well informed; differentiates between fact and opinion; aware of current issues.	Somewhat knowledgeable; lines between fact and opinion are blurred; responses sound memorized; limited awareness of current issues.	Lacks knowledge; more opinion than fact; talks in circles; avoids the issue; seemingly unaware of current issues.	No knowledge of issue; no understanding of current issues.	X4		
Conveyance of Thought and Meaning (40 points)	Communicates opinion as clear statement; uses appropriate terminology; backs up statements with suitable examples; clear, coherent expression of ideas.	Makes fairly clear statements using appropriate language; is able to back up most statements.	Sounds somewhat rehearsed; difficulty backing up statements; draws blanks; often uses filler words (“ah”, “um”).	Sounds rehearsed; uses incorrect terminology; unable to back up statements; demonstrates little understanding of terminology.	Unable to clearly articulate a clear thought; cannot back up any statements; demonstrates no understanding of terminology.	X8		
TOTAL POINTS								



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Grain Grading Scorecard

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

## FFA GRAIN INSPECTION SERVICE

IDENTIFICATION AND LOT:

GRADE AND KIND:

Base Price:

	Amounts	Discounts
TEST WEIGHT BY BUSHEL		
MOISTURE %		
DOCKAGE %		
BCFM %		
HEAT DAMAGED KERNELS %		
DAMAGED KERNELS TOTAL %		
TOTAL DEFECTS %		
TOTAL DAMAGE %		
FOREIGN MATERIAL %		
SHRUNKEN OR BROKEN %		
DEFECTS %		
CLASSES THAT BLEND %		
CONTRASTING CLASSES %		
WHEAT OF OTHER CLASSES % SPLITS %		
SAMPLE GRADE FACTORS SPECIAL GRADES		
OTHER		
MYCOTOXINS		

FINAL PRICE

This tag is an example. Each scorecard will resemble this and be crop specific.  
They will be included at <https://www.FFA.org/participate/cdes/agronomy>.



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Agriculture, Food and Natural Resources Content Standards

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>ABS.01.01.</b> Performance Indicator: Apply micro- and macroeconomic principles to plan and manage inputs and outputs in an AFNR business.		CCSS.ELA-Literacy.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 Financial Investing: Benchmarks: Grade 12, Statement 9
<b>ABS.01.01.01.c.</b> Create strategies to maximize the efficiency of AFNR business inputs and outputs using microeconomic principles.	Team activity	
<b>ABS.01.01.02.c.</b> Analyze the impact of the current macroeconomic environment on decisions related to AFNR businesses.	Team activity	
<b>ABS.01.03.</b> Performance Indicator: Devise and apply management skills to organize and run an AFNR business in an efficient, legal and ethical manner.		CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.01.03.01.c.</b> Devise strategies to improve the operation of AFNR businesses using management skills.	Team activity	
<b>ABS.01.03.02.c.</b> Devise management or operational strategies to address and adhere to local, state, federal, international and industry regulations.	Team activity	
<b>ABS.03. Performance Element: Manage cash budgets, credit budgets and credit for an AFNR business using generally accepted accounting principles.</b>		
<b>ABS.03.01.01.c.</b> Develop cash budgets for AFNR businesses.	Team activity	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6



## Agriculture, Food and Natural Resources Content Standards continued

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>ABS.04.01. Performance Indicator: Analyze characteristics and planning requirements associated with developing business plans for different types of AFNR businesses.</b>		
<b>ABS.04.01.01.c.</b> Demonstrate the application of entrepreneurial skills to conceptualize an AFNR business (e.g., idea generation, opportunity analysis, risk assessment, etc.).	Team activity	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9
<b>ABS.04.01.03.c.</b> Prepare business plans for an AFNR business.	Team activity	
<b>ABS.04.02. Performance Indicator: Develop production and operational plans for an AFNR business.</b>		
<b>ABS.04.02.01.b.</b> Compare and contrast the strengths and weaknesses of operational plans from different AFNR businesses to determine best practices.	Team activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.05.01. Performance Indicator: Analyze the role of markets, trade, competition and price in relation to an AFNR business sales and marketing plans.</b>		
<b>ABS.05.01.01.c.</b> Evaluate and predict future trends for a specific AFNR product as related to markets, trade and price (e.g., corn, oil, wheat, etc.).	Grain grading	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13
<b>ABS.05.02. Performance Indicator: Assess and apply sales principles and skills to accomplish AFNR business objectives.</b>		
<b>ABS.05.02.01.c.</b> Analyze the sales process of AFNR businesses and create methods to suggest improvements.	Team activity	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5

## Agriculture, Food and Natural Resources Content Standards continued

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>ABS.05.03. Performance Indicator: Assess marketing principles and develop marketing plans to accomplish AFNR business objectives.</b>		
<b>ABS.05.03.01.c.</b> Deconstruct and analyze current AFNR marketing plans to determine the effectiveness of implementation of marketing principles and alternative marketing strategies.	Team activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>CS.01.01. Performance Indicator: Examine issues and trends that impact AFNR systems on local, state, national and global levels.</b>		
<b>CS.01.01.01.c.</b> Evaluate and explain AFNR issues and their impacts to audiences with limited AFNR knowledge.	Issues interview	
<b>CS.01.01.02.c.</b> Evaluate emerging trends and the opportunities they may create within the AFNR systems.	Issues interview	
<b>CS.01.02. Performance Indicator: Examine technologies and analyze their impact on AFNR systems.</b>		
<b>CS.01.02.01.c.</b> Solve problems in AFNR workplaces or scenarios using technology	Grain grading	
<b>CS.01.02.02.c.</b> Evaluate the importance of technology use and how it impacts AFNR systems.	Grain grading	
<b>CS.01.03. Performance Indicator: Identify public policies and their impact on AFNR systems.</b>		
<b>CS.7.02.01.c.</b> Evaluate a public policy within AFNR systems and defend or challenge it.	Issues interview	
<b>CS.7.02.02.c.</b> Create a plan for implementing a new public policy that will positively impact AFNR systems.	Issues interview	

*Agriculture, Food and Natural Resources Content Standards continued*

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>CS.02.01. Performance Indicator: Research geographic and economic data related to AFNR systems.</b>		
CS.02.01.01.c. Evaluate geographic data and select necessary data sets to solve problems within AFNR systems.	Soils	
<b>CS.02.02. Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy</b>		
CS.02.02.01.c. Devise a strategy for explaining components of AFNR systems to audiences with limited knowledge.	Issues interview	
CS.02.02.02.c. Evaluate how society traditions, customs or policies have resulted from practices with AFNR systems.	Issues interview	
CS.02.02.03.c. Evaluate how positive or negative changes in the local, state, national or global economy impacts AFNR systems.	Issues interview	
<b>CS.03.01. Performance Indicator: Identify required regulations to maintain and improve safety, health and environmental management systems.</b>		
CS.03.01.01.c. Evaluate how AFNR organizations/businesses promote improved health, safety and environmental management.	Exam	
CS.03.01.02.c. Construct and implement methods to evaluate compliance with required safety, health and environmental management regulations.	Exam	
<b>CS.03.04. Performance Indicator: Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.</b>		
C3.06.04.01.c. Design plans to ensure the use of appropriate protective equipment when using various AFNR tools and equipment.	Exam	
C3.06.04.02.c. Evaluate and select appropriate tools and equipment to complete AFNR tasks.	Exam; machinery identification	
<b>CS.04.01. Performance Indicator: Identify and implement practices to steward natural resources in different AFNR systems.</b>		
CS.04.01.02.c. Evaluate sustainability policies and plans and prepare summary of potential improvements for AFNR businesses or organizations.	Issues interview	

*Agriculture, Food and Natural Resources Content Standards continued*

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>CS.04.02. Performance Indicator: Assess the natural resource related trends, technologies and policies that impact AFNR systems.</b>		
CS.04.02.01.c. Defend or challenge natural resources trends and technologies based upon an assessment of their impact on AFNR systems.	Issues interview	
<b>CS.06.01. Performance Indicator: Explain foundational cycles and systems of AFNR.</b>		
CS.06.01.02.c. Evaluate AFNR systems and predict how the systems may change or adapt in the future of food, fiber and fuel production based on current trends and data.	Issues interview	
<b>CS.06.02. Performance Indicator: Explain the connection and relationships between different AFNR systems on a national and global level.</b>		
CS.06.02.01.c. Evaluate how AFNR systems impact each other on a national and global level.	Issues interview	
CS.06.02.02.c. Evaluate how changes in one AFNR system can benefit cost components of other systems on a national and global level.	Issues interview	
<b>FPP.01.02. Performance Indicator: Apply food safety and sanitation procedures in the handling and processing of food products to ensure food quality.</b>		
FPP.01.02.01.c. Identify sources of contamination in food products and/or processing facilities and develop ways to eliminate contamination.	Grain grading; Exam	
<b>FPP.01.03. Performance Indicator: Apply food safety procedures when storing food products to ensure food quality.</b>		
FPP.01.03.01.a. Identify and summarize purposes of food storage procedures (e.g., first in/first out, temperature regulation, monitoring, etc.).	Grain grading	
<b>FPP.03.01. Performance Indicator: Implement selection, evaluation and inspection techniques to ensure safe and quality food products.</b>		
FPP.03.01.01.c. Outline procedures to assign quality and yield grades to food products according to industry standards.	Grain grading	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
FPP.03.01.02.b. Assemble procedures to perform quality-control inspections of raw food products for processing.	Grain grading	

*Agriculture, Food and Natural Resources Content Standards continued*

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>FPP.03.02. Performance Indicator: Design and apply techniques of food processing, preservation, packaging and presentation for distribution and consumption of food products.</b>		
FPP.03.02.01.a. Identify and explain English and metric measurements used in the food products and processing industry.	Grain grading	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.04.01. Performance Indicator: Examine the scope of the food industry by evaluating local and global policies, trends and customs for food production.</b>		
FPP.04.01.01.c. Articulate and defend a personal point of view on policies and legislation that affect the food products and processing system in the U.S. or around the world.	Issues interview	HS-ETS1-3 .
<b>NRS.01.01. Performance Indicator: Apply methods of classification to examine natural resource availability and ecosystem function in a particular region.</b>		
NRS.01.01.01.c. Devise strategies for the preservation of natural resources based on their classification.	Soils; team activity	AFNR Career Cluster, Statement 1 AFNR Career Cluster, Statement 2 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9
NRS.01.01.02.c. Conduct analyses of ecosystems and document the interactions of living species and non-living resources.	Exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster, Statement 2 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9

*Agriculture, Food and Natural Resources Content Standards continued*

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>NRS.01.02. Performance Indicator: Classify different types of natural resources in order to enable protection, conservation, enhancement and management in a particular geographical region.</b>		
NRS.01.02.05.c. Evaluate the non-living resources present in an area to determine the best practices for improving, enhancing and protecting an ecosystem.	Soils	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
<b>NRS.01.05. Performance Indicator: Apply ecological concepts and principles to terrestrial natural resource systems.</b>		
NRS.01.05.04.c. Devise a soil management plan to minimize erosion and maximize biodiversity, plant productivity, and the formation of topsoil.	Soils	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS3-4 HS-ESS3-2
<b>NRS.04.02. Performance Indicator: Diagnose plant and wildlife diseases and follow protocols to prevent their spread.</b>		
NRS.04.02.01.b. Analyze a plant disease based on its symptoms, identify if the disease needs to be reported to authorities and determine which authorities it should be reported to.	Grain grading	CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-7

*Agriculture, Food and Natural Resources Content Standards continued*

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>PS.01.01. Performance Indicator: Determine the influence of environmental factors on plant growth.</b>		
PS.01.01.01.c. Analyze plant responses to varied light color, intensity and duration and recommend modifications to light for desired plant growth.	Exam	
PS.01.01.03.c. Analyze plant responses to water conditions and recommend modifications to water for desired plant growth.	Commodity evaluation	
<b>PS.01.02. Performance Indicator: Prepare and manage growing media for use in plant systems.</b>		
PS.01.02.01.c. Formulate and prepare growing media for specific plants or crops.	Exam	
PS.01.02.02.c. Determine the hydraulic conductivity for soil and how the results influence irrigation practices.	Exam; team activity; pest management; soils	
<b>PS.01.03. Performance Indicator: Develop and implement a fertilization plan for specific plants or crops.</b>		
PS.01.03.01.a. Identify the essential nutrients for plant growth and development and their major functions (e.g., nitrogen, phosphorous, potassium, etc.).	Team activity; Exam; pest management	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.01.c. Monitor plants for signs of nutrient deficiencies and prepare a scouting report to correct elements negatively affecting plant growth in a field or greenhouse.	Pest management	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.02.c. Adjust the pH of growing media for specific plants or crops.	Exam; team activity	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.03.c. Prescribe fertilizer applications based on the results of a laboratory analysis of soil and plant tissue samples.	Exam; team activity	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.05.c. Devise a plan for soil management for a selected production method.	Exam; team activity; soils	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.06.c. Devise a plan to meet plant nutrient needs based on environmental factors present.	Team activity	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3

*Agriculture, Food and Natural Resources Content Standards continued*

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>PS.02.02. Performance Indicator: Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.</b>		
PS.02.02.01.c. Apply the knowledge of cell differentiation and the functions of the major types of cells to plant systems.	Exam	HS-LS1-4
PS.02.02.02.c. Correlate the active and passive transport of minerals into and through the root system to plant nutrition.	Exam	HS-LS1-5
PS.02.02.03.c. Evaluate the function of the xylem, phloem and cambium tissues and the impact on plant systems.	Exam	HS-LS1-5
PS.02.02.04.c. Devise a plan for plant management practices that takes into account leaf structure and functions.	Team activity	HS-LS1-5
PS.02.02.05.c. Evaluate flower structures and analyze the impact of plant structure on plant breeding, production and use.	Exam	HS-LS1-4 HS-LS1-5
PS.02.02.06.c. Evaluate the impact of different seed and fruit structures to plant culture and use.	Exam	HS-LS1-4 HS-LS1-5
<b>PS.01.03. Performance Indicator: Apply knowledge of plant physiology and energy conversion to plant systems.</b>		
PS.02.03.01.c. Evaluate the impact of photosynthesis and the factors that affect it on plant management, culture and production problems.	Exam	HS-LS1-5
PS.02.03.02.c. Evaluate the impact of plant respiration on plant growth, crop management and post-harvest handling decisions.	Exam	HS-LS1-5
PS.02.03.05.c. Devise plans for plant management that applies knowledge of transpiration, translocation and assimilation on plant growth.	Exam	HS-LS1-4 HS-LS1-5



*Agriculture, Food and Natural Resources Content Standards continued*

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>PS.03. Performance Element: Propagate, culture and harvest plants and plant products based on current industry standards.</b>		
<b>PS.03.01.01.c.</b> Select and defend the use of pollination methods and practices used to maximize crop pollination.	Exam	
<b>PS.03.01.02.a.</b> Demonstrate sowing techniques for providing favorable conditions to meet the factors of seed germination.	Machinery identification	
<b>PS.03.01.03.a.</b> Summarize optimal conditions for asexual propagation and demonstrate techniques used to propagate plants by cuttings, division, separation, layering, budding and grafting.	Exam	
<b>PS.03.01.04.a.</b> Define micropropagation, discuss advantages associated with the practice and summarize the main stages of the process.	Exam	
<b>PS.03.01.05.b.</b> Compare and contrast the potential risks and advantages associated with genetically modified plants.	Issues interview	
<b>PS.03.02. Performance Indicator: Develop and implement a management plan for plant production.</b>		
<b>PS.03.02.01.b.</b> Inspect propagation material for evidence of pests or disease.	Pest management	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
<b>PS.03.02.02.b.</b> Prepare soil and growing media for planting with the addition of amendments.	Soils	
<b>PS.03.02.03.a.</b> Determine seeding rate need for specified plant population or desired quantity of finished plants.	Team activity	
<b>PS.03.02.04.a.</b> Observe and record environmental conditions during the germination, growth and development of a crop.	Exam	

*Agriculture, Food and Natural Resources Content Standards continued*

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
PS.03.02.04.c. Prepare and implement a plant production schedule based on predicted environmental conditions and desired market target (e.g., having plants ready to market on a specific day such as Mother's Day, organic production, low maintenance landscape plants, etc.).	Team activity	
PS.03.02.05.b. Demonstrate proper techniques to control and manage plant growth through mechanical, cultural or chemical means.	Exam	
<b>PS.03.03. Performance Indicator: Develop and implement a plan for integrated pest management for plant production.</b>		
PS.03.03.01.a. Identify and categorize plant pests, diseases and disorders.	Pest management and identification	
PS.03.03.01.b. Identify and analyze major local weeds, insect pests and infectious and noninfectious plant diseases.	Pest management and identification	
PS.03.03.01.c. Devise solutions for plant pests, diseases and disorders.	Team activity and pest management	
PS.03.03.02.b. Predict pest and disease problems based on environmental conditions and life cycles.	Pest management; exam and team activity	
PS.03.03.03.c. Employ pest management strategies to manage pest populations, assess the effectiveness of the plan and adjust the plan as needed.	Team activity; pest management and exam	
PS.03.03.04.b. Examine and apply procedures for the safe handling, use and storage of pesticides including personal protective equipment and reentry interval.	Exam	
<b>PS.03.04. Performance Indicator: Apply principles and practices of sustainable agriculture to plant production.</b>		
PS.03.04.01.c. Research, prepare and defend plans for a plant systems enterprise that aligns with USDA sustainable practices criteria.	Issues interview	AFNR Career Cluster, Statement 2 STEM Career Cluster, Statement 1 STEM Career Cluster, Statement 4 HS-ESS3-2
PS.03.04.02.c. Select and defend the use of nationally/internationally grown or locally/regionally grown for a production operation system.	Issues interview	AFNR Career Cluster, Statement 2 STEM Career Cluster, Statement 1 STEM Career Cluster, Statement 4 HS-ESS3-2

*Agriculture, Food and Natural Resources Content Standards continued*

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>PS.03.05. Performance Indicator: Harvest, handle and store crops according to current industry standards.</b>		
PS.03.05.01.c. Analyze the processed used by mechanical harvesting equipment.	Machinery identification	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a-
PS.03.05.02.b. Evaluate crop yield and loss data and make recommendations to reduce crop loss.	Team activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a-
PS.03.05.03.c. Research laws and apply regulations to ensure the production of plants and plant products that are safe for distribution and use.	Pest management and exam	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a-
PS.03.05.05.b. Demonstrate techniques for grading, handling and packaging plants and plant products for distribution.	Grain grading	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a-
PS.03.05.05.c. Evaluate techniques for grading, handling and packaging plants and plant products.	Grain grading and commodity evaluation	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a-
CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.		
CRP.01.01.02.c. Model personal responsibility in workplace and community situations.	Team activity	
<b>CRP.01.02 Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.</b>		
CRP.01.02.01.c. Make and defend personal decisions after analyzing their near- and long-term impacts on self and others.	Team activity	
CRP.01.02.02.c. Make and defend professional decisions after evaluating their near- and long-term impacts on employers and community.	Team activity	
CRP.01.02.02.c. Make and defend professional decisions after evaluating their near- and long-term impacts on employers and community.	Team activity	
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
CRP.02.01.02.c. Apply academic knowledge and skills to solve problems in the community and reflect upon results achieved.	Issues interview	

*Agriculture, Food and Natural Resources Content Standards continued*

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
CRP.02.02.01.c. Apply technical concepts to solve problems in the workplace and reflect upon the results achieved.	Team activity; commodity evaluation and pest management	
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Issues interview; team activity	
<b>CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.</b>		
CRP.04.02.02.c. Compose clear and coherent written documents (e.g., agendas, audio-visuals, drafts, forms, etc.) for formal and informal settings.	Team activity	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Team activity; issues interview	
<b>CRP.07.01. Performance Indicator: Select and implement reliable research processes and methods to generate data for decision-making in the workplace and community.</b>		
CRP.07.01.01.b. Analyze how different research methods are used to generate data in a variety of situations.	Team activity and soils	
<b>CRP.07.02. Performance Indicator: Evaluate the validity of sources and data used when considering the adoption of new technologies, practices and ideas in the workplace and community.</b>		
CRP.07.02.01.c. Propose valid and reliable data sources to use when considering the adoption of new technologies, practices and ideas.	Issues interview	
CRP.07.02.02.c. Create and defend proposals for new technologies, practices and ideas using valid and reliable data sources.	Issues interview	

*Agriculture, Food and Natural Resources Content Standards continued*

Performance Measurement Levels	Event Activities Addressing Measurements	Related Academic Standards
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Team activity	
CRP.08.01.02.b. Assess solutions to workplace and community problems for evidence of reason, logic and consideration of multiple perspectives.	Team activity	
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.02.c. Evaluate and select solutions with greatest potential for success to solve workplace and community problems.	Team activity and pest management	
<b>CRP.11.01. Performance Indicator: Research, select and use new technologies, tools and applications to maximize productivity in the workplace and community.</b>		
CRP.11.01.01.b. Analyze advantages and disadvantages of new technologies, tools and applications to maximize productivity in the workplace and community.	Team activity and issues interview	
CRP.11.01.01.c. Construct effective communications to explain the features, benefits and risks of new technologies, tools and applications in the workplace and community	Issues interview	
CRP.11.01.02.b. Select, apply and use new technologies, tools and applications in workplace and community situations to maximize productivity.	Team activity, exam, and pest management	



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# CONDUCT OF CHAPTER MEETINGS

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

- To introduce seventh, eighth and ninth grade FFA members to parliamentary procedure while learning how to conduct efficient meetings and build their communication skills.
- Agriculture, Food and Natural Resources (AFNR) Cluster Skills and Career Readiness Practice Standards
- Agriculture is a highly technical and ever-changing industry which everyone is dependent. We will maintain agriculture as our nation's number one industry only if we understand the importance of the different agrisciences, marketing strategies, safe food production and the need for continuous research to improve agriculture. Strong, relevant agriscience programs are one way we can maintain our nation's agricultural edge.
- With the recommendation of the National FFA Board of Directors, all national FFA programs have incorporated these standards to guide the direction and content of program materials and activities. Refer to Appendix A in the handbook for a complete list of the measurable activities that participants will carry out in this event.



## Objectives

*Students will be able to:*

- Demonstrate correct use of FFA opening and closing ceremonies.
- Demonstrate parliamentary procedure to conduct an orderly and efficient meeting.
- Communicate and participate effectively as a team member.
- Demonstrate critical thinking and teamwork for effective decision making.

## Event Rules

Team make-up: Each team will consist of seven members from the same chapter. Members will fulfill the duties of president, vice president, secretary, treasurer, reporter, sentinel and advisor. The member who performs the advisor role in opening ceremonies will participate as a member for the remaining time of the event.

- Team members must be enrolled in the seventh, eighth or ninth grade at the time of qualification.
- Teams must be selected at a state or interstate career/leadership development event held between the immediate previous national FFA convention and prior to the national FFA convention in which they are participating. States that qualify more than one year out must request and submit a written waiver for approval by the certification deadline.
- Team members must be FFA members at time of qualification.

There will be a preliminary, semi-final and final round of demonstrations.

Team members will take the written exam one time. Exam score will be used as part of the team score in each of the three rounds.

Exam scores will be used to seed teams into the preliminary rounds.

## Event Format

### EQUIPMENT

Materials the student needs to provide:

- Two sharpened No. 2 pencils

Materials provided by the event committee:

- Gavel and officer station symbols
- Blank note paper
- Event digital timers
- American and FFA flags

### WRITTEN EXAM:

- Twenty-five questions  
(One point per question; 25 points per member;  
175 total team points)
  - Officer Duties and Meeting Room Preparation (FFA Manual):  
three questions
  - Parliamentary Procedure: 22 questions
    - Permissible Motions
    - Order of Business

### PRESENTATION OPENING CEREMONIES

(15 points/member 105 points/team)

- Voice
- Poise
- Expression



## PRESENTATION - TEAM DEMONSTRATION

- Team members will demonstrate four of the following permissible parliamentary procedure motions: Event officials will select motions to be demonstrated in each flight of event.
  - **Privileged Motions:**
    1. Raise a Question of Privilege
    2. Recess
  - **Subsidiary Motion:**
    1. Previous Question
    2. Postpone Definitely
    3. Commit or Refer
    4. Amend
    5. Postpone Indefinitely
  - **Main Motion**
  - **Incidental Motions:**
    1. Parliamentary Inquiry
    2. Division of the Assembly
    3. Point of Order

**PRESENTATION – CLOSING CEREMONIES**

(20 points; 10 president, five secretary, five team)

**PRESENTATION – OPENING AND CLOSING  
CEREMONIES ACCURACY**

- One point deduction per error (adding, deleting and transposition of words or deviation from printed ceremonies) per team member with a maximum deduction equal to the amount available to be earned. (Official FFA Manual)

**ORAL QUESTIONS**

Judges will ask one oral question (which may contain one to two parts) per participant. Oral questions will be predetermined and related to the permissible motions, general purposes of parliamentary procedure or officer duties and responsibilities.

## Event Procedures

- The room will be pre-set with a lectern, tables, chairs, station markers and a timer prior to the event. All teams will use identical room set provided by the event committee. Actual meeting room set will be provided during team orientation meeting prior to the event.
- All participants will be provided paper to take notes during the entire demonstration. Pencils must be provided by the team.
- Participants will have one minute immediately before their demonstration to read their card silently and take notes. Team members may not mark or write on the cards and may not confer or signal each other during the one minute time period or during the demonstration, except when seeking recognition from the chair.
- The student advisor will participate during the opening ceremonies for the advisor's part and then will take on the role of a member to participate in debate and may be assigned a motion and will be asked an oral question.
- Every participant will receive a card (see the sample below) with the main motion and the four required motions from the list of permissible motions. No other motions may be used. However, a point of order and parliamentary inquiry may be used if it is not listed on the motion card. Points will not be awarded if it is not on the motion card, and an appeal may not be made on the president's ruling. Included in the four required motions, will be a minimum of one debatable subsidiary motion.

**MAIN MOTION:**

I move that our chapter organize a district novice parliamentary procedure competitive event.

**REQUIRED MOTIONS:**

Raise a Question of Privilege

Previous Question

**Amend**

Point of Order

*Highlighted and bolded motion is your required motion.*

- Required motion must be demonstrated by the officer that the motion is assigned to for points to be scored. If the assigned motion is used by another officer it must be properly renewed again if allowed by the assigned officer to score points.
- Judges will score all member debates, only the top three debates per team member will impact final team score.
- If the privileged motion recess is adopted, members must stay at their officer stations and may not talk or signal each other.
- Four of the six participants on the floor will be assigned a required motion. The motion will be marked in bold print and underlined on their cards to indicate the motion assigned.
- The demonstration including the opening and closing ceremonies will not exceed 13 minutes. (Penalties will be assessed see starting at 13:01).
- A time clock or time card will be provided so that the team can see. The clock will count up from zero minutes starting with opening ceremonies (signaled to begin by two taps of the gavel by the president) and stop when closing ceremonies are completed. If a time clock is not used, the timekeeper will signal the team with large cards at the elapsed times of nine and 11 minutes.
- Judges will ask one oral question (which may contain one to two parts) per participant. Oral questions will be predetermined and related to the permissible motions, general purposes of parliamentary procedure or officer duties and responsibilities. The same set of questions will be used for each team in each flight of the event. Separate sets of questions will be developed for each round of the event.
- **Main Motion:**
  - There is no pre-determined list of main motions. Main motions are determined annually by the event superintendent and must be developed for any of the three divisions of the chapter program of activities, which includes grow leaders, build communities and strengthen agriculture.
- Official dress is highly recommended.

- The order of business will begin at the conclusion of opening ceremonies and will begin with the consideration of new business (other items normally on the order of business are not to be considered). After opening ceremonies are completed, a member on the floor will gain recognition and state the main motion which will not be assigned to any particular officer.
- The motion to adjourn is not allowed. Closing ceremonies must be performed.
- Rubric should be used to determine the ranking of teams for each round.
- Point of order and parliamentary inquiry may be used with no point deduction, if not listed on the motion card when used appropriately. Use of other motions not listed on the motion card have no point value and will result in a point reduction not to exceed 20 points per instance.

### **TIEBREAKERS**

- Presentation — Debate
- Written Exam — Team Total



## Awards

- All teams will receive a gold, silver or bronze team plaque at the award function.
- All individuals will receive a gold, silver or bronze pin at the award function.
- National finalists (four) will receive additional plaque and perform on the Final's stage
- Awards will be presented to teams based upon their rankings at the awards ceremony.

## SPECIALTY AWARDS

- A certificate will be awarded for the best chairman.
- A certificate will be awarded for the best member
- Certificates will be awarded for the best team written test score.
- Certificate will be awarded for the highest exam score
- Large traveling gavel and one large gavel that is used at event will be engraved with the team name. Traveling gavel will need to be returned to national event at the next convention.



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Judges Rubric Worksheet

	WRITTEN TEST	OPENING CEREMONY	DEBATE	ORAL QUESTIONS	INDIVIDUAL TOTAL
President	(25)	(15)	**( 45)	(10)	(95)
Vice President	(25)	(15)	(45)	(10)	(95)
Secretary	(25)	(15)	(45)	(10)	(95)
Treasurer	(25)	(15)	(45)	(10)	(95)
Reporter	(25)	(15)	(45)	(10)	(95)
Sentinel	(25)	(15)	(45)	(10)	(95)
Advisor	(25)	(15)	(45)	(10)	(95)
INDIVIDUAL TOTALS	(175)	(105)	(315)	(70)	(665)
Required Assigned Motions	(4)	(50)	(65)		(200)
Conclusions Reached		(65)	(50)		
Team Voice, Poise, Expression		(50)	(20)		
Closing Ceremony		(20)			
TEAM TOTAL					(335)
Deductions for parliamentary errors range from 5-25 points** per error depending on the severity					
Opening Ceremonies Errors -1 point deduction per missed or added word during the opening and closing ceremony – Maximum of 15 points total per officer					
Deductions for overtime The time penalty is 2 points per second over 13 minutes.					
TOTAL POINTS					(1000)

\*\*These points are distributed based on the chair's ability to preside.



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Rules for the Permissible Motions

Standard Descriptive Characteristics (see current edition of Robert's Rule of Order, Newly Revised)

MOTION NAMES, CLASS <sup>1</sup> AND PURPOSES	INTERRUPT SPEAKER?	SECOND NEEDED?	DEBATABLE?	AMENDABLE?	VOTE NEEDED?
<b>CLASS: Privileged Motions</b> (Deals with special matters of immediate or overriding importance to the business of the assembly)					
<b>Recess</b> (Provides a brief break)	No	Yes	No	Yes <sup>2</sup>	Majority
<b>Raise a Question of Privilege</b> (Asks an urgent question regarding rights and privileges of the assembly)	Yes	No	No	No	No vote. Chair rules
<b>CLASS: Subsidiary Motions</b> (Aids the assembly in handling or disposing of a main motion)					
<b>Previous Question</b> (Closes debate and goes directly to a vote and prevents the making of subsidiary motions listed on this table)	No	Yes	No	No	Two-thirds
<b>Postpone Definitely</b> (Puts off further consideration of the main motion to a later time, not beyond the next regular scheduled meeting if within a quarterly interval)	No	Yes	Yes	Yes	Majority (Two-Thirds if made a Special Order)
<b>Commit or Refer</b> (Refers the motion to a committee)	No	Yes	Yes	Yes	Majority
<b>Amend</b> (Proposes to change a motion)	No	Yes	Yes <sup>3</sup>	Yes	Majority
<b>Postpone Indefinitely</b> (Rejects or kills the main motion)	No	Yes	Yes	No	Majority
<b>CLASS: Main Motions</b> (Introduces new business to the assembly)					
<b>Main Motions</b> (Introduce new business to the assembly)	No	Yes	Yes	Yes	Majority

## Conduct of Chapter Meeting

## Rules for the Permissible Motions continued

MOTION NAMES, CLASS <sup>1</sup> AND PURPOSES	INTERRUPT SPEAKER?	SECOND NEEDED?	DEBATABLE?	AMENDABLE?	VOTE NEEDED?
<b>CLASS: Incidental Motions</b> (Related to the pending business and must be decided immediately)					
<b>Parliamentary Inquiry</b> (Allows a member to ask a question related to parliamentary law or the rules of the organization)	Yes	No	No	No	No vote. Chair answers
<b>Division of the Assembly</b> [Requires a standing (rising) vote]	Yes	No	No	No	No vote. Demand
<b>Point of Order</b> (Requests that the rules be enforced)	Yes	No	No	No	No vote. Chair usually rules <sup>4</sup>

1. Motions that bring a question again before the assembly are not required for this event.
2. Amendable with respect to the length of the recess
3. Debatable if applied to a debatable motion
4. Assembly decides by a majority vote if the chair does not want to make a ruling.



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Deductions for Parliamentary Procedure Errors

The table below shows the recommended deductions that judges will use for parliamentary procedure errors. If a parliamentary procedure error is made and a point of order is called at the time of the infraction and promptly ruled on by the chair correctly, points should not be deducted. “Members” are the team members other than the chair.

PARLIAMENTARY PROCEDURE ERRORS	Severity of Point Deduction	Point Deduction
<b>VIOLATIONS RELATED TO USING A MOTION IMPROPERLY</b>		
Postpone Indefinitely (when qualified. e.g., a time is given)	****	
Parliamentary Inquiry (when used to ask another member a question)	***	
Raise a Question of Privilege (when used to ask a question of another member or ask a question related to parliamentary procedure)	***	
<b>VIOLATIONS RELATED TO THE CHAIR</b>		
Improper use of the gavel	*	
Referring to him/herself in the first person (e.g., “I”)	*	
Failing to announce results of vote	*	
Not obtaining a second before stating or putting the motion	**	
Not calling for a negative vote	**	
Failing to call for debate on a debatable motion	**	
Ignoring a member requesting the floor	**	
Taking a hand vote after a Division of the Assembly has been called	**	
Taking a voice vote on a motion that requires a two-thirds vote	**	
Failing to take a vote on a motion	***	
Taking an incorrect vote (e.g., majority when two-thirds required or vice versa)	***	
Stating a personal opinion	****	
Not giving preference in recognition to maker of motion if he/she has not debated	**	
Not giving preference in recognition to member who has not debated	**	
Not alternating debate between those opposed and those in favor of a motion (if known)	*	
Neglecting to notify members to be seated after taking a standing (rising) vote	*	
Arbitrarily stopping debate	**	
Not completing all steps in the announcement of the vote.	**	

## Conduct of Chapter Meeting

## Deductions for Parliamentary Procedure Errors continued

PARLIAMENTARY PROCEDURE ERRORS	Severity of Point Deduction	Point Deduction
<b>VIOLATIONS RELATED TO AMENDMENTS</b>		
Adding words to middle (instead of end) of motions	*	
Striking words that result in incomplete wording for main motion	*	
Inserting “not” to make the motion a negatively worded motion	*	
Making an amendment that is not germane	**	
Amending a non-amendable motion	****	
Making a third-degree (tertiary) amendment	****	
<b>VIOLATIONS RELATED TO MOTIONS</b>		
Chair not restating the motion as it was moved by a member	*	
Member incorrectly stating a motion (e.g., “I motion that...”, using incorrect postpone, etc.)	*	
Chair restating motion before it receives a second	**	
Taking up a motion out of the order of precedence	****	
Member makes an assigned motion in the wrong class (e.g., the assigned privileged motion to Recess is made when no question is pending. It is therefore classified as an incidental main motion)	****	
Member calling out “Question” from his/her seat to stop debate	***	
Member not including special committee size and method of appointing members when making the motion to Commit or Refer	***	
<b>VIOLATIONS RELATED TO DEBATE BY MEMBERS</b>		
Not getting recognized before debating (discussing) a motion	*	
Not addressing debate through the chair	*	
Addressing other members by name	*	
Debating more than two (2) times on a single motion	**	
Debating against a motion they moved	**	
Debating a non-debatable motion	****	
Debate not germane	***	
Debating a motion after it is adopted (e.g., debating an amendment after it is adopted while the main motion it is applied to is immediately pending)	***	

**Note:** star ranking system\* = least amount of deduction to \*\*\*\* = greatest amount of deduction



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Agriculture, Food and Natural Resources Content Standards

Measurement Assessed	Where measured in event	Standards Addressed
<b>CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.</b>		
<b>CRP.01.01.01.a.</b> Define personal responsibility and distinguish how it applies in workplace and community (e.g., make educated choices, listen and follow directions, ask for help when needed, meet expected standards, etc.).	Event Exam – Officer Responsibilities Event Exam – Conduct of Meetings Event Exam – Parliamentary Procedure Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate Demonstration – Opening and Closing Ceremonies Demonstration – Oral Questions Participants Total Score	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.01.01.01.b.</b> Analyze and predict how personal responsibility impacts the workplace and community.	Event Exam – Officer Responsibilities Event Exam – Conduct of Meetings Event Exam – Parliamentary Procedure Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate Demonstration – Opening and Closing Ceremonies Demonstration – Oral Questions Participants Total Score	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.01.01.02.a.</b> Distinguish personal levels of responsibility, which can be applied in the workplace and community.	Event Exam – Officer Responsibilities Event Exam – Conduct of Meetings Event Exam – Parliamentary Procedure Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate Demonstration – Opening and Closing Ceremonies Demonstration – Oral Questions Participants Total Score	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.01.01.02.b.</b> Assess personal level of responsibility and examine opportunities for improvement.	Event Exam – Officer Responsibilities Event Exam – Conduct of Meetings Event Exam – Parliamentary Procedure Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate Demonstration – Opening and Closing Ceremonies Demonstration – Oral Questions Participants Total Score	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6

## Conduct of Chapter Meeting

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Standards Addressed
<b>CRP.01.01.02.c.</b> Model personal responsibility in workplace and community situations.	Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate Demonstration – Opening and Closing Ceremonies Demonstration – Oral Questions	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.01.02 Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.</b>		
<b>CRP.01.02.01.a.</b> Classify the near- and long-term impacts of personal decisions on self and others (e.g., decisions involving health, relationships, money, perceptions, education, etc.).	Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.01.03. Performance Indicator: Identify and act upon opportunities for professional and civic service at work and in the community.</b>		
<b>CRP.01.03.02.a.</b> Identify civic service opportunities in workplaces and the community (e.g., organizations, fundraising, etc.).	Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.01.03.02.b.</b> Assess available civic service opportunities at workplaces and in the community (e.g., community events, attend meetings, etc.).	Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
<b>CRP.02.01.01.b.</b> Assess workplace problems and identify the most appropriate academic knowledge and skills to apply.	Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.02.01.01.c.</b> Apply academic knowledge and skills to solve problems in the workplace and reflect upon the results achieved.	Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.02.01.02.b.</b> Assess community problems and identify the most appropriate academic knowledge and skills to apply.	Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6



Conduct of Chapter Meeting

Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Standards Addressed
<b>CRP.02.01.02.c.</b> Apply academic knowledge and skills to solve problems in the community and reflect upon results achieved.	Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
<b>CRP.02.02.01.c.</b> Apply technical concepts to solve problems in the workplace and reflect upon the results achieved.	Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate Demonstration – Oral Questions	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.02.02.02.c.</b> Apply technical concepts to solve problems in the community and reflect upon results achieved.	Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate Demonstration – Oral Questions	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
<b>CRP.04.01.01.b.</b> Analyze use of verbal and non-verbal communication strategies in workplace situations.	Demonstration – Chair Person Demonstration – Debate Demonstration – Oral Questions	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.04.01.02.b.</b> Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Demonstration – Chair Person Demonstration – Debate Demonstration – Oral Questions	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
<b>CRP.04.03.01.b.</b> Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.). <b>Demonstration-</b> C, D, OC, OQ	Demonstration – Chair Person Demonstration – Debate Demonstration – Opening and Closing Ceremonies Demonstration – Oral Questions	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.04.03.02.c.</b> Model active listening strategies in formal and informal settings.	Demonstration – Chair Person Demonstration – Opening and Closing Ceremonies Demonstration – Oral Questions	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6

## Conduct of Chapter Meeting

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Standards Addressed
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
<b>CRP.05.01.01.b.</b> Analyze how the process of decision making is used in workplace and community situations.	Event Exam – Officer Responsibilities Event Exam – Conduct of Meetings Event Exam – Parliamentary Procedure Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate Demonstration – Opening and Closing Ceremonies Demonstration – Oral Questions Participants Total Score	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.05.01.03.c.</b> Synthesize information and resources and apply to workplace and community situations to make positive decisions.	Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate Demonstration – Oral Questions	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
<b>CRP.06.01.b.</b> Synthesize information, knowledge and experience to generate ideas for workplace and community situations.	Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.06.03. Performance Indicator: Create and execute a plan of action to act upon new ideas and introduce innovations to workplace and community organizations.</b>		
<b>CRP.06.03.01.b.</b> Assess and communicate the risks and benefits of applying new ideas and innovations to the workplace and community.	Demonstration – Required Motions Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.06.03.02.a.</b> Identify individuals and organizations (i.e., stakeholders) that need to provide input and feedback on new ideas or innovation prior to implementation in the workplace or community.	Demonstration – Required Motions Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6

## Conduct of Chapter Meeting

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Standards Addressed
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
<b>CRP.08.01.01.b.</b> Apply steps for critical thinking to a variety of workplace and community situations. <b>Total</b> event all areas	Event Exam – Officer Responsibilities Event Exam – Conduct of Meetings Event Exam – Parliamentary Procedure Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate Demonstration – Opening and Closing Ceremonies Demonstration – Oral Questions Participants Total Score	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.08.01.02.a.</b> Examine and identify opportunities to apply reason, logic and multiple perspectives to solve problems in workplace and community situations.	Event Exam – Officer Responsibilities Event Exam – Conduct of Meetings Event Exam – Parliamentary Procedure Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate Demonstration – Opening and Closing Ceremonies Demonstration – Oral Questions Participants Total Score	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
<b>CRP.08.02.02.b.</b> Apply decisions-making processes to generate possible solutions to solve workplace and community problems.	Event Exam – Parliamentary Procedure Demonstration – Debate Demonstration – Oral Questions	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.08.03. Performance Indicator: Establish plans to solve workplace and community problems and execute them with resiliency.</b>		
<b>CRP.08.03.02.a.</b> Identify and analyze the elements of a plan for solving workplace and community problems (e.g., budget, timeline, etc.).	Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.09.01. Performance Indicator: Model characteristics of ethical and effective leaders in the workplace and community (e.g. integrity, self-awareness, self-regulation, etc.).</b>		
<b>CRP.09.01.02.c.</b> Model characteristics and actions of ethical and effective leaders in workplace and community situations (e.g., integrity, self-awareness, etc.).	Demonstration – Chair Person Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6

## Conduct of Chapter Meeting

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Standards Addressed
<b>CRP.09.02. Performance Indicator: Implement personal management skills to function effectively and efficiently in the workplace (e.g., time management, planning, prioritizing, etc.).</b>		
CRP.09.02.02.a. Examine personal management skills (e.g., time management, prioritizing, setting goals, etc.) that are individually implemented and demonstrated in workplace and community.	Event Exam – Officer Responsibilities Event Exam – Conduct of Meetings Event Exam – Parliamentary Procedure Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate Demonstration – Opening and Closing Ceremonies Demonstration – Oral Questions Participants Total Score	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
CRP.12.01.02.b. Apply consensus building techniques to accomplish results in team-oriented situations.	Demonstration – Chair Person Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6
<b>CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).</b>		
CRP.12.02.02.b. Select strategies to engage team members and apply in a variety of situations.	Demonstration – Chair Person Demonstration – Required Motions Demonstration – Debate	CCSS.ELA-Literacy.SL.9-10.1 CCSS.ELA-Literacy.SL.9-10.2 CCSS.ELA-Literacy.SL.9-10.3 CCSS.ELA-Literacy.SL.9-10.4 CCSS.ELA-Literacy.SL.9-10.5 CCSS.ELA-Literacy.SL.9-10.6



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# CREED SPEAKING

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS



## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://FFA.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The FFA Creed outlines the organization's beliefs regarding the industry of agriculture, FFA membership and the value of citizenship and patriotism. The Creed is recited by FFA members as part of the requirements to earn the Greenhand FFA Degree. The purpose of the Creed speaking leadership development event is to develop the public speaking abilities of 7th, 8th and 9th grade FFA members as well as develop their self-confidence and contribute to their advancement in the FFA degree program.*



## Event Rules

*The National FFA Creed Speaking Leadership Development Event will be limited to one participant per state. The participant must qualify in grades 7, 8 or 9. The participant must compete at the next national convention following their state qualifying round.*

- It is highly recommended that participants wear FFA Official Dress for this event.
- Three to five competent and impartial persons will be selected to judge the event. At least one judge should have an agricultural/ FFA background. Any advisor who has a student competing in a speaking event may not serve as a judge for the that respective speaking event.
- Each state association is to provide a judge for the preliminary and potentially semifinal rounds of the event.
- Any participant in possession of any electronic device is subject to disqualification.





## Event Format

*The event will include an oral presentation and answering critical thinking questions directly related to the Creed.*

Each participant will be asked three questions per round with a five minute total time limit. The questions used will change as the participant progresses to semifinal and final rounds of the event. The questions will be formulated annually by the Creed speaking leadership development superintendent and will avoid two part questions. Past questions will be released in the CDE Q & A found on [FFA.org](https://www.ffa.org).

Members will present the Creed from the current year's *Official FFA Manual*.

The event will be a timed activity with four minutes for presentation. After four minutes, the participant will have one point deducted for every second over set time.

The national event will be conducted in three rounds: preliminary (consisting of five to eight speakers per section), semifinals (two sections of eight speakers each) and finals (four participants). The top two speakers from each preliminary section will advance to the semifinals. The top two speakers from the semifinal sections will advance to the final round. No ranking will be given except for the final four. Feedback for all participants will be distributed at the awards function.

Event officials will randomly determine the speaking order. The room facilitator will introduce each participant by participant number and state association in order of the drawing. No props are to be used. Applause shall be withheld until all participants have spoken.

Each participant must recite the Creed from memory. Each participant shall begin the presentation by stating, “The FFA Creed by E.M. Tiffany.” Each CDE participant shall end the presentation with the statement, “... that inspiring task. Thank you.” Additional introductory or concluding remarks will result in accuracy deductions as indicated on the scorecard.

Participants will be held in isolation until their presentation. Participants will not be allowed to have contact with any outside persons.

At the time of the event, the judges will be seated in a designated section of the room in which the event is held. They will score each participant on the delivery of the Creed and responses using the rubric provided.

Timekeepers will be designated to record the time used by each participant in delivering his/her speech. Content accuracy judges will record the number of recitation errors during delivery.

When participants have finished the presentation and answering of questions, each judge will total the score of each speaker. The timekeepers’ and accuracy judges’ records will be used in computing the final score for each participant. The judges’ score sheets will then be submitted to event officials to determine final rankings of participants.

Participants will be ranked in numerical order on the basis of the final score to be determined by each judge without consultation. The judges’ ranking of each participant then will be added, and the winner will be that participant whose total ranking is the lowest. Other placings will be determined in the same manner (low point score method of selection).

During preliminary and semifinal rounds, recording of presentations is permitted by one person from each participant’s association for that participant only.

## Tiebreakers

*Ties will be broken based on the greatest number of low ranks.*

Participant's low ranks will be counted and the participant with the greatest number of low ranks will be declared the winner. If a tie still exists, then the event superintendent will rank the participant's response to questions. The participant with the greatest number of low ranks from the response to questions will be declared the winner. If a tie still exists then the participant's raw scores will be totaled. The participant with the greatest total of raw points will be declared the winner.



## Awards

*Awards will be presented to individuals based upon their rankings at the awards ceremony.*

Awards are sponsored by a cooperating industry sponsor(s) as a special project and/or by the general fund of the National FFA Foundation.

## References

*This list of references is not intended to be all inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. Make sure to use discretion when selecting website references by only using reputable, proven sites. The following list contains references that may prove helpful during event preparation. The most current edition of resources will be used.

- Past CDE materials, finals hall footage and other resources are available by logging in to <https://www.ffa.org/participate/cdes/creed-speaking>
- National FFA Core Catalog: Developing Great Speeches Guide
- Current year's Official FFA Manual [FFA.org](https://www.ffa.org)



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Creed Speaking LDE Presentation Rubric

100 points

Participant # \_\_\_\_\_

INDICATORS	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Strong evidence of skill is not present 1–0 points	Points Earned	Weight	Total Points
<b>Oral Communication – 30 points</b>						
<b>Pace</b>	Speaks very articulately at rate that engages audience.	Speaks articulately but occasionally speaks too fast or has long unnecessary hesitations.	Speaks too slow or too fast to engage audience.		X 2	
<b>Tone</b>	Voice is upbeat, impassioned and under control.	Voice is somewhat upbeat, impassioned and under control.	Voice is not upbeat; lacks passion and control.		X 2	
<b>Volume</b>	Emitted a clear, audible voice for the audience present.	Emitted a somewhat clear, audible voice for the audience present.	Emitted a barely audible voice for the audience present.		X 2	
<b>Non-verbal Communication – 30 points</b>						
<b>Eye contact</b>	Eye contact constantly used as an effective connection. Constantly looks at the entire audience (90–100 percent of the time).	Eye contact is mostly effective and consistent. Mostly looks around the audience (60–80 percent of the time).	Eye contact does not always allow connection with the speaker. Occasionally looks at someone or some groups (less than 50 percent of the time).		X 2	
<b>Mannerisms and gestures</b>	Hand motions are expressive and used to emphasize talking points. No nervous habits.	Sometimes exhibits nervous habits. Hands are sometimes used to express or emphasize.	Displays some nervous habits. Hands are not used to emphasize talking points; hand motions are sometimes distracting.		X 2	
<b>Poise</b>	Portrays confidence and composure through appropriate body language (stance, posture, facial expressions).	Maintains control most of the time; rarely loses composure.	Lacks confidence and composure.		X 2	

Creed Speaking LDE Presentation Rubric continued

INDICATORS	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Strong evidence of skill is not present 1–0 points	Points Earned	Weight	Total Points
<b>Question and Answer—40 points</b>						
Response to questions	Is able to respond with organized thoughts and concise answers.	Is able to speak effectively and sometimes gets off topic. Answer lacks organization.	Response fails to answer question.		X 2	
Support	Always provides details which support answers/basis of the question.	Usually provides details which are supportive of the answers/basis of the question.	Sometimes overlooks details that could be very beneficial to the answers/basis of the question.		X 3	
Knowledge of agriculture	Answer shows knowledge of agriculture.	Answer shows limited knowledge of agriculture.	Answer shows no knowledge of agriculture.		X 3	
Gross Total Points						
Time Deduction*						
Accuracy Deduction**						
NET TOTAL POINTS						
RANK						

\* -1 point per second over, determined by the timekeepers

\*\* - 20 points per word, determined from by the accuracy judges.



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# Agriculture, Food and Natural Resources Content Standards

Measurement assessed	Where measured in event	Academic content standards addressed
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.01.a. Identify and categorize strategies for ensuring clarity, logic, purpose and professionalism in verbal and non-verbal communication (e.g., vocal tone, organization of thoughts, eye contact, preparation, etc.).	Entire Event	
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Entire Event	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Entire Event	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Entire Event	
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	Entire Event	





# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# DAIRY CATTLE EVALUATION AND MANAGEMENT

2017-2021



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*Dairy Cattle Evaluation and Management***IMPORTANT NOTE**

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.

***Purpose***

*The purpose of the National FFA Dairy Cattle Evaluation and Management Career Development Event is to provide a competitive event for agricultural education students which emphasizes skills in dairy cattle management and evaluation.*





## Objectives

- To provide a practical experience to students enrolled in agricultural education with an interest in dairy cattle to help prepare for industry positions or in management of a modern dairy herd.
- To develop students' skills in observation, analysis, communication and team collaboration.
- To provide experience in the evaluation of dairy cattle type, production records and dairy herd management.
- To encourage agriculture instructors to seek assistance from various resources in the dairy industry. (Examples: dairy breed associations, artificial breeding organizations, state extension dairy specialists, state dairy herd improvement associations, dairy equipment manufacturers, local dairy farmers and breeders, etc.)

## Event Rules

*Each team will be comprised of four members.*

- All four participant scores will be used to determine total team score.
- It is highly recommended that participants wear FFA Official Dress for this event.
- Participants will report to the team orientation meeting for instructions at the time and places shown in the current year's team orientation packet.
- The most current and updated information will be used as industry standards change.
- Computer score sheets will be used in the event to record all responses. These forms must be completed within the time allotted for each section of the event. No additional time will be permitted to transfer responses to computer scoring sheets. Responses that are not correctly recorded on the computer score sheets cannot be considered due to the large number of participants' responses that must be processed.

## Event Format

Each participant must have:

- Two sharpened No. 2 pencils
- An electronic calculator. Calculators used in this event should be battery operated, non-programmable and silent with large keys and displays. Calculators should only have these functions: addition, subtraction, multiplication, division, equals, percent, square root, +/- key and one memory register. No other calculators are allowed to be used during the event.

**Electronic Devices:** Each state team or individual may be required to provide a laptop computer or other personal electronic devices for participation in the Dairy Cattle Evaluation Event. Minimum specifications will be determined and posted on the event webpage and in the team orientation packet prior to the event.

## TEAM ACTIVITY

### 600 POINTS

Each team will be provided with a dairy farm management scenario to identify problems and determine possible improvements. (See references.) All necessary information will be provided.

The scenario will be based on the following rotating topic areas:

- 2017: Feeds/Nutrition
- 2018: Housing/Facilities
- 2019: Health/Diseases
- 2020: Genetics/Reproduction
- 2021: Young Stock Management

Each scenario may include animal welfare, biosecurity, business management, current issues, environmental management and safety concerns related to the topic area.

**Team Expectations:**

- Teams should assume the role of a hired consultant advising a producer (judges).
- Teams will be given 40 minutes to prepare their recommendations to be presented to a panel of judges.
- It is not necessary to describe the scenario to the judges since they are the producer.
- Teams will be allowed 10 minutes to present their recommendations, followed by five minutes of clarifying questions from the judges.

**INDIVIDUAL ACTIVITIES****GENERAL KNOWLEDGE EXAM (150 POINTS)**

- The exam will consist of a 50 question exam involving dairy management practices and DHI Records.
- Forty questions will cover various dairy management and industry related topics.
- Ten questions will be answered using a dairy herd record evaluation data sheet to analyze individual cows.
- Participants will have 40 minutes to complete the exam.

**EVALUATION AND SELECTION (300 POINTS)**

- Six classes of four dairy animals will each be placed on type. Classes will be selected from the recognized breeds of dairy cattle. The class selection committee, however, shall give priority to selecting quality cattle in the breeds available and not be obligated to having all breeds represented in the evaluation classes. Classes will consist of heifers, young cows or mature cows.
- Class or classes may contain production/pedigree data as part of the evaluation process.

- Participants will be permitted to view the animals from all angles but will not be permitted to handle them.
- The dairy cattle handlers will wear numbers which identify the animals.
- Each class is worth 50 points maximum for a correct placing.
- Participants will have 12 minutes to place each class. For classes on which oral reasons will be given, participants will be given 15 minutes.

### **ORAL REASONS (150 POINTS)**

- Oral reasons will be required on three classes. These three classes will be designated by the event superintendent prior to the actual evaluation of the class.
- Oral reasons will be given in another location immediately following the evaluation classes.
- Participants may not use notes during delivery of reasons. Points will be deducted for the use of notes.
- Each class is worth 50 points maximum for each set of reasons.
- Participants will have 12 minutes to prepare each set of oral reasons. No more than two minutes may be used to deliver the reasons before the judges.



## Scoring

Individual	Maximum Points
General knowledge exam	150
Evaluation	300
Oral reasons	150
<b>TOTAL POSSIBLE SCORE</b>	<b>600</b>

Team	Maximum Points
Dairy management activity	600
Total individual score x4	2,400
<b>TOTAL POSSIBLE SCORE</b>	<b>3,000</b>

## TIEBREAKERS

If a tie occurs, the following events will be used to determine award recipients:

### INDIVIDUAL

- Oral reasons score
- General knowledge exam score
- Evaluation score

### OVERALL TEAM

- Team activity score
- Total oral reasons score
- Total general knowledge exam score
- Total evaluation score



## Awards

*Awards will be presented to individuals and/or teams based upon their final rankings and presented at the awards ceremony.*

Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

### SPECIALTY AWARDS

The high-scoring participant in each of the following categories will also receive a certificate recognizing their accomplishment:

- High Breed total (High individual of each breed- Holstein, Jersey, Guernsey, Brown Swiss, etc.,) with associated oral reasons scores as applicable
- Oral reasons score
- General knowledge exam
- Team- dairy management activity

## References

*This list of references is not intended to be all-inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

- National FFA past CDE material: [FFA.org](http://FFA.org)
- Hoard's Dairyman- Judging contest and materials, youth tests and quiz questions and current industry issues: [www.hoards.com](http://www.hoards.com)
- Cornell University Department of Animal Science Dairy Resources: <http://www.ansci.cornell.edu/4H/dairycattle/dairyresources.html>
- Virginia Dairy Quiz Bowl study materials: <https://www.vtdairy.dasc.vt.edu/youth/quizbowl/youth-quiz-bowl.html>
- CEV Multimedia, Inc.: [www.cevmultimedia.com](http://www.cevmultimedia.com)
- Holstein Foundation Education Workbooks: [http://www.holsteinfoundation.org/Holstein Foundation Youth Programs: Quiz Bowl Materials: http://www.holsteinfoundation.org/](http://www.holsteinfoundation.org/Holstein%20Foundation%20Youth%20Programs%20Quiz%20Bowl%20Materials)
- Dairy Herd Improvement: [www.drms.org](http://www.drms.org)
- Current Dairy Unified Scorecard: <http://www.purebreddairycattle.com/pages/Literature.php>
- Gillispie, James R. Modern Livestock and Poultry Production most current edition. Albany, NY: Delmar Cengage Learning, Inc. 2015. Note: confirm publisher and publisher contact. Cengage Publishers [cengage.com](http://cengage.com)



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## Team Activity: Content of Presentation Rubric

400 points

CHAPTER	STATE			TEAM NUMBER		
INDICATOR	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 1-0 points	Points Earned	Weight	Total Points
Opening statement	Begins with an impact statement or question that articulates the focus of the topic area.	Begins with an impact statement or question that is vague concerning the topic area.	Begins with a statement or question that is completely irrelevant to the topic area.		X 4	
Identification of problem areas	Four or more problems from the scenario are accurately identified and discussed.	Two to three problems from the scenario are accurately identified and discussed.	One or no problems from the scenario are accurately identified and discussed.		X 8	
Supporting information	Does an outstanding job discussing industry trends with related statistics.	Does an adequate job discussing industry trends with related statistics.	Vaguely discusses industry trends with related statistics.		X 12	
Factors of impact	All factors that are impacted by problems listed in the scenario are addressed. (i.e., economic impact, production factors, etc.)	Some factors that are impacted by problems listed in the scenario are addressed. (i.e., economic impact, production factors, etc.)	Little or no factors that are impacted by problems listed in the scenario are addressed. (i.e. economic impact, production factors, etc.)		X 20	
Identifying solutions	All solutions connect with and support industry best practices.	Some solutions connect with and support industry best practices.	Solutions do not connect with and do not support industry best practices.		X 20	
Implementation of solutions	All solutions are correctly prioritized for implementation; provides complete justification for the implementation process.	Few solutions are correctly prioritized for implementation; provides little justification for the implementation process.	Solutions are incorrectly prioritized for implementation; provides no justification for the implementation process.		X 12	
Conclusion	Provides a summary statement that provides a clear and concise overview of the topic area.	Provides a summary statement that provides a vague overview of the topic area.	Provides a summary statement that has little relevance to the topic area.		X 4	
TOTAL POINTS						



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# Team Activity: Communications of Outcomes Rubric

100 points

CHAPTER

STATE

TEAM NUMBER

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Strong evidence of skill is not present 1–0 points	Points Earned	Weight Total	Total Points
<b>Speaking without hesitation</b>	Speaks very articulately without hesitation. • Never has the need for unnecessary pauses or hesitation when speaking.	Speaks articulately, but sometimes hesitates. • Occasionally has the need for a long pause or moderate hesitation when speaking.	Speaks articulately, but frequently hesitates. • Frequently hesitates or has long, awkward pauses while speaking.		X 4	
<b>Tone</b>	Appropriate tone is consistent. • Speaks at the right pace to be clear. • Pronunciation of words is very clear and intent is apparent.	Appropriate tone is usually consistent. • Speaks at the right pace most of the time, but shows some nervousness. • Pronunciation of words is usually clear, sometimes vague.	Has difficulty using an appropriate tone. • Pace is too fast; nervous. • Pronunciation of words is difficult to understand; unclear.		X 4	
<b>Being detail-oriented</b>	Is able to stay fully detail-oriented. • Always provides details which support the issue; is well organized.	Is mostly good at being detail-oriented. • Usually provides details which are supportive of the issue; displays good organizational skills.	Has difficulty being detail-oriented. • Sometimes overlooks details that could be very beneficial to the issue; lacks organization.		X 4	
<b>Speaking unrehearsed</b>	Speaks unrehearsed with comfort and ease. • Is able to speak quickly with organized thoughts and concise answers.	Speaks unrehearsed mostly with comfort and ease, but sometimes seems nervous or unsure. • Is able to speak effectively, has to stop and think and sometimes gets off focus.	Shows nervousness or seems unprepared when speaking unrehearsed. • Seems to ramble or speaks before thinking.		X 4	
<b>Connecting and articulating facts and issues</b>	Exemplary in connecting facts and issues and articulating how they impact the issue locally and globally. • Possesses a strong knowledge base and is able to effectively articulate information regarding related facts and current issues.	Sufficient in connecting facts and issues and articulating how they impact the issue locally and globally. • Possesses a good knowledge base and is able to, for the most part, articulate information regarding related facts and current issues.	Has difficulty with connecting facts and issues and articulating how they impact the issue locally and globally. • Possesses some knowledge base but is unable to articulate information regarding related facts and current issues.		X 4	
<b>TOTAL POINTS</b>						



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## Team Activity Preparation Rubric

100 points

Work on how this can score on individual participation and then be added to develop a team process score.

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Strong evidence of skill is not present 1–0 points	Points Earned	Weight	Total Points
Effective listening	Clearly evident that all team members are listening.	Listening occurs but distraction is evident.	Not listening to each other and/or talking over each other.		X 2	
Oral communication	Clearly evident that all team members are discussing the topic.	Communication occurs but side conversations are occurring or two to three members dominating.	One member dominating conversation.		X 2	
Demonstrated cooperation	Clearly all team members completing tasks, sharing written and oral solutions.	Tasks primarily completed by two to three members, other members assist occasionally.	Tasks primarily completed by one member, other members contributing only slightly.		X 4	
	Clearly all team members respected the input of other team members.	Most team members respected the input of other team members.	The team members did not respect the input of other team members?		X 4	
Participated in the team preparation	Clearly all team members are engaged, attentive, and making notes for the full term of event.	Members are engaged and attentive with two to three making notes, participation fades over time.	One to two members form the primary team, other members participate occasionally early, fade over time.		X 4	
	Clearly all team members demonstrate efficient use of his/her time in comprising the plan?	Most team members demonstrate efficient use of his/her time in comprising the plan?	One to two team members demonstrate efficient use of his/her time in comprising the plan?		X 4	
TOTAL						

## Team Activity Example Scenario

**Directions:** Please read the dairy farm management scenario and supplemental information provided for the scenario, identify problems and determine possible improvements. Your team should assume the role of a hired consultant advising the producer (judges). Then, you have five minutes to respond orally to the judges. Your team has 40 minutes to prepare your recommendations to be presented to a panel of judges. It is not necessary to describe the scenario to the judges since they are the producer. Teams will be allowed 10 minutes to present their recommendations, followed by five minutes of clarifying questions from the judges.

You will be provided with an additional worksheet to assist you with your presentation. This worksheet will be turned in to the judges after the completion of your presentation and responses to the judges' questions. All four team members are expected to participate in the oral presentation. You may make and take notes for the presentation.

This scenario, your responses and evidence of team work are worth 600 points (400 points on content and 200 points on communication).

## Dairy Management Exercise Example

### DAIRY NUTRITION SCENARIO

**Scenario:** You received a call from Fred F. Anderson, owner of FFA Dairy, LLC. Mr. Anderson feels that his nutrition program could be improved and would like you to evaluate his farm to see what suggestions you have for improvements.

FFA Dairy, LLC has 1,150 total Holstein dairy cows on a freestall dairy operation in the Midwestern US. The farm has a rolling herd average of 24,000 lbs. of milk. They typically average 3.8% milk fat, 3.0% protein, and a SCC of 175,000. The cows are milked three times a day in a double-20 parallel milking parlor. The freestalls are bedded with sand, and the cows are utilizing their stalls well. They are feeding the same TMR ration to all lactating cows. The lactating cow ration was properly balanced by a nutritionist in September to meet the nutrient needs for cows producing 85 lbs. of milk per day. The balanced ration fed daily to the cows contains the following amounts (as fed) on a per cow basis:

- 4 lbs. of dry hay
- 20 lbs. of haylage per cow
- 55 lbs. of corn silage per cow
- 27 lbs. of grain, concentrates, vitamins and minerals

The cows have recently dropped approximately 8 lbs. of milk per day and the milk fat percentage has dropped to 3.4%. Mr. Anderson would like to get the problem corrected immediately. A veterinarian has checked the cows and confirmed that there are no new, contagious, or chronic disease issues and says to check with a nutritionist. The cows in the early lactation group are averaging a body condition score (BCS) of 2.25. Cows in the dry cow group are a body condition score (BCS) of 4.0.



The day that you arrive, you watch the new employee that is feeding the cows mix a load of feed for the early lactation cows. They are feeding two times per day using a vertical TMR mixer. The mix is being made for 100 cows in the pen. They mix the following amount in the mixer in the following order:

- Dry hay: 200 lbs.
- Haylage: 1,000 lbs.
- Corn silage: 2,750 lbs.
- Grain mix: 1,350 lbs.

After adding all of the ingredients, the TMR is mixed for 30 minutes. The TMR is then fed immediately to the cows. These early lactation cows are housed in a pen with a feed bunk that is 200 feet long. There are 100 freestalls in the pen as well. There are adequate fans in the barn and a properly functioning soaker system on the inside of the feeding lane to prevent heat stress.

The only change that has been recently made with the feeds is that a new bunker of corn silage was just started. The feeder used the front bucket on a tractor to remove the silage from the face, starting in the middle of the pile face. The ration has not been adjusted since they started feeding the new corn silage. An analysis of both the old and the new corn silage has been provided for your information (Table 1).

After the ration was mixed, you particle sized the ration using a Penn State Particle Separator. The results from the using the separator were:

- Top screen: 2%
- Middle screen: 40%
- Bottom pan: 58%

In addition to an overall evaluation of his nutrition program, Mr. Anderson has a few specific questions for you:

- What changes should he make to help the cows return to their previous milk production level and how would you work with him to implement these changes?
- Do you have suggestions to increase the percentage of milk fat of the lactating cows?
- Which of the nutrition-related or nutrition management changes would you make first?



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**Table 1. Chemical analysis of the original corn silage and the new corn silage.**

CORN SILAGE ANALYSIS		Date of Analysis: 3/18/2013		Date of Analysis: 10/11/2013	
		Original Corn Silage		New Corn Silage	
		Dry matter basis	As fed basis	Dry matter basis	As fed basis
Dry Matter	%	100	34.5	100	28.2
Crude Protein	%	7.9	2.7	8.5	2.4
Soluble Protein	%	54	18.6	52	14.7
Degradable protein	%	73	25.2	70	19.7
Acid Detergent Fiber	%	23.5	8.1	30.5	8.6
Neutral detergent fiber	%	41.5	14.3	48.9	13.8
NDFD, 30 hr	% of NDF	56.4	19.5	41.5	11.7
Calcium	%	0.25	0.09	0.21	0.06
Phosphorus	%	0.24	0.08	0.26	- 0.07
Magnesium	%	0.17	0.06	0.18	0.05
Potassium	%	1.2	0.41	1.4	0.39
Nitrate	%	negative		negative	
Aflatoxin	ppb	negative		negative	
DON	ppm	negative		negative	
pH		4.2		4.5	
Lactic acid	%	5.6		2.1	
Acetic Acid	%	2.25		2.4	
Butyric Acid	%	0.01			
Lactic/ Acetic Ratio		2.49		0.88	



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## Example of SWOT Analysis

### STRENGTHS

1. Milk fat, protein, and SCC are good prior to new corn silage
2. 2 feet of bunk space per cow
- 3.
- 6.
- 7.

### WEAKNESSES

1. TMR mixing for 30 minutes
2. Using a bucket to face the silage pile
3. New feed samples: 7% higher in fiber 15% lower in digestability
- 6.
- 7.

### OPPORTUNITIES

1. On farm moisture testing
2. Retrain feed mixer person
3. Check particle size with shaker box
4. Feed multiple groups of cattle

### THREATS

1. 8 lb milk drop  
.4 % drop in milk fat
2. Particle size of diet
3. No moisture adjustments to new corn silage  
(6% change in moisture)
4. Too large of drop in body condition score



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## Team Activity Worksheet

STRENGTHS	WEAKNESSES
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
OPPORTUNITIES	THREATS
	1.
	2.
	3.
	4.
	5.



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## Example/Sample Response

Problems or Opportunities Identified	Relevant Data and Supporting facts	Proposed Solutions
1. Length of time TMR is mixed	1. Penn State shaker box information and lower fat test	1. Run the mixer less time
2. Moisture testing	2. Non – Adjustment to new moisture	2. On farm moisture tester
3. Bunker face	3. Picuture of bunker, use of bucket	3. silage facer
4. Body condition scores	4. Body condition scoring	4. Group cows to nutrition needs
5. Distrubution of feed in feed bunk	5. Picture	5. Spread it evenly, push up more often

*Dairy Cattle Evaluation and Management**Team Activity Worksheetcontinued*

Problems or Opportunities Identified	Relevant Data and Supporting facts	Proposed Solutions
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.
5.	5.	5.



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## Dairy Scenario Presentation Outline

### **INTRODUCTION:** TEAM MEMBER #1

- 1) Introduce the team members

### **STRENGTHS:** TEAM MEMBER #2

- 1) Bunk space
- 2) Cooling

### **CHANGES:** TEAM MEMBER #3

- 1) TEAM MEMBER R mixing time
- 2) Moisture Testing

### **SOLUTIONS:** TEAM MEMBER #4

Adjust mixing time/proper training for employees,

- 1) Work with nutritionist or equipment rep
- 2) Moisture testing on farm

### **CHANGES:** TEAM MEMBER #1

- 1) Bunker face
- 2) Distribution of feed

### **SOLUTIONS:** TEAM MEMBER #2

- 1) Use silage facer
- 2) Spread feed out in barn, push up feed

### **CHANGES:** TEAM MEMBER #3

- 1) Body condition scores

### **SOLUTIONS:**

- 1) Multiple grouping strategies

### **CHANGES:** TEAM MEMBER #4

- 1) Inventory of feeds

### **SOLUTIONS:**

- 1) Stock pile enough corn silage to let current crop ferment

### **WRAP UP:** TEAM MEMBER #1

- 1) Boots on ground
- 2) Our team can monitor:
  - Feed mixer
  - Bunkers
  - Body condition scores

Thank You for your time (Shake Hands)



## Answer Key

FFA Dairy, LLC has several positive strengths. The cows are comfortable and the barn is designed to help cool the cows. Up until recently, they have had good milk components. They are not overcrowding the early lactation cows, which should help those cows get off to a good start.

### FEED NOT DISTRIBUTED FULL LENGTH OF FEEDBUNK

One of the easiest problems to fix in this scenario is to place feed along the entire length of the feed bunk. By not feeding the entire length of the feed bunk, there is not enough recommended space for the cows in the pen (24 inches of feed bunk space per cow). From the feed access standpoint, it is good that FFA Dairy, LLC is not overcrowding, but an overcrowding situation is being created by not feeding along the entire feed bunk. The overcrowding can reduce feed access for the cows.

### TMR MIXED TOO LONG

The feeds in the TMR are being mixed much too long. The time stated, 30 minutes, is definitely excessive. The long mixing time is further evidenced by the Penn State Particle Separator results. The amount of the TMR remaining on the top screen is much too low and there is too much in the bottom pan. The amount on the top screen should be between 5 to 10% (note that recommendations will vary between 2 to 10%, but are typically in the 5 to 10% range). There should be 30 to 50% remaining on the middle screen and less than 40% in bottom pan. The over-mixing of the TMR is one of the factors that could be contributing to the reduction in milk fat % from 3.8 to 3.4%.

## CHANGE IN NUTRIENT ANALYSIS OF CORN SILAGE

The rations need to be rebalanced for the new bunker of corn silage as the nutrient value of the corn silage has changed. The changes in nutrient value of the corn silage are likely one of the main reasons for the recent drop in milk production.

- The new corn silage (10/11/13) has greater levels of fiber (neutral detergent fiber [NDF] and acid detergent fiber [ADF]), indicating that the corn silage will contain less energy for the cows.
  - Also, the NDF in the corn silage is much less digestible (41.5% as compared to 56.4% for 30 hr NDF). The decreased digestibility of the fiber will reduce the amount of energy the cows are able to utilize from the corn silage they are consuming.
- The moisture level of the new corn silage has increased dramatically (34.5 to 28.2% dry matter), but the amount of the various feeds being included in the ration has not changed on an as fed basis. This has resulted in the cows receiving less forage in their ration, another possible cause of the reduced milk fat percentage.
- The VFA profile of the new corn silage shows a low level of lactic acid and a high level of acetic acid. This indicates that the silage did not ferment properly and could be leading to palatability issues as well.

## BUNKER MANAGEMENT

The new corn silage appears to have some mold along the edge and the face of the silage is not being managed very well. The face of the bunker is very uneven, providing additional surface area and exposure of the silage to oxygen. The additional oxygen exposure can increase spoilage and increase the potential for molding.

## TRANSITION COW PROBLEM

The dry cows are too fat and are not transitioning well. Because of transition cow problems, the cows are losing too much weight early during their lactation. Ideally, the dry cows should have a BCS of 3.5 and the early lactation cows would be averaging 2.5 to 2.75.

**NEW FEEDER- LABOR MANAGEMENT**

There is a new feeder at FFA Dairy, LLC. The feeder needs to be properly trained to understand dry matter and inclusion of feeds in the TMR, mixing times and strategies for the TMR, and properly placing feed along the entire feed bunk and close enough that the cows are able to reach the feed.

**OTHER CONSIDERATIONS- MULTIPLE RATIONS**

Right now, FFA Dairy, LLC is feeding the same TMR to all of the cows. They could consider grouping cows and feeding multiple rations to more closely meet the needs of the cows in the various groups. However, multiple rations do increase the chances of errors and labor management becomes an important factor.



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## Dairy Management Exercise Example

Select best answer for each of the following 40 questions.

1. White blood cells (leukocytes) that move into the udder during inflammation and epithelial cells from milk producing tissues are two type of cells that are measured when your cow is suffering from what?  
A) Pinkeye  
B) Milk Fever  
C) Mastitis  
D) Ketosis  
E) None of the above
2. After milk is picked up at the farm, how often should the bulk tank be washed and sanitized?  
A) Every time it is emptied  
B) Once a Day  
C) Once a week  
D) Monthly  
E) Once a year
3. You recently visited a farm that installed new lights in the freestall barn. The goal was to increase the photoperiod of the cows by providing them with 16-18 hours of light to increase milk production. What hormone is released by the pineal gland in response to this lighting change?  
A) Oxytocin  
B) Melatonin  
C) Progesterone  
D) Prostaglandin  
E) Relaxin
4. When lameness caused by abscesses, infection, foot rot or injury is common in a dairy herd, what should the owner implement immediately to help reduce lameness in his herd?  
A) Footbath  
B) New bedding  
C) Change milking times  
D) Increase the moisture in the bedding pack  
E) All of the above
5. It is often said you can't improve what you can't measure. The Brix refractometer is a tool used on many dairy farms to help estimate or measure what?  
A) Wither height  
B) Light quality  
C) Cow's reaction time  
D) Amount of bacteria in milk  
E) Colostrum quality
6. Healthy calves are essential to any dairy operation. To be a better grower of calves you have joined the Dairy Calf & Heifer Association. According to this organization, how many quarts of colostrum should a calf receive in the first four hours of life?  
A) 1 quart  
B) 2 quarts  
C) 4 quarts  
D) 8 quarts  
E) 12 quarts
7. If there are large numbers of flies around the dairy barn, what should be the first thing to be examined in an attempt to solve the fly problem?  
A) Cow feeding procedures  
B) Milking procedures  
C) Calf feeding procedures  
D) Manure handling procedures  
E) Mowing the grass
8. Mastitis is a growing problem on your neighbor's farm. You notice that he is bedding his cows with straw. You recommend that he should change his bedding to what to help decrease the amount of bacteria?  
A) Sawdust  
B) Sand  
C) Compost  
D) Chopped Bark  
E) All of the above will work

*Dairy Cattle Evaluation and Management**Dairy Management Exercise Example continued*

9. When using a body condition scoring system of 1 to 5, what does a score of 1 mean?
- A) Extremely thin
  - B) Average body condition
  - C) Extremely fat
  - D) Above average body condition
  - E) These are the best cows in the herd
10. Paul Bunyan's ox "Babe" had a rare genetic disorder that caused him to be blue. Both his parents were apparently normal. What are the odds his next full-sib will be blue?
- A) 25%
  - B) 50%
  - C) 67%
  - D) 75%
  - E) 100%.
11. In what part of whole milk are most of the off-flavors found?
- A) Protein
  - B) Lactose
  - C) Butterfat
  - D) Water
  - E) Minerals
12. A cow is almost ready to calf. You observe excessive fluid accumulation in the udder and surrounding tissues. What do we call this condition?
- A) Ketosis
  - B) Udder Edema
  - C) IBR
  - D) Mastitis
  - E) Bangs
13. This dairy breed was originally used for milk, meat and draft purposes. Today it is known for high protein to fat ratio, longevity, sound feet and legs, and having few health problems. Which breed is this?
- A) Guernsey
  - B) Milking Shorthorn
  - C) Jersey
  - D) Brown Swiss
  - E) Holstein
14. The following information is listed concerning a cow: 305 3X 35,234 4.2 1480 3.2 1127 Which of the following is not correct?
- A) 305 day lactation
  - B) Milked three times per day
  - C) Milk contained 4.2 % milk fat
  - D) Milk contained 3.2% milk fat
  - E) Milk contained 3.2% milk protein
15. You infuse an antibiotic into a cow's udder to treat her for mastitis, how should her milk be handled?
- A) Discard milk from treated quarter according to label
  - B) Discard milk from treated quarter for 72 hours
  - C) Discard all milk according to label
  - D) Discard all milk for 72 hours
  - E) Discard all milk for 96 hours
16. What state is currently working on a proposal to establish a new Federal Milk Marketing Order?
- A) New Mexico
  - B) Wisconsin
  - C) California
  - D) Washington
  - E) Michigan
17. Absorption of antibodies from colostrum primarily takes place in which compartment of a calf's stomach?
- A) Abomasum
  - B) Omasum
  - C) Reticulum
  - D) Rumen
  - E) Small Intestine
18. During evening chores you notice one of your heifers is not feeling well and is in need of treatment. After reading the product label you are using for treatment, you learn that the shot has to be given IM. Where is the injection site located on your heifer?
- A) In the muscle of the neck
  - B) In the vein
  - C) In the fat tissue
  - D) Under the skin
  - E) It doesn't matter

*Dairy Cattle Evaluation and Management**Dairy Management Exercise Examplecontinued*

19. The Council on Dairy Cattle Breeding recently reported the following milestone achieved in genotyping dairy animals in August 2015.
- A) 500,000 genotyped
  - B) 750,000 genotyped
  - C) 1 million genotyped
  - D) The first animal with 100% of its genome typed
  - E) 3 million genotyped
20. All quality assurance programs insist that a farmer have what type of on-going relationship with their veterinary?
- A) Veterinary Client Patient Relationship (VCPR)
  - B) A relationship is not required
  - C) Telephone contact only
  - D) First name basis
  - E) None of the above
21. The dairy cow has the ability to digest some of the plant carbohydrates which animals with simple stomachs cannot. Which of the following is not one of these carbohydrates?
- A) Cellulose
  - B) Lignin
  - C) Hemicellulose
  - D) Starch
  - E) Pectin
22. Cull heifers and cows have been treated with hormones to cause them to become sexually active as heat check animals. What is the primary hormone that is used?
- A) Estrogen
  - B) Progesterone
  - C) LH
  - D) FSH
  - E) Testosterone
23. Which of the following countries was the number 1 milk and milk product importer in 2014?
- A) Japan
  - B) Algeria
  - C) Saudi Arabia
  - D) China
  - E) Russian Federation
24. This waxy substance found in the teat duct limits bacterial growth and provides a physical barrier against bacteria.
- A) Alveoli
  - B) Keratin
  - C) Myoepithelial
  - D) Prolactin
  - E) Papillae
25. Little Miss Muffet sat on her tuffet, eating her curds and whey. How many pounds of whey are produced from 10 pounds of milk?
- A) 1 pound
  - B) 10 pounds
  - C) 9 pounds
  - D) 5 pounds
  - E) 0 pounds.
26. When a dairy farm operation is owned by a single individual, what type of business entity is this called?
- A) Limited Liability Corporation
  - B) Limited Liability Partnership
  - C) C Corporation
  - D) S Corporation
  - E) Sole proprietorship
27. What corn forage is typically harvested with a forage harvester equipped with an ear-snapper header? The ear should be chopped with a short length-of-cut and then well processed with the on-board kernel processor.
- A) Earlage
  - B) Snaplage
  - C) Corn Silage
  - D) Haylage
  - E) All of the above
28. What is the name of the new fluid milk beverage that is ultra-filtered that Coca-Cola is producing with Select Milk Producers?
- A) Dairy Pure
  - B) TruMoo
  - C) Muscle Milk
  - D) Fairlife
  - E) CocaMoo.

*Dairy Cattle Evaluation and Management**Dairy Management Exercise Examplecontinued*

29. What is the name of the international organization of educators, scientists and industry representatives who are committed to advancing the dairy industry? The Journal of Dairy Science is the organization's official publication.
- A) American Dairy Science Association
  - B) American Dairy Association
  - C) International Dairy Producers
  - D) American Animal Science Association
  - E) Dairy Herd Improvement Association
30. Which of the following countries was the number 1 exporter of milk and milk products in 2014.
- A) New Zealand
  - B) European Union
  - C) United States
  - D) Belarus
  - E) Australia
31. The PMO regulations govern the production, hauling, processing, packaging and storage of which type and grades of milk?
- A) Only Grade A milk,
  - B) Both Grade A and manufacturing milk
  - C) Manufacturing grade milk only
  - D) Grade B only
  - E) Processing grade milk and Grade A.
32. In the reproductive cycle, the level of what hormone in the blood decreases when the corpus luteum is destroyed?
- A) Relaxin
  - B) Testosterone
  - C) Oxytocin
  - D) Progesterone
  - E) Prostaglandin
33. After harvesting corn silage, you take a soil test. The test shows your field is high in phosphorus and low in potassium. Which of the following fertilizers would you not apply in order to reduce the potential of phosphorus run off?
- A) 0-0-44
  - B) 46-0-0
  - C) 0-0-50
  - D) 11-52-0
  - E) 18-4-12
34. On a dairy farm where foot rot problems have been identified in the herd as a major cause of lameness, which common material is used in the footbath to prevent foot rot:
- A) Copper sulfate
  - B) Calcium carbonate
  - C) Sodium chloride
  - D) Monosodium phosphate
  - E) Iron oxide
35. This fatal cattle disease destroys the intestinal lining of ruminants with its major symptom being diarrhea?
- A) IBR
  - B) Johne's disease
  - C) Listeria
  - D) Leukosis
  - E) Black Leg
36. Which group of cattle should not be vaccinated with a modified live bovine virus diarrhea vaccine:
- A) Calves
  - B) Pre-pubertal heifers
  - C) Open cows and heifers
  - D) Pregnant cows and heifers
  - E) None of the above
37. Which vitamin is often recommended as a feed additive to minimize the occurrence of fatty liver and ketosis in fresh cows?
- A) Niacin (B-3)
  - B) Vitamin A
  - C) Thiamine (B-1)
  - D) Vitamin E
  - E) Biotin (B-7)
38. When the environmental temperature falls below 30 degrees F, the normal diet of a young calf should be supplemented with?
- A) Water
  - B) Energy
  - C) Protein
  - D) Vitamin A
  - E) Warm fresh milk

*Dairy Cattle Evaluation and Management**Dairy Management Exercise Examplecontinued*

39. A cow who has recently calved has had her blood tested. The test shows that she has a calcium deficiency more than likely related to an imbalance of calcium, phosphorus and Vitamin D. Which disease is the cow suffering from?
- A) Blackleg
  - B) Ketosis
  - C) Milk Fever
  - D) Johne's
  - E) Hardware
40. In the updated 2009 PDCA Dairy Cow Unified Scorecard, in the dairy strength category which trait receives the highest priority?
- A) Ribs
  - B) Chest
  - C) Barrel
  - D) Thighs
  - E) Neck

*Prepared by K.L. Heckaman, Purdue Extension – Kosciusko County, Warsaw, IN*





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## Official Answers for Dairy Management Exercise:

1. D	21. C
2. C	22. B
3. B	23. B
4. D	24. D
5. E	25. D
6. A	26. C
7. A	27. A
8. C	28. B
9. C	29. D
10. D	30. E
11. B	31. A
12. A	32. C
13. A	33. A
14. C	34. D
15. D	35. D
16. E	36. E
17. E	37. A
18. C	38. C
19. A	39. A
20. E	40. B

## Herd Record Evaluation Example

Select the one cow that best answers each of the following 10 questions.

For questions 1 through 10, use the “herd record evaluation”.

1. Indicate which cow is potentially suffering from rumen acidosis.
2. Which cow should be the next one to be dried off after the testing date, assuming that breeding dates are accurate?
3. Indicate which cow has the highest index value that selects for the improvement of milk, fat, and protein yield, somatic cell score and productive life.
4. Which cow has the lowest mature equivalent for fat?
5. Indicate the cow having the least impact on the somatic cell count in the bulk tank.
6. Indicate which cow is having the most impact on the somatic cell count in the bulk tank.
7. Select the cow that will transmit the lowest expected breeding value to her offspring for milk.
8. Select which cow will be the next one to calve after the testing date, assuming normal gestation length.
9. Determine the cow with the highest expectation among the cows for the value of a future lactation’s production, relative to the herd average.
10. Select the cow which is the most significantly underweight.

## Dairy Cattle Evaluation and Management

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## 2014 National FFA Dairy Cattle Event - Dairy Herd Record Evaluation - Management Quiz

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y
1																									
2																									
3																									
4																									
5																									
6																									
7																									
8																									
9	35																								
10	93	1/8/15	3	P																					
11	44																								
12	81	6/4/15	1	P	2.75	107	2.8	2.8	2.7	570															
13		12/18/14	2	P	3.25	Dry				594															
14		12/18/14	1	P	3.50	Dry				607															
15	33																								
16	23	4/23/15	5	P	3.00	76.9	4.1	2.8	0.9	612															
17	29	4/23/15	1	P	3.25	90.4	2.8	2.8	1.2	626															
18	264	5/14/15	1	P	2.75	107	3.0	2.6	4.4	627															
19	1715	1/29/15	2	P	3.00	15	3.7	4.0	7.1	633															
20	18	7/17/15	3	P	3.75	79.9	2.8	2.8	0.5	648															
21	13	4/2/15	1	P	2.75	75.4	2.9	2.7	0.1	650															
22	13																								
23	13																								
24	44	2/19/15	1	P	3.25	58.8	4.3	3.4	1.8	657															
25	44	4/23/15	3	P	3.00	52.7	3.2	2.8	1.8	658															
26		12/18/14	4	P	3.25	Dry				661															
27		11/6/14	1	P	3.25	Dry				662															
28	13	7/17/15	2	P	3.25	110	2.8	2.3	0.1	672															
29		12/18/14	1	P	3.25	Dry				674															
30	13	7/17/15	2	P	2.75	105.5	3.8	2.9	0.1	675															
31	18																								
32	13	7/17/15	1	P	3.00	107	2.6	2.5	0.5	686															
33		11/26/14	1	P	3.50	Dry				695															
34	13																								
35	1970	6/25/15	1	N	3.25	125.1	2.7	2.5	7.3	701															
36	31	6/25/15	3	N	3.25	116.1	2.6	2.5	1.3	704															
37	13	6/25/15	1	P	2.75	104	3.4	2.7	0.1	708															
38		12/18/14	2	P	3.00	Dry				709															
39	54																								
40		12/18/14	2	P	3.25	Dry				712															
41	429									723															
42	15	6/25/15	3	P	3.25	105.5	3.5	2.8	0.3	730															
43	123	1/9/15	1	P	3.00	33.1	3.7	3.3	3.3	738															
44	33	6/4/15	1	P	2.50	110	3.0	3.0	1.4	744															
45	152	4/23/15	3	P	4.00	46.7	3.4	3.0	3.6	745															
46		12/18/14	2	P	3.25	Dry				746															
47	23	7/17/15	2	P	3.50	117.6	3.7	2.9	0.9	748															
48	13	7/17/15	2	P	3.25	107	2.9	2.7	0.1	749															
49	17	6/4/15	1	P	3.00	123.6	1.5	2.9	0.4	753															
50	57	1/10/15	1	P	3.00	48.2	3.7	3.4	2.2	757															
51	38	6/4/15	1	P	3.50	85.9	4.6	3.2	1.6	758															
52	87	7/17/15	3	P	3.25	116.1	2.8	2.8	2.8	759															
53	115	4/23/15	3	P	4.25	93.4	3.8	3.1	3.2	765															
54	54	6/25/15	3	P	3.00	82.9	3.8	3.3	2.1	767															
55		11/17/14	1	P	3.25	Dry				769															
56	13																								
57	17	7/17/15	3	P	105.5	3.3	2.7	0.4	771																
58	Sonatic																								
59	Sonatic																								
60	Cell																								
61	Count																								
62	(1000's)																								
63																									
64																									
65																									
66																									
67																									
68																									

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## Key DHI Benchmarks from Dairy Metrics

	PERCENTILE		
	50th	75th	95th
<b>Holstein Herds (N=73) with at least 100 cows</b>			
Rolling Milk	19388.6	21482.4	24494.6
Rolling Fat	702.4	778.4	887.8
Rolling Protein	595.4	657.4	746.6
Daily Milk-Milk cows	59.0	65.6	75.1
Summit Milk 1st Lactation	66.2	72.4	81.3
Summit Milk 2nd Lactation	82.1	90.3	102.2
Summit Milk 3rd+ Lactation	87.4	95.9	108.1
Peak Milk 1st Lactation	71.8	78.5	88.2
Peak Milk 2nd Lactation	88.8	98.2	111.7
Peak Milk 3rd+ Lactation	95.2	103.7	115.9
Proj 305 Day ME Milk	21502.8	23491.3	26352.0
Standardized 150 Day Milk	67.6	75.2	86.0
Days in Milk	210.9	191.4	163.4
Age of 1st Lactation Cows	26.5	24.8	22.4
Cows Left Herd-All Lactations, %	34.5	25.0	11.3
Cows Died-All Lactations, %	7.4	4.0	0.0
Cows Left Herd for Repro-All Lactations, %	5.5	1.3	0.0
SCC Actual	397.0	273.0	94.5
SCC Score	3.2	2.8	2.2
SCC Score for 1st Lact Cows	2.8	2.4	1.8
SCC Score for 2nd Lact Cows	3.1	2.6	1.9
SCC Score for 3rd+ Lact Cows	3.6	3.1	2.4
Cows (SCCS of 0-3), %	57.9	65.2	75.7

## Key DHI Benchmarks from Dairy Metricscontinued

	PERCENTILE		
	50th	75th	95th
<b>Holstein Herds (N=73) with at least 100 cows</b>			
1st lact (SCCS of 0-3), %	65.0	72.7	83.8
2nd lact (SCCS of 0-3), %	60.9	70.1	83.4
3rd lact (SCCS of 0-3), %	50.1	59.4	72.8
Pregnancy Rate-Current, %	13.5	19.7	28.6
Days Open-Projected Minimum-Total Herd	180.7	155.6	119.5
Projected Calving Interval	15.2	14.3	12.9
Actual Calving Interval	14.5	13.7	12.5
Days to 1st Service-(%herd < VWP)	19.2	28.0	40.7
Days to 1st Service-(%VWP to 100D)	44.8	56.9	74.2
Days to 1st Service-(%herd > 100D)	37.5	49.9	67.8
Days to 1st Service-Total Herd	108.1	84.0	49.2
Days to 1st Service(%herd <100D)-1st Lact	62.5	76.3	96.1
Days to 1st Service(%herd <100D)-2nd Lact	65.5	79.2	98.9
Days to 1st Service(%herd <100D)-3rd+ Lact	63.0	74.1	90.1
Conception Rate for Past 12M-1st Service, %	48.4	66.5	92.6
Conception Rate for Past 12M-2nd Service, %	45.1	63.9	90.8
Conception Rate for Past 12M-3rd+ Service, %	35.0	51.9	76.3
Service per Preg-All Lact	2.5	1.8	
Service per Preg-1st Lact	2.5	1.8	
Service per Preg-2nd Lact	2.6	1.7	
Service per Preg-3rd+ Lact	2.6	1.8	
Heats Observed, %	29.7	42.1	60.0
Percentile Rank of Proven AI Bulls	40.0	61.8	93.1



## Dairy Cattle Evaluation and Management

## Herd Record Evaluation Answer Keycontinued

Cow No.	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
738	0	2	0	0	0	0	0	0	0	0
744	0	0	0	0	0	0	0	0	0	0
745	0	0	0	0	0	0	0	0	0	0
746	0	0	0	0	0	0	0	0	0	0
748	0	0	0	0	0	0	0	0	0	0
749	0	0	0	0	0	0	0	0	0	0
753	3	0	0	0	0	0	0	0	0	0
757	0	1	0	0	0	0	0	0	0	0
758	0	0	0	0	0	0	0	0	0	0
759	0	0	0	0	0	0	0	0	0	0
765	0	0	0	0	0	0	0	0	0	0
767	0	0	1	0	0	0	0	0	0	0
769	0	0	0	0	0	0	0	2	0	0
770	0	0	0	0	0	0	0	0	0	0
771	0	0	0	0	0	0	0	0	0	0

3= full credit answer

1&amp;2= partial credit answer

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## Agriculture, Food and Natural Resources Content Standards

**ABS.01.02. Performance Indicator: Read, interpret, evaluate and write statements of purpose to guide business goals, objectives and resource allocation.**

**ABS.01.02.02.c.** Evaluate AFNR business goals and objectives, then make revisions based on data and observations.

Team Activity – Content

CCSS.ELA-LITERACY.W.9-10.2  
CCSS.ELA-LITERACY.W.11-12.2  
CCSS.ELA-LITERACY.W.9-10.9  
CCSS.ELA-LITERACY.W.11-12.9  
CCSS.ELA-LITERACY.RI.9-10.4  
CCSS.ELA-LITERACY.RI.11-12.4

**ABS.01.03. Performance Indicator: Devise and apply management skills to organize and run an AFNR business in an efficient, legal and ethical manner.**

**ABS.01.03.01.c.** Devise strategies to improve the operation of AFNR businesses using management skills.

Team Activity – Content  
Event Exam

CCSS.ELA-LITERACY.SL.9-10.6  
CCSS.ELA-LITERACY.SL.11-12.6  
CCSS.ELA-LITERACY.L.9-10.6  
CCSS.ELA-LITERACY.L.11-12.6  
CCSS.ELA-LITERACY.RST.9-10.4  
CCSS.ELA-LITERACY.RST.11-12.4

**ABS.01.03.02.c.** Devise management or operational strategies to address and adhere to local, state, federal, international and industry regulations.

Team Activity – Content  
Event Exam

CCSS.ELA-LITERACY.SL.9-10.6  
CCSS.ELA-LITERACY.SL.11-12.6  
CCSS.ELA-LITERACY.L.9-10.6  
CCSS.ELA-LITERACY.L.11-12.6  
CCSS.ELA-LITERACY.RST.9-10.4  
CCSS.ELA-LITERACY.RST.11-12.4

**ABS.02.02. Performance Indicator: Assemble, interpret and analyze financial information and reports to monitor AFNR business performance and support decision-making (e.g., income statements, balance sheets, cash-flow analysis, inventory reports, break-even analysis, return on investment, taxes, etc.).**

**ABS.02.02.01.b.** Prepare and interpret financial reports to describe the performance of AFNR businesses (e.g., efficiency, profitability, net worth, financial ratios, etc.).

Team Activity – Content  
Event Exam

CCSS.ELA-LITERACY.W.9-10.9  
CCSS.ELA-LITERACY.W.11-12.9  
CCSS.ELA-LITERACY.RH.9-10.7  
CCSS.ELA-LITERACY.RH.11-12.7  
CCSS.MATH.CONTENT.HSS.ID.C.7  
CCSS.MATH.CONTENT.HSS.IC.B.6  
CCSS.MATH.CONTENT.HSN.Q.A.1  
Savings: Benchmarks: Grade 12, Statements 3  
Savings: Benchmarks: Grade 12, Statements 4  
Savings: Benchmarks: Grade 12, Statements 6  
Savings: Benchmarks: Grade 12, Statements 7  
Financial Investing: Benchmarks: Grade 12, Statement 2



*Dairy Cattle Evaluation and Management*

*Agriculture, Food and Natural Resources Content Standards continued*

<b>ABS.02.02.02.c.</b> Create recommendations to improve management of inventory in AFNR businesses (e.g., maintaining optimal levels, calculating costs of carrying input and output inventory, supply chain management, etc.).	Team Activity – Content Team Activity – Presentation Event Exam	CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2
<b>ABS.03.01. Performance Indicator: Develop, assess and manage cash budgets to achieve AFNR business goals.</b>		
<b>ABS.03.01.01.b.</b> Examine and interpret cash budgets for AFNR businesses.	Team Activity – Content Event Exam	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.03.01.02.c.</b> Predict the impact of management decisions on cash budgets in AFNR businesses.	Team Activity – Process Team Activity – Content Event Exam	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.04.02. Performance Indicator: Develop production and operational plans for an AFNR business.</b>		
<b>ABS.04.02.01.c.</b> Make recommendations to improve operational plans for an AFNR business based on best practices.	Team Activity – Process Team Activity – Content Team Activity – Presentation	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.04.02.02.c.</b> Create strategies to improve the production process of an agricultural product for an AFNR facility (e.g., SWOT- strengths, weaknesses, opportunities and threats, supply chain management, etc.).	Team Activity – Process Team Activity – Content Team Activity – Presentation	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4

*Agriculture, Food and Natural Resources Content Standards continued*

<b>ABS.04.02.02.c.</b> Create strategies to improve the production process of an agricultural product for an AFNR facility (e.g., SWOT- strengths, weaknesses, opportunities and threats, supply chain management, etc	Team Activity – Process Team Activity – Content Team Activity – Presentation	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>CS.01.02. Performance Indicator: Examine technologies and analyze their impact on AFNR systems.</b>		
<b>CS.01.02.01.b.</b> Apply appropriate use of technologies in AFNR workplace scenarios.	Team Activity – Content Team Activity – Presentation	
<b>CS.01.02.01.c.</b> Solve problems in AFNR workplaces or scenarios using technology.	Team Activity – Content Team Activity – Presentation Event Exam	
<b>CS.01.02.02.b.</b> Analyze how technology is used in AFNR systems to maximize productivity.	Team Activity – Process Team Activity – Content	
<b>CS.03.01. Performance Indicator: Identify required regulations to maintain and improve safety, health and environmental management systems.</b>		
<b>CS.03.01.01.b.</b> Assess health, safety and environmental procedures to comply with regulatory and safety standards.	Team Activity – Process Team Activity – Content Team Activity – Presentation	
<b>CS.03.02. Performance Indicator: Develop a plan to maintain and improve health, safety and environmental compliance and performance.</b>		
<b>CS.03.02.01.b.</b> Analyze health and safety performance plans of an AFNR business.	Team Activity – Content Team Activity – Presentation Event Exam	
<b>CS.03.02.02.b.</b> Develop plans to improve environmental compliance and performance within an AFNR system.	Team Activity – Content Team Activity – Presentation	
<b>CS.03.04. Performance Indicator: Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.</b>		
<b>CS.03.04.01.c.</b> Design plans to ensure the use of appropriate protective equipment when using various AFNR tools and equipment.	Team Activity – Content Event Exam	
<b>CS.03.04.02.c.</b> Evaluate and select appropriate tools and equipment to complete AFNR tasks.	Team Activity – Content Event Exam	
<b>CS.03.04.03.b.</b> Assess and demonstrate appropriate operation, storage and maintenance techniques for AFNR tools and equipment.	Team Activity – Content Team Activity – Presentation Event Exam	
<b>CS.03.04.03.c.</b> Devise operation, storage and maintenance plans or schedules for AFNR tools and equipment.	Team Activity – Content Team Activity – Presentation Event Exam	

## Dairy Cattle Evaluation and Management

## Agriculture, Food and Natural Resources Content Standards continued

<b>CS.04.01. Performance Indicator: Identify and implement practices to steward natural resources in different AFNR systems.</b>		
<b>CS.04.01.01.b.</b> Analyze available practices to steward natural resources in AFNR systems (e.g., wildlife and land conservation, soil and water practices, ecosystem management, etc.).	Event Exam	
<b>CS.04.01.01.c.</b> Devise strategies for stewarding natural resources at home and within community.	Team Activity – Process Team Activity – Content Team Activity – Presentation	
<b>CS.04.01.02.b.</b> Analyze and assess sustainability practices that can be applied in AFNR systems (e.g., energy efficiency, recycle/reuse/repurpose, green resources, etc.).	Event Exam	
<b>CS.04.02. Performance Indicator: Assess the natural resource related trends, technologies and policies that impact AFNR systems.</b>		
<b>CS.04.02.01.b.</b> Analyze natural resources trends and technologies and document how they impact AFNR systems (e.g., climate change, green technologies, water resources, etc.).	Event Exam	
<b>AS.01.02. Performance Indicator: Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts.</b>		
<b>AS.01.02.01.c.</b> Evaluate the effectiveness of different production methods and defend the use of selected methods using data and evidence.	Team Activity – Process Team Activity – Content Team Activity – Presentation	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
<b>AS.01.02.03.b.</b> Analyze and evaluate the accuracy and effectiveness of records used in an animal system business.	Event Exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
<b>AS.01.03. Performance Indicator: Analyze and apply laws and sustainable practices to animal agriculture from a global perspective.</b>		
<b>AS.01.03.01.c.</b> Evaluate the impact of laws pertaining to animal agriculture (e.g., pros, cons, effect on individuals, effect on businesses, etc.) and assess the compliance of production practices with established regulations.	Team Activity – Process Team Activity – Content Team Activity – Presentation Event Exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 HS-ETS1-1

## Dairy Cattle Evaluation and Management

## Agriculture, Food and Natural Resources Content Standards continued

AS.01.03.02.c. Select, evaluate and defend the use of sustainable practices in animal agriculture.	Team Activity – Content Team Activity – Presentation	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 HS-ETS1-1
<b>AS.02.01. Performance Indicator: Demonstrate management techniques that ensure animal welfare.</b>		
AS.02.01.01.b. Design programs that assure the welfare of animals and prevent abuse or mistreatment.	Event Exam	HS-ETS1-2
AS.02.01.02.c. Devise, implement and evaluate safety procedures and plans for working with animals by species using information based on animal behavior and responses.	Team Activity – Content Team Activity – Presentation	HS-ETS1-2
AS.02.01.03.b. Analyze and document animal husbandry practices and their impact on animal welfare.	Team Activity – Content Event Exam	HS-ETS1-2
AS.03.01. Performance Indicator: Analyze the nutritional needs of animals.		
AS.03.01.01.c. Assess nutritional needs for an individual animal based on its growth stage and production system.	Team Activity – Content Team Activity – Presentation Event Exam	
AS.03.02 Performance Indicator: Analyze feed rations and assess if they meet the nutritional needs of animals.		
AS.03.02.01.c. Select appropriate feedstuffs for animals based on a variety of factors (e.g., economics, digestive system and nutritional needs, etc.).	Team Activity – Content Team Activity – Presentation Event Exam	
AS.03.02.02.c. Select and utilize animal feeds based on nutritional requirements, using rations for maximum nutrition and optimal economic production.	Team Activity – Content Team Activity – Presentation Event Exam	
AS.03.02.03.b. Compare and contrast methods that utilize feed additives and growth promotants with production practices that do not, (e.g., organic versus conventional production methods).	Event Exam	
AS.03.02.03.c. Make and defend decisions regarding whether to use feed additives and growth promotants after researching and considering scientific evidence, production system needs and goals, and input from industry professionals.	Team Activity – Content Team Activity – Presentation	

Agriculture, Food and Natural Resources Content Standards continued

<b>AS.03.03 Performance Indicator: Utilize industry tools to make animal nutrition decisions.</b>		
AS.03.03.01.b. Utilize tools and equipment to perform animal nutrition tasks.	Event Exam	
AS.03.03.01.c. Select, evaluate and defend the use of specific tools or equipment used to perform animal nutrition tasks.	Team Activity – Content Team Activity – Presentation	
AS.03.03.02.b. Analyze and apply information from a feed label and feeding directions to feed animals.	Event Exam	
AS.03.03.03.b. Analyze technologies used to provide animal nutrition and summarize their potential benefits and consequences.	Event Exam	
AS.03.03.03.c. Research and recommend technology improvements to provide proper nutrition to animals.	Team Activity – Content Team Activity – Presentation	
<b>AS.04.01. Performance Indicator: Evaluate animals for breeding readiness and soundness.</b>		
AS.04.01.02.c. Evaluate and select animals for reproductive readiness.	Selection Classes	
AS.04.02.03.c. Treat or cull animals with reproductive problems.	Event Exam	
<b>AS.04.02. Performance Indicator: Apply scientific principles to select and care for breeding animals.</b>		
AS.04.02.01.c. Select and evaluate a breeding system based on the principles of genetics.	Team Activity – Content Team Activity – Presentation Event Exam	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
AS.04.02.02.c. Select and evaluate breeding animals and determine the probability of a given trait in their offspring.	Team Activity – Content Team Activity – Presentation Team Activity – Process Event Exam Selection Classes	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
AS.04.02.04.b. Analyze the care needs for breeding stock in each stage of growth.	Event Exam	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.04.03 Performance Indicator: Apply scientific principles to breed animals.</b>		
AS.04.03.01.c. Select animal breeding methods based on reproductive and economic efficiency.	Team Activity – Content Team Activity – Presentation	
AS.04.03.02.c. Evaluate the implementation and effectiveness of artificial insemination techniques.	Team Activity – Content Team Activity – Presentation	
AS.04.03.03.b. Analyze the processes of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer.	Event Exam	

*Dairy Cattle Evaluation and Management*

*Agriculture, Food and Natural Resources Content Standards continued*

AS.04.03.03.c. Create and evaluate plans and procedures for estrous synchronization, superovulation, flushing, embryo transfer and other reproductive management practices.	Team Activity – Content Team Activity – Presentation Event Exam	
AS.04.03.04.c. Select and assess animal performance based on quantitative breeding values for specific characteristics.	Team Activity – Content Team Activity – Presentation Event Exam Selection Classes	
<b>AS.05.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.</b>		
AS.05.01.01.b. Critique designs for an animal facility and prescribe alternative layouts and adjustments for the safe, sustainable and efficient use of the facility.	Team Activity – Content Team Activity – Presentation Event Exam	AFNR Career Cluster – Animal Systems Pathway, Statement 2 STEM Career Cluster, Statement 4 STEM Career Cluster, Statement 5
AS.05.01.02.b. Analyze the use of modern equipment, technology and handling facility procedures and determine if they enhance the safe, economic and sustainable production of animals.	Team Activity – Content Team Activity – Presentation Event Exam	AFNR Career Cluster – Animal Systems Pathway, Statement 2 STEM Career Cluster, Statement 4 STEM Career Cluster, Statement 5
<b>AS.06.03. Performance Indicator: Select animals for specific purposes and maximum performance based on anatomy and physiology.</b>		
<b>Sample Measurement:</b> The following sample measurement strands are provided to guide the development of measurable activities (at different levels of proficiency) to assess students' attainment of knowledge and skills related to the above performance indicator. The topics represented by each strand are not all-encompassing.		
AS.06.03.01.c. Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth and reproduction	Selection Classes	STEM Career Cluster, Statement 5
AS.06.03.02.c. Choose, implement and evaluate sustainable and efficient procedures (e.g., selection, housing, nutrition and management) to produce consistently high-quality animals that are well suited for their intended purposes.	Team Activity – Content Team Activity – Presentation Selection Classes	STEM Career Cluster, Statement 5
AS.06.03.03.c. Evaluate and select animals to produce superior animal products based on industry standards.	Selection Classes	STEM Career Cluster, Statement 5
<b>AS.07.01. Performance Indicator: Design programs to prevent animal diseases, parasites and other disorders and ensure animal welfare.</b>		
AS.07.01.02.c. Determine when an animal health concern needs to be referred to an animal health professional.	Event Exam	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
AS.07.01.03.b. Identify and describe common illnesses and disorders of animals based on symptoms and problems caused by wounds, diseases, parasites and physiological disorders.	Event Exam	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3

## Dairy Cattle Evaluation and Management

## Agriculture, Food and Natural Resources Content Standards continued

AS.07.01.04.c. Design and implement a health maintenance and a disease and disorder prevention plan for animals in their natural and/or confined environments.	Team Activity – Content Team Activity – Presentation	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
AS.07.01.05.c. Identify and describe surgical and nonsurgical veterinary treatments and procedures to meet specific animal health care objectives.	Team Activity – Content Team Activity – Presentation	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.02. Performance Indicator: Analyze biosecurity measures utilized to protect the welfare of animals.</b>		
AS.07.02.01.c. Design and evaluate a biosecurity plan for an animal production operation.	Team Activity – Content Team Activity – Presentation Event Exam	
<b>AS.08.01. Performance Indicator: Design and implement methods to reduce the effects of animal production on the environment.</b>		
AS.08.01.01.b. Assess methods of reducing the effects of animal agriculture on the environment.	Event Exam	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 1 HS-LS2-6 HS-LS2-7
AS.08.01.01.c. Devise a plan that includes measures to reduce the impact of animal agriculture on the environment.	Team Activity – Content Team Activity – Presentation	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 1 HS-LS2-6 HS-LS2-7
<b>AS.08.02. Performance Indicator: Evaluate the effects of environmental conditions on animals and create plans to ensure favorable environments for animals.</b>		
AS.08.02.02.c. Devise and improve plans to establish favorable environmental conditions for animal growth and performance based on a variety of factors (e.g., economic feasibility, environmental sustainability, impact on animals, etc.).	Team Activity – Content Team Activity – Presentation Event Exam	HS.LS4-6
<b>CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.</b>		
CRP.01.01.01.c. Evaluate past workplace and community situations and determine how personal responsibility positively or negatively impacted outcomes.	Team Activity – Content Team Activity – Presentation	
<b>CRP.01.02 Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.</b>		
CRP.01.02.02.c. Make and defend professional decisions after evaluating their near- and long-term impacts on employers and community.	Oral Reasons	
<b>CRP.01.03. Performance Indicator: Identify and act upon opportunities for professional and civic service at work and in the community.</b>		
CRP.01.03.01.c. Devise strategies for involvement in professional service opportunities at work and in the community (e.g., coaching/mentorship, presentations at meetings, etc.).	Team Activity – Content Team Activity – Presentation	



## Agriculture, Food and Natural Resources Content Standards continued

<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
CRP.02.01.01.b. Assess workplace problems and identify the most appropriate academic knowledge and skills to apply.	Team Activity – Process Team Activity – Content Team Activity – Presentation Event Exam	
CRP.02.01.01.c. Apply academic knowledge and skills to solve problems in the workplace and reflect upon the results achieved.	Event Exam	
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
CRP.02.02.01.b. Assess workplace problems and distinguish the most appropriate technical concepts to apply.	Team Activity – Process Team Activity – Content Team Activity – Presentation Event Exam	
CRP.02.02.02.b. Assess community problems and identify the most appropriate technical concepts to apply.	Team Activity – Process Team Activity – Content Event Exam	
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Team Activity – Process Team Activity – Content Team Activity – Presentation	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Team Activity – Process	
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	Team Activity – Process	
<b>CRP.05.02. Performance Indicator: Make, defend and evaluate decisions at work and in the community using information about the potential environmental, social and economic impacts.</b>		
CRP.05.02.01.c. Evaluate and defend decisions applied in the workplace and community situations.	Team Activity – Content Team Activity – Presentation Oral Reasons	
CRP.05.02.02.c. Evaluate workplace and community situations and propose decisions to be made based upon the positive impact made on environment, social and economic areas.	Team Activity – Process Team Activity – Content Team Activity – Presentation	
<b>CRP.06.02. Performance Indicator: Assess a variety of workplace and community situations to identify ways to add value and improve the efficiency of processes and procedures.</b>		
CRP.06.02.01.c. Evaluate past workplace and community situations and determine how processes and procedures impacted outcomes.	Team Activity – Process Team Activity – Content Team Activity – Presentation	



Agriculture, Food and Natural Resources Content Standards continued

<b>CRP.06.03. Performance Indicator: Create and execute a plan of action to act upon new ideas and introduce innovations to workplace and community organizations.</b>		
CRP.06.03.02.b. Elicit and assimilate input and feedback from individuals and organizations about new ideas or innovations for the workplace or community.	Team Activity – Process	
<b>CRP.07.02. Performance Indicator: Evaluate the validity of sources and data used when considering the adoption of new technologies, practices and ideas in the workplace and community.</b>		
CRP.07.02.01.b. Assess data sources for reliability and validity.	Team Activity – Process Team Activity – Presentation	
CRP.07.02.02.b. Assimilate data to assist in making a decision about the adoption of a new technology, practice or idea by workplaces and community organizations.	Team Activity – Process Team Activity – Presentation	CRP.07.02.02.c. Create and defend proposals for new technologies, practices and ideas using valid and reliable data sources.
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Team Activity – Process	
CRP.08.01.02.b. Assess solutions to workplace and community problems for evidence of reason, logic and consideration of multiple perspectives.	Team Activity – Process	
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.01.b. Assimilate and prioritize potential solutions to solve problems in the workplace and community.	Team Activity – Process	
CRP.08.02.02.c. Evaluate and select solutions with greatest potential for success to solve workplace and community problems.	Team Activity – Process	
<b>CRP.08.03. Performance Indicator: Establish plans to solve workplace and community problems and execute them with resiliency.</b>		
CRP.08.03.02.b. Create plans to solve workplace and community problems.	Team Activity – Process Team Activity – Content Team Activity – Presentation	
<b>CRP.09.03. Performance Indicator: Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community (e.g., positively influencing others, effectively communicating, etc.).</b>		
CRP.09.03.02.c. Model respectful and purposeful behaviors that contribute to positive morale and culture in the workplace and community (e.g., effectively communicating, recognizing accomplishments of others, etc.).	Team Activity – Process	

## Dairy Cattle Evaluation and Management

## Agriculture, Food and Natural Resources Content Standards continued

<b>CRP.11.01. Performance Indicator: Research, select and use new technologies, tools and applications to maximize productivity in the workplace and community.</b>		
CRP.11.01.02.c. Evaluate effectiveness and make recommendations for using new technologies, tools and applications in the workplace and community.	Team Activity – Content Team Activity – Presentation	
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
CRP.12.01.03.b. Assess the need and benefit for cultural and global competency in team settings at work and in the community.	Team Activity – Process	
<b>CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).</b>		
CRP.12.02.02.b. Select strategies to engage team members and apply in a variety of situations.	Team Activity – Presentation Team Activity – Process	
<b>BS.03.04. Performance Indicator: Apply biotechnology principles, techniques and processes to enhance plant and animal care and production (e.g., selective breeding, pharmaceuticals, biodiversity, etc.).</b>		
BS.03.04.02.b. Assess the benefits, risks and opportunities associated with using biotechnology to promote animal health.	Team Activity – Content Team Activity – Presentation Event Exam	HS-ETS1-2 HS-LS4-6



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

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The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# DAIRY HANDLERS ACTIVITY

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS



## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## ***Purpose***

The purpose of the National FFA Dairy Cattle Handlers Activity is to recognize the contributions of the handlers in presenting each animal to its best advantage in the evaluation of the dairy cows and heifers during the National FFA Dairy Cattle Management and Evaluation Career Development Event.



## Event Rules

- It is highly recommended that participants wear dairy whites.
- Each state shall be eligible to nominate one member to serve as a participant in the dairy cattle handlers' activity. A state may determine its dairy handler by selecting the top handler in a state FFA dairy showing event or any other method a state prefers to select a qualified dairy handler.
- All handlers will be recognized with gold or silver emblem medals. All handlers will be recognized at the National FFA Dairy Cattle Management and Evaluation Career Development Event awards program.
- Handler participants must identify the class of dairy animal that they wish to handle on their certification form; however, they may not be assigned their first choice.
- Handlers should have had prior experience in showing dairy cattle.
- Handlers will not participate in either the preparation or fitting of the animals assigned.

*Dairy Cattle Handlers*

- Handlers will report to the event superintendent for instructions at the time and place shown in the current year's team orientation packet. It is important that all handlers attend the team orientation meeting the day before the National FFA Dairy Cattle Management and Evaluation Career Development Event, as well as report on time on the event day. Those who do not report the day before the event or on time on the event day may be substituted by approved alternates.
- If a dairy handler cannot control his/her animal, this animal may have to be displayed by an alternate holder.



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS



## Scoring (100 points)

Evaluation and scoring of each participant will be performed by a person(s) designated by the event superintendent.

CRITERIA	Points
Appearance of the handler:	10
Control of animal(s) by the handler	
Setting up the assigned animal to its best advantage	15
Maintaining the animal(s) in its most advantageous pose	15
Effectively restraining, as well as avoiding exciting the as-signed animal(s)	15
Moving the animal(s) as requested by the ringmaster	15
Poise and calmness of the handler	20
Display a cooperative, courteous, helpful and positive attitude	10
<b>TOTAL</b>	<b>100</b>





NATIONAL FFA  
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DEVELOPMENT EVENTS

# Activity Scorecard

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_

CRITERIA	Points Possible	Points Earned
Appearance of the handler:	10	
Control of animal(s) by the handler		
Setting up the assigned animal to its best advantage	15	
Maintaining the animal(s) in its most advantageous pose	15	
Effectively restraining, as well as avoiding exciting the as-signed animal(s)	15	
Moving the animal(s) as requested by the ringmaster	15	
Poise and calmness of the handler	20	
Display a cooperative, courteous, helpful and positive attitude	10	
<b>TOTAL POINTS</b>	<b>100</b>	

JUDGE'S NAME \_\_\_\_\_ JUDGE'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# EMPLOYMENT SKILLS

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://FFA.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The National FFA Employment Skills Leadership Development Event is designed for FFA members to develop, practice and demonstrate skills needed for seeking employment in the industry of agriculture. Each part of the event simulates, as closely as possible, real-world activities that are used by real-world employers.*

## Event Rules

- The National FFA Employment Skills Leadership Development Event will be limited to one participant per state.
- Participants are strongly encouraged to wear FFA Official Dress for this event.
- All written materials, including cover letter, resume, etc., will be the result of each participant's own efforts.
- Any participant in possession of an unapproved electronic device in the event area is subject to disqualification.
- Job description, cover letter and resume must be uploaded by the designated deadline found at [FFA.org](https://www.ffa.org).

## Evaluation

*In the preliminary round participants will be placed in interview flights based on their cumulative score from the job application, cover letter, resume and initial phone call.*

The top qualifiers (based on a cumulative score from submitted items, interview and follow-up correspondence) will advance to compete in the semi-final round. The semi-final round will consist of 12 competitors.

Scores from the preliminary round will not carry over to the semi-final round. Students will complete a series of one-on-one interviews in the semi-final round.

The top six qualifiers from the semi-final round will advance to the final round, which will include the networking activity and the telephone job offer. Scores from the semifinal interview will be carried over to the final round.

## Event Format

*The event is developed to help participants in their current job search (for SAE projects, internships, part-time and full-time employment). Therefore, materials submitted by the participant must reflect their current skills and abilities and must be targeted to a job for which they would like to apply. In other words, participants cannot develop a fictitious resume; they must utilize their actual experience. They are expected to target the resume toward a real job for which they presently qualify.*

## EQUIPMENT

Participants are required to bring the following items to the event:

- Laptop or tablet capable of a Wi-Fi connection
- Writing utensils

Participants may bring:

- Blank paper
- Resume
- Cover letter
- List of references
- Business cards
- Padfolio

The following items are not permitted:

- Letters of reference
- Samples of work
- Pictures
- Personal pages

## ITEMS TO BE ELECTRONICALLY SUBMITTED BEFORE CONVENTION

By Sept. 1 at 5 p.m. EST, participants will electronically submit the following in PDF format:

- Job Description
- Cover Letter
- Resume

States qualifying after the Sept. 1 deadline will have ten days from state qualifying event date to submit their documents.

A penalty of 10 percent will be assessed for documents received after the Sept. 1 deadline. If document is not received by seven days after deadline, the participant may be subject to disqualification.

Instructions for submitting electronic documents will be posted at <https://www.FFA.org/participate/cdes/job-interview>

### JOB DESCRIPTION

- The job description is required in order for the judges to score sections of the event. The job description will not be scored but is a required submission.
- Participants who fail to submit this component will be subject to disqualification.
- The job description should include a description of the position the student is applying for, desired qualifications and work experience.
- Sources for job descriptions can be found by looking in the newspaper or online through job search websites and company websites.

### COVER LETTER (100 POINTS)

The cover letter is to be typed, one page, single spaced, left justified using Times, Times New Roman or Arial 10-12 point minimum font.



The letter is to be dated for the first day of the national event and addressed to:

Mark Kline  
6060 FFA Dr.  
P.O. Box 68960  
Indianapolis, IN 46268-0960

### RESUME (200 POINTS)

- The resume should not exceed two pages total.
- Resume must be non-fictitious and based upon actual work history.
- The resume should be generated from the resume generated from the resume generators at [FFA.org](http://FFA.org).

## ITEMS TO BE COMPLETED BEFORE CONVENTION

### ELECTRONIC EMPLOYMENT APPLICATION (100 POINTS)

- Participants will complete a standard electronic job application per instructions at the CDE/LDE website.
- The application will be open online between Sept. 1-15.

### INITIAL PHONE INTERVIEW (50 POINTS)

The initial telephone contact will last three to five minutes.

Students will sign up for a phone call time when they complete their job application online.

- The participant will be contacted by the potential employer to arrange an interview time. The potential employer may ask questions regarding aspects of the participant's resume.

## ITEMS TO BE COMPLETED AT THE NATIONAL EVENT

### Preliminary Round

#### PERSONAL INTERVIEW (500 POINTS)

- The preliminary round interview will be with a panel of judges. Each interview will last twenty minutes.

#### FOLLOW-UP CORRESPONDENCE (50 POINTS)

- Participants will submit follow-up correspondence after the interview. Participants will be provided with necessary information to compose a follow up correspondence.
- Correspondence may include, but is not limited to, one of the following: email, hand-written note or typed letter. Participants will have 30 minutes to complete the follow-up correspondence.

### Semi-final Round

#### PERSONAL INTERVIEW (500 POINTS)

- The semi-final round will consist of a series of three one-on-one interviews with different judges than the preliminary round judges. Each interview will last a maximum of fifteen minutes. Scores will carry over the final round.

## FINAL ROUND

### NETWORKING ACTIVITY (100 POINTS)

- Final participants will be given a networking scenario in which they will be expected to formulate a two to three minute extemporaneous response to one or more judges. Scenarios may include, but are not limited to meal function, a mixer, career show, an elevator pitch, etc.

### TELEPHONE JOB OFFER (100 POINTS)

- Participants will participate in a follow up phone call where they will receive a job offer. They will be scored on their ability to collect information and negotiate. They will also be scored on their response to the offer and overall impression.

## TIEBREAKERS

*In the event of a tie in the preliminary round, the participant with the highest personal interview score shall receive the higher rank.*

If a tie still exists, the highest resume score will receive the higher rank. In the event of a tie in the semi-final or final round the participant with the highest personal interview score shall receive the higher ranking. If a tie still exists, the highest resume score will receive the highest ranking.



## Awards

*Awards will be presented to individuals based upon their rankings at the awards ceremony.*

Participants in the final round will be recognized on the main stage at the Friday evening session of the National FFA Convention & Expo.

## Scoring

Preliminary Round	Individual Points
Electronic Employment Application	100
Resume	200
Cover Letter	100
Initial Phone Contact	50
Personal interview	500
Follow up correspondence	50
<b>TOTAL POINTS</b>	<b>1,000</b>
Semi-Final Round	
Personal Interviews	500
<b>TOTAL POINTS</b>	<b>500</b>
Final Round	
Semi Final Round Interviews	500
Networking Activity	100
Telephone Job Offer	100
<b>TOTAL POINTS</b>	<b>700</b>

## References

*This list of references is not intended to be all inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. Make sure to use discretion when selecting website references by only using reputable, proven sites. The following list contains references that may prove helpful during event preparation. The most current edition of resources will be used.

- Past CDE materials and other resources [FFA.org](http://FFA.org)
- Open Colleges – How to Write a Resume. <http://www.opencolleges.edu.au/careers/resumes/how-to-write-a-resume>
- 8 Subtle Ways to Ace the Interview. <http://www.businessinsider.com/subtle-ways-to-ace-the-interview-2015-2>
- Killer Questions Candidates Ought to Ask the Interviewer. <http://theundercoverrecruiter.com/9-killer-questions-candidates-ought-ask-interviewer/>
- 9 Keys to Telephone Job Interview Success. [http://www.job-hunt.org/job\\_interviews/telephone-interviews.shtml](http://www.job-hunt.org/job_interviews/telephone-interviews.shtml)
- Sending Your Thank You After the Job Interview. [http://www.job-hunt.org/job\\_interviews/job-interview-thank-you.shtml](http://www.job-hunt.org/job_interviews/job-interview-thank-you.shtml)
- Accepting a Job Offer? Asking These 10 Questions First. <http://www.wetfeet.com/articles/accepting-a-job-offer-ask-these-10-questions-first>
- References from the career center at the land-grant university in your respective state
- FFA resume generator [FFA.org](http://FFA.org)



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# Cover Letter Rubric

100 points

NAME \_\_\_\_\_

MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_

STATE \_\_\_\_\_

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Points Earned	Weight	Total Points
<b>Format and General Appearance</b>	Does not exceed one page without overcrowding; margins are acceptable; font size and style is readable (10–12 pt); uses appropriate business format, date and address at top; addressed to appropriate person; appropriate signature block.	Does not exceed one page without overcrowding; margins are acceptable; font size and style is readable (10–12 pt); uses appropriate business format, date and address at top; not addressed to appropriate person; inappropriate signature block.	Exceeds one page; margins are inappropriate; font style is unreadable; font size is too small or too large; no signature; no date or address; no inside address; not in appropriate business format.		X 4	
<b>Introductory Paragraph</b>	Identifies position they are applying for; states how they heard about the position; states why they are interested in the position; uses wording to attract reader's attention.	Identifies position that are applying for; does not state how they found the job; vaguely describes why they are interested in the job; introduction is bland and not attention catching.	Does not clearly identify position they are seeking; no description of how you heard about the position; does not grab the reader's attention.		X4	
<b>Skills and Experiences</b>	Identifies two to three strongest qualifications for the job; indicates how education has prepared them for this job; states why you are interested in the position; skills and experiences are consistent with resume; makes reference to resume.	Identifies one to two qualifications for the job; indicates how education has prepared them for this job; provides a vague explanation of why interested in the job; skills and experiences are somewhat consistent with resume; makes reference to resume.	Does not identify relevant qualifications for the job; does not indicate how education has prepared them for this job; does not state why they are interested in the job; skills and experiences are not consistent with resume; does not mention resume.		X4	

Cover Letter Rubriccontinued

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Points Earned	Weight	Total Points
Closing Paragraph	Thanks reader for taking time to read; provides appropriate contact information, makes appropriate provisions for follow up.	Thanks reader for taking time to read; provides contact information, but makes reader to assume a follow up.	Does not thank reader; does not mention a plan for follow up; does not provide any contact information.		X3	
Spelling/ Grammar/ Punctuation	Spelling, grammar, and punctuation are extremely high quality with two or less errors in the document.	Spelling, grammar, and punctuation are adequate with three to five errors in the document.	Spelling, grammar, and punctuation are less than adequate with six or more errors in the document.		X5	
TOTAL POINTS						





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# Resume Rubric

200 points

NAME \_\_\_\_\_

MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_

STATE \_\_\_\_\_

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Points Earned	Weight	Total Points
<b>Contact Information</b>	Includes name, address, email, and phone number; name stands out on resume; provides professional e-mail.	Name does not stand out; email is too casual.	Missing name, address, email, or phone number; email used is inappropriate or unprofessional.		X 2	
<b>Employment Objective</b>	Focused objective that states how employee will help company achieve its goals.	Focused objective that states what you want from the company.	No objective identified.		X2	
<b>Education or Relevant Coursework</b>	Contains complete information (listed in reverse chronological order) with relevant courses listed, dates formatted correctly, GPA listed in correct format (if appropriate), includes appropriate honors and awards.	Contains information (listed in reverse chronological order) with relevant courses listed, dates formatted correctly, may show gaps in work history; inappropriate GPA listed, includes appropriate honors and awards.	Information not listed in reverse chronological order, important information missing, information not listed in correct format.		X7	

Resume Rubriccontinued

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Points Earned	Weight	Total Points
<b>Relevant Experience and Skills</b>	Entries are listed in reverse chronological order; company name, title, location, and dates are included; strong action verbs used with correct verb tense; personal pronouns and extraneous words are omitted; bullets are concise, direct and indicate one's impact/ accomplishments; results are quantified; bullets are listed in order of importance.	Entries are listed in reverse chronological order; entries have a pattern of one type of error; action verbs are weak; verb tenses are inconsistent; bullets are not concise or direct and do not indicate impact; bullets are written in complete sentences.	Entries are not in reserve chronological order; most entries do not include company name, dates, location, or position title; bullets are written in complete sentences; verb tenses are inconsistent; bullets are wordy, vague, or do not indicate one's impact; bullets are not listed in order or importance to the reader; results are not quantified when appropriate; irrelevant or outdated information is listed.		X9	
<b>Achievements and Honors</b>	Appropriate and relevant achievements and honors listed; achievements and honors related to career goal; provides specific details for related to achievements and honors; listed in reserve chronological order.	Appropriate and relevant achievements and honors listed; achievements and honors related to career goal; lacks specific details for related to achievements and honors; listed in reserve chronological order.	Achievements and honors not listed in reverse chronological order; inappropriate or irrelevant achievements listed; no achievement or honors are listed.		X5	
<b>References</b>	Listed appropriate references and provide complete contact information for references.	References are listed but not all may be appropriate or not all contact information for references is included.	Inappropriate references are listed; no references listed; no contact information listed.		X2	
<b>Spelling/ Grammar/ Punctuation</b>	Spelling, grammar, and punctuation are extremely high quality with two or less errors in the document.	Spelling, grammar, and punctuation are adequate with three to five errors in the document.	Spelling, grammar, and punctuation are less than adequate with six or more errors in the document.		X5	
<b>Format and General Appearance</b>	Does not exceed two pages without overcrowding; margins are acceptable; font size and style is readable (10–12 point); headings reflect content and content substantiates headings; resume is targeted to job.	Does not exceed two pages; appears overcrowded; margins are acceptable; font size and style is readable (10–12 point); headings don't necessarily reflect content and content substantiates headings; resume is targeted to job.	Exceeds two pages; margins are inappropriate; font style is unreadable; font size is too small or too large.		X8	
<b>TOTAL POINTS</b>						



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# Electronic Employment Application Rubric

100 points

NAME \_\_\_\_\_

MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_

STATE \_\_\_\_\_

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Points Earned	Weight	Total Points
Consistent with Resume	Name, education, experience and other personal information matches information provided on resume.	Name, education, experience and other personal information generally matches information provided on resume.	Name, education, experience and other personal information do not match information provided on resume.		X4	
Grammar/Punctuation/Spelling	Spelling, grammar and punctuation are extremely high quality with two or less errors in the document.	Spelling, grammar and punctuation are adequate with three to five errors in the document.	Spelling, grammar and punctuation are less than adequate with six or more errors in the document.		X6	
Form Completed	Entire application was completed with “N/A” indicated where appropriate.	Majority of the application was completed with few blank fields.	Several blank spaces and missing information.		X4	
Overall Impression	Application was consistent and appropriately highlighted candidates qualifications for the position.	Application was consistent and generally highlighted candidates qualifications for the position.	The application was not consistent and did not highlight candidates qualifications for the position.		X6	
TOTAL POINTS						



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# Initial Phone Interview Rubric

50 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Points Earned	Weight	Total Points
<b>First Impression</b>	Introduced self when answering the phone. Spoke articulately with no hesitation. Appropriate tone, speaks at right pace to be clear, pronunciation of words very clear and intent is apparent. Confident tone, no nervousness.	Incomplete introduction. Speaks articulately, but with some hesitation. Appropriate tone is usually consistent, speaks at right pace, but shows some nervousness. Pronunciation of words is usually clear, sometimes vague.	Did not introduce self upon answering the phone, Appropriate tone, but frequently hesitates, Has difficulty using appropriate tone, pace is too fast, nervous. Pronunciation of words is difficult to understand or unclear.		X 3	
<b>Response to Questions</b>	Confirmed date, time and location along with contact person/information. Provided complete, accurate and concise answers. Sold themselves without being pushy. Used correct terminology. Communicated knowledge of the related industry. Used time efficiently.	Did not confirm all needed information for interview. Provided some answers, some incomplete, rambled occasionally. Seemed off-putting at times in an attempt to sell themselves. Some question as to correct terminology. Seemed to have holes in knowledge of related industry.	Caller had to offer interview and provide information. Unable to answer questioned asked. Off-putting presentation (tried to sell self too hard). Used incorrect terminology for event. Did not have a firm knowledge of the related industry.		X5	
<b>Overall Impression</b>	Exhibited poise (cool under pressure). Was pleasant, professional and courteous. Ended call appropriately and smoothly (thanked caller, said good-bye). Did not have distracting mannerisms that affected their effectiveness.	Seemed nervous under pressure which impacted poise, pleasantness. Used incorrect grammar which distracted from interview. Mannerisms distracted from interview (use of “ums” and “you know”). Ended call without thanking caller or somewhat appropriately (not sure what to do).	Very nervous, not poised (cracks under pressure). Ended call awkwardly and abruptly, did not thank caller or say good-bye, just hung up. Distracted from interview by mannerisms (excessive “ums” or “you know”).		X2	
<b>TOTAL POINTS</b>						



NATIONAL FFA  
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DEVELOPMENT EVENTS

# Personal Interview Rubric

500 points

NAME _____	MEMBER NUMBER _____
CHAPTER _____	STATE _____

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Points Earned	Weight	Total Points
Appearance	<b>Professional dress/groomed:</b> Follows standard dress code, polished shoes, clothes pressed, conservative accessories.	<b>Dress appropriate:</b> Just not as professional and “put together”, shoes clean, but not polished.	<b>Very disheveled:</b> Dirty shoes, not wearing black shoes.		x 10	
First Impression	<b>Greeting:</b> Appropriate salutation and firm handshake. <b>Introduction:</b> States name and state association. <b>Body language:</b> Smiling and pleasant, does not sit until invited, confident in manner.	<b>Greeting:</b> Confident but uneasy, soft handshake. <b>Introduction:</b> States name only when asked. <b>Body language:</b> Rarely smiles, cologne or perfume is distracting.	<b>Greeting:</b> Does not use salutation, very informal. <b>Introduction:</b> Fails to introduce self, fails to shake hands with interviewer. <b>Body language:</b> Obnoxious cologne or perfume, chewing gum.		x 15	
Response to Questions	<b>Used appropriate language for career:</b> Cited relevant examples, evidence knowledge of career field (talk the talk), knows education and experience required for position, discussed skills gained through school or past jobs and how they are relevant to position applied, abilities described match the resume, responses concise and logically communicated, responses do not sound “canned” provided in-depth description of skills, not just a list, provides in-depth response to questions, not yes/no responses do responses provided establish a “theme” that overall describes their abilities.	<b>Seemed to know terms associated with career:</b> Some holes, cited several relevant examples, but list incomplete, knew about career, but conveyed incomplete picture unsure of education or experience required for position, incomplete list of skills gained through school and past jobs and relevance to position applied, abilities mostly match resume, Responses seemed rehearsed and somewhat disorganized, provided some depth to description of job skills, some listing, provided some depth to responses to question, some yes/no, was able to tie some abilities together to form a picture of qualifications.	<b>Knew some of the language of position, but used incorrectly or did not show understanding of terms:</b> Unable to cite or few relevant examples, position education and requirements not known or do not match applicants skill set, unable to relate skills learned in school or past jobs and relevance to position applied, abilities hardly match resume, responses seemed “canned” with little logical progression, mainly provided list of skills with little explanation, provided yes/no responses, unable to see an overall theme of persons abilities.		x 30	

## Employment Skills

## Personal Interview Rubric continued

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Points Earned	Weight	Total Points
Communication Skills	<p><b>Persuasive:</b> Led the interview in a direction that enabled them to expand so their skills were expressed, took initiative to add information beyond question asked.</p> <p><b>Confident:</b> Exhibited confidence in self with body language and verbally.</p> <p><b>Appropriate volume:</b> Spoke with proper volume for room to be heard clearly; not too loud, not too soft.</p> <p><b>Enunciation/grammar:</b> Avoided words like “git” versus “get” and “agin” versus “again”, used proper words when speaking (didn’t use 10 dollar words when a five dollar word will do).</p> <p><b>Concise:</b> Avoided run on sentences and answered with logical and organized thoughts.</p> <p><b>Sincere:</b> Expressed true interest in the position they are seeking.</p> <p><b>Poise:</b> avoids distracting mannerisms such as drumming fingers or overuse of “uhm” and “you know”.</p> <p><b>Discretion/Tact:</b> Shared appropriate information and did not create an awkward situation through responses.</p>	<p><b>Persuasive:</b> Was able to expand somewhat on skills that are a fit for the position, volunteered some additional information to questions asked.</p> <p><b>Confident:</b> Exhibited some nervousness, but covered well, voice and body language showed some uncertainty.</p> <p><b>Appropriate volume:</b> Did not modulate volume to express answers, could hear sometimes, but quiet when unsure of response and hard to hear,</p> <p><b>Enunciation/grammar:</b> Some language not appropriate for position applied, used some slang and exhibited some “dialect”.</p> <p><b>Concise:</b> Some questions answered in a rambling fashion, but point was able to be made. Thoughts were logical, but somewhat disorganized.</p> <p><b>Poise:</b> Seemed comfortable with some nervousness, caught self before exhibiting distracting mannerisms, rarely used “uhm” or “you know”.</p> <p><b>Discretion/Tact:</b> Most professional in tone and shared information that created little if any awkwardness.</p>	<p><b>Persuasive:</b> Answered yes or no to most questions, did not expand on skill set.</p> <p><b>Confident:</b> Did not appear comfortable, nervous, slouched in chair.</p> <p><b>Appropriate volume:</b> Hard to hear answers or volume too loud for room.</p> <p><b>Enunciation/grammar:</b> Used overly complex or simplistic language, sprinkled in words like “git” versus “get” and “agin” versus “again”.</p> <p><b>Concise:</b> Rambled and used run on sentences. Answers were poorly organized and thought not clearly expressed.</p> <p><b>Sincere:</b> Seemed uninterested in the position and distracted, Poise: demonstrated distracted mannerisms such as tapping foot, drumming fingers, cracking knuckles, etc., Excessive use of “uhm” and “you know”.</p> <p><b>Discretion/Tact:</b> Shared information that may be seen as personal about someone else creating awkwardness, appeared unprofessional.</p>		x 30	
Conclusion	<p><b>Posed appropriate questions of interviewer:</b> e.g., when notification of selection will occur and how. Clarified next steps, inquired as to next step in interview process e.g., if there will be additional interviews, etc.</p> <p><b>Appropriate thanks and exit:</b> Asked for business card, thanked interviewer, stands and shakes hands prior to exiting room.</p>	<p><b>Questions posed were somewhat appropriate:</b> Some had no relevance to interview, Incomplete inquiry of the next steps in the interview process, Asked for business card, thanks interviewer and shook hand but seemed uncertain how to end the interview and exit.</p>	<p><b>Asks no questions:</b> Questions asked (if asked, have no relevance to next steps in the interview process, Ends interview abruptly or awkwardly, exits without thanks or shaking hands.</p>		x 15	
TOTAL POINTS						



NATIONAL FFA  
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DEVELOPMENT EVENTS

# Follow Up Correspondence Rubric

50 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Points Earned	Weight	Total Score
Format	The document was directed to the appropriate person with an appropriate address and salutation. The level of formality was appropriate for the type of correspondence.	The document was directed to the appropriate person with an appropriate address and salutation with minor errors. The level of formality was generally appropriate for the type of correspondence.	The document was not directed to the appropriate person. No address or salutation was included. The level of formality was not appropriate.		X 2	
Content	Effectively expressed appreciation and appropriately reiterated their qualities. Expressed interest and appropriately stated provisions for follow-up.	Attempted to express appreciation and generally reiterated their qualities. Generally expressed interest and attempted to state provisions for follow-up.	Did not attempt to express appreciation. Did not attempt to reiterate their qualities. Did not attempt to express interest or state provisions for follow-up.		X3	
Grammar/ Punctuation/ Spelling	Spelling, grammar and punctuation are extremely high quality with two or less errors in the document.	Spelling, grammar and punctuation are adequate with three to five errors in the document.	Spelling, grammar and punctuation are less than adequate with six or more errors in the document.		X2	
Overall Impression	Writing (when appropriate) was legible and length was appropriate.	Writing (when appropriate) was difficult to read and length was generally appropriate.	Writing (when appropriate) was illegible. Length was inappropriate.		X3	

**TOTAL POINTS**



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Networking Activity Rubric

100 points

NAME \_\_\_\_\_

MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_

STATE \_\_\_\_\_

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Points Earned	Weight	Total Points
First Impression	Exhibited a clear, polite introduction, used correct posture and body language, initiated conversation clearly and professionally.	Had an introduction, somewhat exhibited correct posture and body language, attempted to maintain clear conversation.	Did not use proper posture and body language, struggled to maintain conversation, was not clear.		X 3	
Communication Skills	Clearly, confident, sincere and concise. Avoided rambling, is very engaging in the conversation and stays very detail oriented.	Rambled at times, attempted to engage in conversation, fairly detail oriented, fairly confident, sincere, and concise.	Unconfident, insincere, rambled, struggled to engage in conversation and vague.		X 7	
Making the Connection	Clearly connected interest to company/person, found commonalities with company/person, posed appropriate questions, made positive comments about company/person	Attempted to connect interest to company/person, find commonalities with company/person, posed questions, made positive comments about company/person	Struggled to connect interest to company/person, find commonalities with company/person, posed questions, made positive comments about company/person		X 7	
Conclusion	Proficiently used appropriate thanks, exchanged contact information, inquired about follow-up options (website, e-mail, company events), left positive impression upon exit.	Attempted to use appropriate thanks, exchange contact information, inquired about follow-up options (website, e-mail, company events), left neutral impression upon exit.	Struggled to use appropriate thanks, exchange contact information, inquired about follow-up options (website, e-mail, company events), left negative impression upon exit.		X 3	
TOTAL POINTS						





NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Telephone Job Offer Rubric

100 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Points Earned	Weight	Total Points
Response to Offer	Expressed appreciation, upbeat, sincere, shows excitement for the offer.	Seemed caught off guard, attempted to be sincere and show excitement for offer.	Unengaged, insincere, shows little excitement for offer.		X 4	
Gathered appropriate information	Provisions for follow up expressed, Posed appropriate questions (start time, date, who to report to), got contact information.	Somewhat expressed provisions for follow up, attempted to pose appropriate questions (start time, date, who to report to), asked for contact information.	Poorly expressed provisions for follow up, did not pose appropriate questions (start time, date, who to report to), did not ask for contact information.		X 5	
Negotiating Points	Negotiating points appropriate. Exhibited appropriate poise and professionalism while negotiating points. Accepted results with an appropriate response and maturity.	Negotiating points were posed but were a little inappropriate. Exhibited some poise and professionalism while negotiating points. Accepted results with a response.	Negotiating points were inappropriate/ none were stated. Did not exhibit appropriate poise and professionalism. Was disgruntled with results.		X 8	
Overall Impression	Exhibited poise, was pleasant, professional, courteous, ended call appropriately.	Exhibited poise with some nervousness and attempted to be pleasant and courteous. Ended call with a thank you or just said bye.	Seemed nervous, forced conversation. Just hung up.		X 3	
TOTAL POINTS						



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Agriculture, Food and Natural Resources Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CS.05.01. Performance Indicator: Evaluate the steps and requirements to pursue a career opportunity in each of the AFNR career pathways (e.g., goals, degrees, certifications, resumes, cover letter, portfolios, interviews, etc.).</b>		
<b>CS.05.01.01.c.</b> Evaluate progress toward AFNR career goals and identify opportunities for improvement and necessary adjustments to one's plan of action	All Components of the event	
<b>CS.05.01.02.c.</b> Implement one's personal plan of action for obtaining the required education, training and experiences and evaluate progress to identify opportunities for improvement and necessary adjustments.	Resume, Personal Interview and Networking	
<b>CS.05.01.03.c.</b> Evaluate, update and improve a set of personal tools to reflect current skills, experiences, education, goals, etc. and complete the processes needed to pursue and obtain a career in an AFNR pathway.	All Components	
<b>CS.05.02. Performance Indicator: Examine careers in each of the AFNR pathways.</b>		
<b>CS.05.02.01.b.</b> Assess personal skills and align them with potential career opportunities in AFNR pathways.	Application, Resume and Cover Letter	
<b>CS.05.02.02.c.</b> Conduct interviews with career professionals within AFNR pathways and summarize the results.	Interviewing and Networking	
<b>CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.</b>		
<b>CRP.01.01.01.c.</b> Evaluate past workplace and community situations and determine how personal responsibility positively or negatively impacted outcomes.	Interview	
<b>CRP.01.01.02.c.</b> Model personal responsibility in workplace and community situations.	Interview, Resume, Application and Cover Letter	
<b>CRP.01.02 Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.</b>		
<b>CRP.01.02.01.c.</b> Make and defend personal decisions after analyzing their near- and long-term impacts on self and others.	Interview	
<b>CRP.01.02.02.c.</b> Make and defend professional decisions after evaluating their near- and long-term impacts on employers and community.	Interview	

## Agriculture, Food and Natural Resources Content Standards continued

<b>CRP.01.03. Performance Indicator: Identify and act upon opportunities for professional and civic service at work and in the community.</b>		
<b>CRP.01.03.01.c.</b> Devise strategies for involvement in professional service opportunities at work and in the community (e.g., coaching/mentorship, presentations at meetings, etc.).	Resume, Interview and Application	
<b>CRP.01.03.02.c.</b> Devise strategies for personal involvement in civic service at work and in the community (e.g., volunteer at food pantry, community clean-up, join organizations or committees, etc.).	Resume, Interview and Application	
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
<b>CRP.02.01.01.c.</b> Apply academic knowledge and skills to solve problems in the workplace and reflect upon the results achieved.	Round 2 Interview	
<b>CRP.02.01.02.c.</b> Apply academic knowledge and skills to solve problems in the community and reflect upon results achieved.	Round 2 Interview	
<b>CRP.02.02.01.a.</b> Identify opportunities to apply technical concepts to solve problems in the workplace (e.g., identify how to: increase sales, better customer service, reduce inputs, reduce waste, ensure sustainability, etc.).	Preliminary and round 2 Interview	
<b>CRP.02.02.02.a.</b> Identify opportunities to apply technical concepts to solve problems in the community (e.g., identify how to: ensure safe routes to schools, reduce vandalism, reduce air pollution, etc.).	Preliminary and round 2 Interview	
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
<b>CRP.04.01.01.b.</b> Analyze use of verbal and non-verbal communication strategies in workplace situations.	Preliminary and round 2 Interview	
<b>CRP.04.01.02.c.</b> Evaluate personal strengths and areas for growth with regard to speaking formally and informally with clarity, logic, purpose and professionalism, and identify ways to improve.	Preliminary and round 2 Interview, Phone and Networking	
<b>CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.</b>		
<b>CRP.04.02.01.c.</b> Evaluate the effectiveness of different forms of written communication for achieving their intended purpose.	Cover Letter, Resume and Follow-up	
<b>CRP.04.02.02.c.</b> Compose clear and coherent written documents (e.g., agendas, audio-visu-als, drafts, forms, etc.) for formal and informal settings.	All written documents	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
<b>CRP.04.03.01.c.</b> Evaluate personal effectiveness and devise a plan to improve active listening skills.	Networking, Phone and Round 2 Interview	

*Agriculture, Food and Natural Resources Content Standards continued*

<b>CRP.04.03.02.c.</b> Model active listening strategies in formal and informal settings.	Networking, Phone and Round 2 Interview	
<b>CRP.10.01. Performance Indicator: Identify career opportunities within a career cluster that match personal interests, talents, goals and preferences.</b>		
<b>CRP.10.01.01.c.</b> Plan a career path based on personal interests, goals, talents and preferences.	All Components	
<b>CRP.10.01.02.c.</b> Match potential career opportunities in career clusters with personal interests, talents, goals and preferences.	All Components	
<b>CRP.10.02. Performance Indicator: Examine career advancement requirements (e.g., education, certification, training, etc.) and create goals for continuous growth in a chosen career.</b>		
<b>CRP.10.02.01.a.</b> Categorize career advancement requirements for potential careers (e.g., degrees, certification, training, etc.).	All written components	
<b>CRP.10.02.02.a.</b> Identify methods for setting goals for personal improvement and continuous growth in a career area (e.g., SMART goals, training, professional development, etc.).	All Written components	
<b>CRP.10.04. Performance Indicator: Identify, prepare, update and improve the tools and skills necessary to pursue a chosen career path.</b>		
<b>CRP.10.04.01.c.</b> Select and use appropriate tools to pursue career advancement opportunities and assimilate feedback from the process to identify improvements for the future.	All Interviews and Networking	
<b>CRP.10.04.02.c.</b> Apply skills to complete common processes involved in pursuing a career and assimilate input and feedback from experts (e.g., mentors, teachers, business persons, etc.) to improve.	All Components	



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# ENVIRONMENTAL AND NATURAL RESOURCES

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS



## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/intro](https://www.ffa.org/intro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*Environmental and natural resource education has a responsibility to educate the public and prepare students to enter careers in the environmental and natural resource industry. The purpose of the environmental and natural resource career development event is to foster student interest, promote environmental and natural resource instruction in the agricultural education curriculum and provide recognition for those who have demonstrated skills and competencies as a result of environmental and natural resource instruction.*

## Event Rules

- Each team will be comprised of four members. All four scores will be used to determine the total team score.
- Participants must come to the event prepared to work in adverse weather conditions. The event will be conducted regardless of the weather. Participants should have rainwear, warm clothes and appropriate footwear.
- Under no circumstance will any participant be allowed to handle any of the items in the identification portion of the practicums. Any infraction of this rule will be sufficient to eliminate a team from the event.
- Participants will be assigned to group leaders who will escort them to various event-staging sites. Each participant is to stay with his or her assigned group leader throughout the event or until told to change leaders by the event superintendent.
- All participants will be given an identification number by which they will be designated throughout the event.
- All written material will be furnished for the event. No written materials such as tests, problems and worksheets shall be removed from the site.
- No team, team member or team coach shall visit the event facilities to observe plant materials and facilities after Sept. 1. Any team, team member or coach reported and proven to do so will cause the elimination of the team from the National FFA Environmental and Natural Resource CDE.



## Event Format

### EQUIPMENT

Teams will be notified in the team orientation packet if students must provide these materials for the current year:

- **Computers:** Each state team is required to provide a fully charged laptop computer for the team activity. Minimum computer specifications will be determined and posted on the CDE webpage prior to the event. Computers must be Microsoft Office® compatible.
- **Global Positioning System (GPS):** The minimum requirements for GPS will be the Garmin eTrex receiver or compatible. Position accuracy WAAS enabled three meters, 20 routes, 500 way points (total).

Equipment that will be provided:

- A clipboard
- Two sharpened No. 2 pencils
- All other tools equipment will be furnished for the event

Participants must use the tools and equipment furnished at the event.

## **TEAM ACTIVITY**

### **900 POINTS TOTAL**

A yearly topic will be announced in the team orientation packet. Students will be provided a scenario that deals with an environmental/natural resource problem from the following areas:

#### **Soils**

- Physical properties
- Soil erosion
- Soil analysis
- Soil sustainability

#### **Water**

- Importance of water
- Factors that influence the quality and quantity of water
- Management practices to ensure water quality and quantity

#### **Ecosystems**

- Basic ecological concepts
- Management of ecosystems

#### **Waste management**

- Preventing and reducing solid waste
- Disposing of waste
- Manure management
- Hazardous waste

Teams will be required to develop both an oral, as well as a written statement that addresses the questions in the annual scenario.

The teamwork process will be assessed during the preparation portion. (100 points)

Teams will submit a written statement of their findings at the end of one hour. (200 points)

Teams will be required to give an oral presentation justifying the decisions made by the team. The team will have eight minutes to make the oral presentation. (300 points)

Analysis of the team problem (100 points)

Teams will be required to answer questions regarding the decision reached by their team. The question period will be five minutes in length. (200 points)

## **INDIVIDUAL ACTIVITIES**

### **OBJECTIVE WRITTEN EXAM — 60 MINUTES (100 POINTS)**

The written exam will consist of fifty questions submitted by the event committee.

### **PRACTICUMS**

#### **Data Interpretation (100 points)**

- Student will be provided a survey analysis (waste, soil, air or water) and they will be expected to answer questions related to this report.

#### **Identification (100 points)**

Students will identify fifty items these may be pelts, bone, actual specimens, photos, footprint casts, scat from the following combined areas:

- Equipment list
- Native species list
- Invasive/non-native species list

**Water Analysis (100 points)**

- Using measuring devices, each participant will measure a sample of water for quality analysis. Four of the following categories will be tested each year: dissolved oxygen, nitrates, nitrites, pH, temperature, phosphates, water hardness, chlorine and ammonia.
- Analyze the results of measurements and determine if it is suitable for a specific use.
- Answer questions using the data collected about water quality and limiting factors.

**Soil Profile (100 points)**

- Students will be furnished with a scorecard, an interpretation guide and a pre-dug soil pit or core/monolith to judge. The participants will identify soil horizons, textures, percentage coarse fragments, pH, horizon colors, slope, geologic origin, soil permeability, irrigation suitability and soil structure types of the soil present in the given example.
- Using the information from the scorecard and interpretation guide, the student will then identify the most appropriate use for the given area and the erosion control practice that best fits the designated use for the land.

**GPS Locations (100 points)**

Participants will utilize the global position system (GPS) unit (supplied by the team) to complete one of the following:

- Identify the longitude and latitude of a given set of points using a GPS unit and a map.
- Identify boundaries of a given area including calculation of land area and linear feet of boundary.
- Use GPS unit and topographic map to layout the location of fence line, pond, drainage structure or other related facility.
- Use a GPS unit to mark the location of a path or road through a given area.
- Use GPS unit to determine slope of land area for installation of drainage and or other related facilities.

**Waste Management (100 points)**

- Participants will be presented with a scenario (agricultural producer, neighborhood, office building, manufacturing plant, etc.) that generates waste material creating environmental threats.
- Participants will evaluate the nature of waste output to identify plausible options for reducing the rate of waste generation, recycling or providing potential alternative uses for the waste, treating the waste or disposing of the waste.
- Participants should be able to identify at least one benefit and one deterrent for each possible option that is offered.

## Scoring

ACTIVITY	Individual Points	Total Team Points
Written Exam	100	400
Data Interpretation	100	400
Identification	100	400
Water Analysis	100	400
Soil Profile	100	400
GPS Locations	100	400
Waste Management	100	400
Team Activity		900
<b>TOTAL POINTS</b>	<b>700</b>	<b>3,700</b>

## TIEBREAKER

### TEAM

- Highest team activity score
- Highest practicum scores
- Highest combined identification score

### INDIVIDUAL

- Highest exam score
- Highest practicum scores
- Highest identification score



## Awards

*Awards will be presented to individuals and/or teams based upon their rankings at the awards ceremony.*

Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.



## References

*This list of references is not intended to be all-inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

- For past materials and preparation documents log onto [FFA.org](https://www.FFA.org)
- Managing Our Natural Resources. Camp and Daughtery. Delmar Publishers, Inc. 2009. Albany NY.
- Land Judging in Oklahoma. J.H. Stiegler, 4-H Member's Guide, Oklahoma Cooperative Extension Service, Division of Agricultural Sciences and Natural Resources, Oklahoma State University. 4H. HPS.101
- Environmental Science: Fundamentals and Applications. Cengage learning. 2007
- Applied Environmental Science: <https://www.FFA.org/thecouncil/resources>





NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Identification List

100 points

## EQUIPMENT

### WATER QUALITY

- 101. refractometer
- 102. secchi disk
- 103. water meter for physical/chemical parameters (pH, conductivity and/or DO)

### AQUATIC

- 104. bottom dredges
- 105. fish measuring board
- 106. plankton net
- 107. seines
- 108. sieves

### WILDLIFE

- 109. animal tags/bands
- 110. mammal traps
- 111. snake/reptile stick
- 112. radio telemetry unit

### WEATHER

- 113. wind speed meters
- 114. barometer

### SOILS

- 115. abny level
- 116. push probe
- 117. soil auger
- 118. soil color book

## NATIVE SPECIES

### WILDLIFE

- 201. armadillo
- 202. badger
- 203. beaver
- 204. bighorn sheep
- 205. bison
- 206. black bear
- 207. blacktail deer
- 208. bobcat
- 209. chipmunk
- 210. cottontail
- 211. coyote
- 212. elk
- 213. fox squirrel
- 214. gray squirrel
- 215. gray wolf
- 216. grizzly bear
- 217. jack rabbit
- 218. mole
- 219. moose
- 220. mountain goat
- 221. mountain lion
- 222. mule deer
- 223. muskrat
- 224. opossum
- 225. pocket gopher
- 226. porcupine
- 227. prairie dog
- 228. pronghorn
- 229. raccoon
- 230. red fox
- 231. skunk
- 232. weasel
- 233. whitetail deer
- 234. woodchuck

### BIRDS

- 301. bald eagle
- 302. blue jay
- 303. bluebird
- 304. brown thrasher
- 305. Canada goose
- 306. canvasback duck
- 307. cardinal
- 308. Cooper's hawk
- 309. Crissal thrasher
- 310. mourning dove
- 311. great blue heron
- 312. great horned owl
- 313. golden eagle
- 314. hummingbird
- 315. kestrel
- 316. least tern
- 317. mallard duck
- 318. osprey
- 319. pelican
- 320. purple martin
- 321. quail
- 322. red-tailed hawk
- 323. sand hill crane
- 324. blue-winged teal
- 325. turkey
- 326. whooping crane
- 327. wood duck

### REPTILES/AMPHIBIANS

- 401. alligator
- 402. alligator snapping turtle
- 403. black rat snake
- 404. bullfrog
- 405. collared lizard

*Identification list continued*

- 406. common snapping turtle
- 407. copperhead snake
- 408. coral snake
- 409. corn snake
- 410. cottonmouth
- 411. crocodile
- 412. fence lizard
- 413. garter snake
- 414. green anole lizard
- 415. gray tree frog
- 416. rattlesnake
- 417. red eared slider
- 418. ring neck snake
- 419. rubber boa snake
- 420. scarlet king snake
- 421. Woodhouse's toad

**FISH AND OTHER  
AQUATIC ANIMALS**

- 501. blue catfish
- 502. bream/bluegill
- 503. brown trout
- 504. carp
- 505. channel catfish
- 506. clam
- 507. crab
- 508. crappie
- 509. crayfish
- 510. flathead catfish
- 511. largemouth bass
- 512. lobster
- 513. salmon
- 514. shrimp
- 515. smallmouth bass
- 516. sturgeon
- 517. trout
- 518. walleye
- 519. yellow bullhead catfish

**INVASIVE/NON-NATIVE SPECIES****PLANTS**

- 601. broom snake weed
- 602. cheatgrass
- 603. Chinese tallow
- 604. cogongrass
- 605. English ivy
- 606. Himalaya blackberry
- 607. hydrilla
- 608. juniper
- 609. kudzu
- 610. leafy spurge
- 611. melaleuca
- 612. mimosa tree
- 613. purple loosestrife
- 614. Russian olive
- 615. saltcedar

**ANIMALS**

- 701. Asiatic clam
- 702. Asian long-horned beetle
- 705. Chinese mitten crab
- 706. chukkar
- 707. English sparrow
- 708. European starling
- 709. feral hog
- 710. feral horse
- 711. fire ant
- 712. gopher
- 713. Norway rat
- 714. nutria
- 715. ring neck pheasant
- 716. sea lamprey
- 717. tilapia
- 718. zebra mussel



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Team Activity – Team Presentation

900 points

CHAPTER		STATE		TEAM NUMBER	
INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Strong evidence of skill is not present 1–0 points	Weight	Total Points
<b>Written statement</b>					
<b>Writing conventions</b>	Information is thoroughly and clearly reported. Ideas are clearly addressed and supported with details.  There is a concise informative organization to the writing.  Grammar and spelling are high quality. Less than two blatant errors.	Ideas are stated with some supporting details. There is some organization evident without clear construction. (Intro, body and conclusion).  Grammar and spelling are adequate. There are less than five blatant errors.	The message is difficult to understand. The main idea of the presentation is not supported by details.  Rambling message with obvious lack of organization.  Lack of grammar and correct spelling throughout the writing. There are six or more blatant errors.	X 40	
<b>Analysis</b>	Addresses the problem at hand and conveys viable solutions. Subject knowledge excellent.	Addresses the problem at hand solutions may not be as clear or viable.  Subject knowledge is average	No specific focus on the problem.  Factual errors are evident.	X 40	
<b>Presentation</b>					
<b>Communication</b>	Speaks very articulately without hesitation. Confidence, poise and eye contact; excellent use of grammar. Oral communication enhances entire presentation.  Never has the need for unnecessary pauses or hesitation when speaking.	Speaks articulately but sometimes hesitates. Some problems with eye contact and grammar is average.  Occasionally has the need for a long pause or moderate hesitation when speaking.	Speaks articulately but frequently hesitates.  Frequently hesitates or has long, awkward pauses while speaking. Reads from notes and rarely looks at the judges. Has problem with pronunciation and/or very low level use of grammar.	X 40	
<b>Participation</b>	All members participated equally.	The majority of the group took an active role.	All members did not participate equally, obvious weak individuals	X 20	
<b>Questions and Answers</b>	Knowledge is evident and provides a clear, concise well-thought out answer to the questions.	Provides answers that are somewhat unclear and at times does not answer the questions.	Seems caught off guard by questions and either does not answer the question or provides a rambling answer	X 20	
<b>TOTAL POINTS</b>					

## Environmental and Natural Resources

## Team Activity – Team Presentation continued

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Strong evidence of skill is not present 1–0 points	Points Earned	Weight	Total Points
<b>Teamwork</b>						
<b>Managing team dynamics</b>	Completely committed to team dynamics, maturity and professionalism is always present.  In team conflicts, problem-solving and decision-making methods and skills are used to produce a positive compromise.	Somewhat committed to team dynamics, maturity and professionalism is seldom present.  In team conflicts, problem-solving and decision-making methods and skills are sometimes used to produce a compromise. Sometimes involvement in this process is limited.	Lacking team dynamics, maturity and professionalism.  When team conflict arises minimal or no attempt at a resolution is made by team members.		X 6	
<b>Awareness of personality styles of others</b>	Totally conscious and respectful of differing attitudes, personalities and behaviors.  Language is free of bias, and completely shows an understanding and respect for others' differences in learning and personality.	Is, for the most part, respectful of others' differences in personality and behavior.  For the most part, language conveys an understanding of others' differences in learning and personality.	Shows little tolerance for differing personalities and behaviors.  Language used may be expressed as not understanding others' differences in personality and learning styles.		X 2	
<b>Uses positive and mature language and mannerisms</b>	Always uses mature language and mannerisms.  Never uses immature verbal and/or nonverbal communication.  Always has positive communications.	Usually uses mature language and mannerisms.  Rarely uses immature verbal and/or nonverbal communication.  Usually has positive communications.	Seldom or never uses mature language and mannerisms.  Frequently uses immature verbal and/or nonverbal communication.  Seldom has positive communications.		X 4	
<b>Reacting to changes</b>	Has ability to react and transition effortlessly to change.  Shows excellent ability to adapt with unexpected change; thinks quickly; shows no sign of stress.	Typically reacts well to changes.  Seems able to adapt to unexpected change most of the time; occasionally stresses.	Has difficulty reacting well to changes.  Seems stressed by change.		X 2	
<b>Handling tasks</b>	Handles tasks with ease, including task assignment.  Efficient in planning, managing and completing all tasks in a timely and organized fashion.  All project parts are assigned equally.	Does a good job handling tasks with some ease, including task assignment.  Is thoughtful about the planning and sequencing of tasks, but occasional priority mistakes are made.  Some project parts are assigned equally.	Has difficulty handling tasks, including task assignment.  Seems to have trouble deciding the order to do several tasks and struggles with completion in a timely manner.  No project parts are assigned equally.		X 6	
<b>TOTAL POINTS</b>						



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Water Analysis Scorecard

100 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_

Your job today is to analyze the given water sample. You will need to find the given levels of the following possible factors: nitrites, dissolved oxygen, nitrates, pH, phosphates, water hardness, chlorine, ammonia and the current temperature. Using this information indicate if the water quality is suitable for the given species. Indicate the limiting factors and explain ways this water quality can be improved. (Each year, you will test for four of the categories listed above.)

CATEGORY	Answers	Possible Points	Total Points
1		10	
2		10	
3		10	
4		10	
Indicate if the quality of the sample is suitable for the following use:		10	
Indicate the limiting factor(s):		25	
How can water quality be improved?		25	
TOTAL:		100	



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Soil Profile Scorecard

100 points

NAME \_\_\_\_\_

MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_

STATE \_\_\_\_\_

## PART 1 (60 POINTS)

### Soil Factors – Part 1 Check Appropriate Box

Points

#### Texture

Sur. Sub.

- ☐ ☐ 1. Coarse  
☐ ☐ 2. Moderately Coarse  
☐ ☐ 3. Medium  
☐ ☐ 4. Moderately Fine  
☐ ☐ 5. Fine

#### Depth of Soil

- ☐ 1. Deep  
☐ 2. Moderately Deep  
☐ 3. Shallow  
☐ 4. Very Shallow

#### Slope

- ☐ 1. Nearly Level .....0-1%  
☐ 2. Gently Sloping .....1-3%  
☐ 3. Moderate Sloping .....3-5%  
☐ 4. Strongly Sloping .....5-8%  
☐ 5. Steep .....8-15%  
☐ 6. Very Steep .....> 15%

#### Erosion – Wind and Water

- ☐ 1. None to Slight  
☐ 2. Moderate  
☐ 3. Severe  
☐ 4. Very Severe

Points

### Soil Factors – Part 1 Check Appropriate Box

Points

#### Permeability

- ☐ 1. Rapid  
☐ 2. Moderate  
☐ 3. Slow  
☐ 4. Very Slow

#### Surface Runoff

- ☐ 1. Rapid  
☐ 2. Moderate  
☐ 3. Slow  
☐ 4. Very Slow

#### Major Factors That Keep Area

##### Out of Class 1

- |  |                                      |
|--|--------------------------------------|
| <input type="checkbox"/> 1. Texture      | <input type="checkbox"/> 6. Runoff   |
| <input type="checkbox"/> 2. Depth        | <input type="checkbox"/> 7. Wetness  |
| <input type="checkbox"/> 3. Slope        | <input type="checkbox"/> 8. Flooding |
| <input type="checkbox"/> 4. Erosion      | <input type="checkbox"/> 9. None     |
| <input type="checkbox"/> 5. Permeability |                                      |

#### Land Capability Class

- |                                       |  |
|---------------------------------------|--|
| <input type="checkbox"/> 1. Class I   | <input type="checkbox"/> 5. Class V    |
| <input type="checkbox"/> 2. Class II  | <input type="checkbox"/> 6. Class VI   |
| <input type="checkbox"/> 3. Class III | <input type="checkbox"/> 7. Class VII  |
| <input type="checkbox"/> 4. Class IV  | <input type="checkbox"/> 8. Class VIII |

Points

TOTAL POINTS PART 1



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Soil Profile Scorecard

### PART 2 (40 POINTS)

#### Recommended Treatment – Part 1

Check Appropriate Box

Points

##### Vegetative

- ☐ 1. Row crop/occasional soil conserving crop
- ☐ 2. Row crop/frequent soil conserving crop
- ☐ 3. Row crops not more than 2 out of 4 years
- ☐ 4. Row crops not more than 1 out of 5 years
- ☐ 5. Return crop residue to the soil
- ☐ 6. Practice conservation tillage
- ☐ 7. Establish recommended grass or grasses and legumes
- ☐ 8. Proper pasture and range management
- ☐ 9. Protect from burning
- ☐ 10. Control grazing
- ☐ 11. Plant recommended trees
- ☐ 12. Harvest trees selectively
- ☐ 13. Use only for wildlife or recreation area

##### Mechanical

- ☐ 14. Control brush or trees
- ☐ 15. Terrace and farm on contour
- ☐ 16. Maintain terraces
- ☐ 17. Construction diversion terraces
- ☐ 18. Install drainage system
- ☐ 19. Control gullies
- ☐ 20. No mechanical treatment needed

##### Fertilizer and Soil Amendments

- ☐ 21. Soil amendments
- ☐ 22. Phosphorous [P]
- ☐ 23. Potassium [K]
- ☐ 24. Nitrogen [N]
- ☐ 25. Fertilizer or soil amendments not needed

TOTAL POINTS PART 2 (40 POINTS POSSIBLE)

TOTAL POINTS PART 1(60 POINTS POSSIBLE)

GRAND TOTAL POINTS – 100 (POINTS POSSIBLE)



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# GPS Location Scorecard

100 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

List your numbers for each location point following the latitude and longitude given.

**Note:** Variance for differential corrections are noted on condition sheet.

Location Point	Point Number	Possible Points	Points Earned
1		20	
2		20	
3		20	
4		20	
5		20	
TOTAL POINTS			

JUDGE'S NAME \_\_\_\_\_ JUDGE'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_





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DEVELOPMENT EVENTS

## Agriculture, Food and Natural Resources Content Standards

### AS.01.01. Performance Indicator: Evaluate the development and implications of animal origin, domestication and distribution on production practices and the environment.

AS.01.01.01.c. Evaluate the implications of animal adaptations on production practices and the environment.

Team Activity, Annual  
Practicum – Waste  
Management

HS-LS4-3

AS.01.01.02.c. Predict trends and implications of future developments within different animal industries on production practices and the environment.

Team Activity, Annual  
Practicum – Waste  
Management

HS-LS4-3

### AS.01.02. Performance Indicator: Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts.

AS.01.02.01.b. Analyze the impact of animal production methods on end product qualities (e.g., price, sustainability, marketing, labeling, animal welfare, etc.).

Team Activity

AFNR Career Cluster, Statement 1  
AFNR Career Cluster – Animal Systems Pathway, Statement 3  
STEM Career Cluster, Statement 1  
Buying Goods and Services, Benchmarks: Grade 12, Statement 1  
Buying Goods and Services, Benchmarks: Grade 12, Statement 3

AS.01.02.04.b. Research and summarize local wildlife populations, challenges and ecological measures that are being utilized

Team Activity, Data  
Analysis, Annual  
Practicums – Water, Soil,  
Waste Management

AFNR Career Cluster, Statement 1  
AFNR Career Cluster – Animal Systems Pathway, Statement 3  
STEM Career Cluster, Statement 1  
Buying Goods and Services, Benchmarks: Grade 12, Statement 1  
Buying Goods and Services, Benchmarks: Grade 12, Statement 3

AS.01.02.04.c. Devise and evaluate plans to manage wildlife populations to achieve optimal ecological health.

Team Activity, Annual  
Practicums – Water, Soil,  
Waste Management

AFNR Career Cluster, Statement 1  
AFNR Career Cluster – Animal Systems Pathway, Statement 3  
STEM Career Cluster, Statement 1  
Buying Goods and Services, Benchmarks: Grade 12, Statement 1  
Buying Goods and Services, Benchmarks: Grade 12, Statement 3

### AS.01.03. Performance Indicator: Analyze and apply laws and sustainable practices to animal agriculture from a global perspective.

AS.01.03.02.b. Analyze the local and global impact of sustainable animal agriculture practices on human and environmental systems.

Team Activity, Data  
Analysis, Annual  
Practicums – Water, Gps,  
Soil and Waste  
Management

AFNR Career Cluster, Statement 2  
AFNR Career Cluster – Animal Systems Pathway, Statement 1  
STEM Career Cluster, Statement 1, 4  
CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b  
CCSS.ELA-Literacy.RI.9-10.1  
CCSS.ELA-Literacy.RI.11-12.1  
HS-ETS1-1

## Agriculture, Food and Natural Resources Content Standards continued

AS.01.03.02.c. Select, evaluate and defend the use of sustainable practices in animal agriculture.	Team Activity And Data Analysis	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 HS-ETS1-1
<b>AS.08.01. Performance Indicator: Design and implement methods to reduce the effects of animal production on the environment.</b>		
AS.08.01.01.b. Assess methods of reducing the effects of animal agriculture on the environment.	Written Exam, Team Activity – Water and Waste Management, Data Analysis – Soil and Gps	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 1 HS-LS2-6 HS-LS2-7
AS.08.01.01.c. Devise a plan that includes measures to reduce the impact of animal agriculture on the environment.	Written Exam, Team Activity – Data Analysis – Soil and Gps	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 1 HS-LS2-6 HS-LS2-7
<b>AS.08.02. Performance Indicator: Evaluate the effects of environmental conditions on animals and create plans to ensure favorable environments for animals.</b>		
AS. 08.02.01.b. Critique the reliability and validity of evidence presented to support claims regarding the effects of environmental conditions on animal populations and performance (e.g., population changes, emerging species, extinction, etc.).	Written Exam, Team Activity – Water and Waste Management, Data Analysis – Soil and Gps	HS.LS4-6
AS. 08.02.01.c. Apply valid and reliable research evidence to predict the potential effects of different environmental conditions for an animal population.	Written Exam, Team Activity – Water and Waste Management, Data Analysis – Soil and Gps	HS.LS4-6
AS.08.02.02.b. Implement and evaluate the effectiveness of methods to ensure optimal environmental conditions for animals.	Written Exam, Team Activity – Water and Waste Management, Data Analysis – Soil and Gps	HS.LS4-6
AS.08.02.02.c. Devise and improve plans to establish favorable environmental conditions for animal growth and performance based on a variety of factors (e.g., economic feasibility, environmental sustainability, impact on animals, etc.).	Data Analysis and Written Exam	HS.LS4-6

## Agriculture, Food and Natural Resources Content Standards continued

<b>BS.01.01. Performance Indicator: Investigate and explain the relationship between past, current and emerging applications of biotechnology in agriculture (e.g., major innovators, historical developments, potential applications of biotechnology, etc.).</b>		
<b>BS.01.01.03.b.</b> Analyze and document emerging problems and issues associated with agricultural biotechnology.	Team Activity	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 CCSS.ELA-Literacy.RI.9-10.6 CCSS.ELA-Literacy.RI.11-12.6 CCSS.ELA-Literacy.WI.9-10.2 CCSS.ELA-Literacy.WI.11-12.2
<b>BS.01.03.01.c.</b> Devise and support an argument for or against an ethical issue associated with biotechnology in agriculture.	Team Activity	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 CCSS.ELA-Literacy.RI.9-10.6 CCSS.ELA-Literacy.RI.11-12.6 CCSS.ELA-Literacy.WI.9-10.2 CCSS.ELA-Literacy.WI.11-12.2
<b>BS.02.01. Performance Indicator: Read, document, evaluate and secure accurate laboratory records of experimental protocols, observations and results.</b>		
<b>BS.02.01.01.b.</b> Maintain and interpret laboratory records documented in a laboratory to ensure data accuracy and integrity (e.g., avoid bias, record any conflicts of interest, avoid misinterpreted results, etc.).	Data Interpretation	CCSS.ELA-Literacy.RST.9-10.1 CCSS.ELA-Literacy.RST.11-12.1 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.11-12.3
<b>BS.02.02. Performance Indicator: Implement standard operating procedures for the proper maintenance, use and sterilization of equipment in a laboratory.</b>		
<b>BS.02.02.02.b.</b> Manipulate basic laboratory equipment and measurement devices (e.g., water bath, electrophoresis equipment, micropipettes, laminar flow hood, etc.).	Water Management	
<b>BS.02.04. Performance Indicator: Safely manage and dispose of biological materials, chemicals and wastes according to standard operating procedures.</b>		
<b>BS.02.04.01.b.</b> Assess the need for personal protective equipment and select the appropriate equipment to wear when working with biological and chemical materials.	Water Management	CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.RST.11-12.4
<b>BS.02.04.03.c.</b> Propose a management plan to reduce laboratory waste and prevent ecological or health problems related to waste disposal.	Team Activity and Waste Management	CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.RST.11-12.4

## Agriculture, Food and Natural Resources Content Standards continued

<b>BS.03.01. Performance Indicator: Apply biotechnology principles, techniques and processes to create transgenic species through genetic engineering.</b>		
<b>BS.03.01.03.a.</b> Analyze the benefits and risks associated with the use of biotechnology to increase productivity and improve quality of living species (e.g., plants, animals such as aquatic species, etc.).	Team Activity	HS-LS3-2
<b>BS.03.01.04.b.</b> Analyze data to identify changes and patterns of transgenic species in the environment.	Team Activity, Data Analysis	HS-LS3-2
<b>BS.03.03. Performance Indicator: Apply biotechnology principles, techniques and processes to protect the environment and maximize use of natural resources (e.g., biomass, bioprospecting, industrial biotechnology, etc.).</b>		
<b>BS.03.03.01.b.</b> Analyze how biotechnology can be used to monitor the effects of agricultural practices on natural populations.	Team Activity	
<b>BS.03.03.01.c.</b> Evaluate the impact of modified organisms on the natural environment.	Team Activity	
<b>BS.03.03.03.b.</b> Assess and document the pros and cons of bioprospecting.	Team Activity	
<b>BS.03.03.03.c.</b> Weigh the short-term and long-term impacts of bioprospecting on the environment.	Team Activity	
<b>BS.03.04. Performance Indicator: Apply biotechnology principles, techniques and processes to enhance plant and animal care and production (e.g., selective breeding, pharmaceuticals, biodiversity, etc.).</b>		
<b>BS.03.04.02.b.</b> Assess the benefits, risks and opportunities associated with using biotechnology to promote animal health.	Team Activity	HS-ETS1-2 HS-LS4-6
<b>BS.03.04.04.b.</b> Assess whether current threats to biodiversity will have an unsustainable impact on human populations.	Team Activity	HS-ETS1-2 HS-LS4-6
<b>BS.03.05. Performance Indicator: Apply biotechnology principles, techniques and processes to produce biofuels (e.g., fermentation, transesterification, methanogenesis, etc.).</b>		
<b>BS.03.05.01.b.</b> Analyze the impact of the production and use of biofuels on the environment.	Team Activity	AFNR Career Cluster, Statement 5 CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.11-12.3

## Agriculture, Food and Natural Resources Content Standards continued

<b>BS.03.05.01.c.</b> Evaluate and support how biofuels could solve a global issue (e.g., environmental, agricultural, etc.).	Team Activity	AFNR Career Cluster, Statement 5 CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.11-12.3
<b>BS.03.05.05.b.</b> Analyze and describe the process used to produce methane from biomass.	Team Activity, Waste Management	AFNR Career Cluster, Statement 5 CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.11-12.3
<b>BS.03.06. Performance Indicator: Apply biotechnology principles, techniques and processes to improve waste management (e.g., genetically modified organisms, bioremediation, etc.).</b>		
<b>BS.03.06.01.b.</b> Analyze the process by which organisms are genetically engineered for waste treatment.	Team Activity, Waste Management	
<b>BS.03.06.02.b.</b> Assess and describe the processes involved in biotreatment of biological wastes.	Team Activity, Waste Management	
<b>BS.03.06.03.b.</b> Evaluate and describe the processes involved in biotreatment of industrial chemical wastes.	Team Activity, Waste Management	
<b>BS.03.06.04.b.</b> Analyze and summarize the risks and benefits of using biotechnology for bioremediation.	Team Activity, Waste Management	
<b>CS.01.01. Performance Indicator: Examine issues and trends that impact AFNR systems on local, state, national and global levels. Team Activity</b>		
<b>CS.01.01.01.b.</b> Analyze and document AFNR issues and their impact on local, state, national and global levels.	Team Activity	
<b>CS.01.01.02.b.</b> Analyze current trends in AFNR systems and predict their impact on local, state, national and global levels.	Team Activity	
<b>CS.01.01.02.c.</b> Evaluate emerging trends and the opportunities they may create within the AFNR systems.	Team Activity	
<b>CS.01.02. Performance Indicator: Examine technologies and analyze their impact on AFNR systems. Team Activity</b>		
<b>CS.01.02.01.b.</b> Apply appropriate use of technologies in AFNR workplace scenarios.	Team Activity	
<b>CS.01.02.01.c.</b> Solve problems in AFNR workplaces or scenarios using technology.	Team Activity	
<b>CS.01.02.02.b.</b> Analyze how technology is used in AFNR systems to maximize productivity. Team Activity		

## Agriculture, Food and Natural Resources Content Standards continued

CS.01.02.02.c. Evaluate the importance of technology use and how it impacts AFNR systems. Team Activity		
<b>CS.02.01. Performance Indicator: Research geographic and economic data related to AFNR systems.</b>		
CS.02.01.01.b. Assess sets of AFNR geographic data using systems and technologies (e.g., GIS, GPS, etc.).	Gps, Waste Management, Soil Management	
CS.02.01.01.c. Evaluate geographic data and select necessary data sets to solve problems within AFNR systems.	Gps, Waste Management, Soil Management	
<b>CS.02.02. Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy.</b>		
CS.02.02.01.b. Assess components within AFNR systems and analyze relationships between systems.	Team Activity	
CS.02.02.01.c. Devise a strategy for explaining components of AFNR systems to audiences with limited knowledge.	Team Activity	
CS.02.02.02.b. Assess how people within societies on local, state, national and global levels interact with AFNR systems on daily, monthly or yearly basis.	Team Activity	
CS.02.02.03.b. Assess the economic impact of an AFNR system on a local, state, national and global level. Team Activity		
CS.02.02.03.c. Evaluate how positive or negative changes in the local, state, national or global economy impacts AFNR systems.	Team Activity	
<b>CS.03.01. Performance Indicator: Identify required regulations to maintain and improve safety, health and environmental management systems.</b>		
CS.03.01.02.b. Analyze existing required regulations within an AFNR workplace.	Team Activity, Data Analysis	
<b>CS.03.02. Performance Indicator: Develop a plan to maintain and improve health, safety and environmental compliance and performance.</b>		
CS.03.02.01.c. Create a plan to improve safety, health and environmental management regulations in an AFNR business.	Team Activity	AFNR Career Cluster, Statement 6
CS.03.02.02.b. Develop plans to improve environmental compliance and performance within an AFNR system.	Team Activity	AFNR Career Cluster, Statement 6

## Agriculture, Food and Natural Resources Content Standards continued

CS.03.02.02.c. Devise a strategy to educate employees on environmental compliance and performance in an AFNR business.	Team Activity	AFNR Career Cluster, Statement 6
<b>CS.04.01. Performance Indicator: Identify and implement practices to steward natural resources in different AFNR systems.</b>		
CS.04.01.01.b. Analyze available practices to steward natural resources in AFNR systems (e.g., wildlife and land conservation, soil and water practices, ecosystem management, etc.).	Team Activity, Data Analysis, Written Exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
CS.04.01.01.c. Devise strategies for stewarding natural resources at home and within community.	Team Activity, Data Analysis, Written Exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
CS.04.01.02.b. Analyze and assess sustainability practices that can be applied in AFNR systems (e.g., energy efficiency, recycle/reuse/repurpose, green resources, etc.).	Team Activity, Data Analysis, Written Exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
CS.04.01.02.c. Evaluate sustainability policies and plans and prepare summary of potential improvements for AFNR businesses or organizations.	Team Activity, Data Analysis, Written Exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
<b>CS.04.02. Performance Indicator: Assess the natural resource related trends, technologies and policies that impact AFNR systems</b>		
CS.04.02.01.b. Analyze natural resources trends and technologies and document how they impact AFNR systems (e.g., climate change, green technologies, water resources, etc.).	Team Activity, Written Exam, Data Analysis	AFNR Career Cluster, Statement 7
CS.04.02.01.c. Defend or challenge natural resources trends and technologies based upon an assessment of their impact on AFNR systems.	Team Activity	AFNR Career Cluster, Statement 7
<b>CS.06.01. Performance Indicator: Explain foundational cycles and systems of AFNR.</b>		
CS.06.01.01.b. Analyze how foundational cycles affect production, processing and management of food, fiber and fuel.	Written Exam	
CS.06.01.01.c. Teach others about the impact of foundational cycles within AFNR systems.	Team Activity	
CS.06.01.02.b. Analyze AFNR systems and determine their impact on producing and processing food, fiber and fuel.	Team Activity	

## Agriculture, Food and Natural Resources Content Standards continued

CS.06.01.02.c. Evaluate AFNR systems and predict how the systems may change or adapt in the future of food, fiber and fuel production based on current trends and data.	Team Activity, Data	
<b>CS.06.02. Performance Indicator: Explain the connection and relationships between different AFNR systems on a national and global level.</b>		
CS.06.02.01.b. Analyze differences between AFNR systems on a national and global scale. Team Activity, Written Exam		
CS.06.02.01.c. Evaluate how AFNR systems impact each other on a national and global level.	Team Activity, Written Exam	
CS.06.02.02.b. Analyze the connections and relationships impacted when there is a change in an AFNR system on a national and global level.	Team Activity, Written Exam	
CS.06.02.02.c. Evaluate how changes in one AFNR system can benefit cost components of other systems on a national and global level.	Team Activity, Written Exam	
<b>ESS.01.01. Performance Indicator: Analyze and interpret laboratory and field samples in environmental service systems.</b>		
ESS.01.01.01.b. Determine the appropriate sampling techniques needed to generate data.	Water Analysis	CCSS.ELA-LITERACY.SL.11-12.5 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3 CCSS.MATH.CONTENT.HSS.ID.A.2 CCSS.MATH.CONTENT.HSS.ID.B.5 HS-ESS2-2
ESS.01.01.01.c. Collect and prepare sample measurements using appropriate data collection techniques.	Water Analysis	CCSS.ELA-LITERACY.SL.11-12.5 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3 CCSS.MATH.CONTENT.HSS.ID.A.2 CCSS.MATH.CONTENT.HSS.ID.B.5 HS-ESS2-2
<b>ESS.01.02. Performance Indicator: Properly utilize scientific instruments in environmental monitoring situations (e.g., laboratory equipment, environmental monitoring instruments, etc.).</b>		
ESS.01.02.01.b. Demonstrate the proper use and maintenance of basic laboratory equipment.	Water Analysis, Gps	



## Agriculture, Food and Natural Resources Content Standards continued

ESS.01.02.01.c. Calibrate and use laboratory equipment according to standard operating procedures.	Gps, Water Analysis	
ESS.01.02.02.b. Demonstrate the proper use and maintenance of environmental monitoring instruments.	Water Analysis, Gps, Soils Management	
ESS.01.02.02.c. Calibrate and use environmental monitoring instruments according to standard operating procedures.	Gps, Water Analysis	
<b>ESS.02.01. Performance Indicator: Interpret and evaluate the impact of laws, agencies, policies and practices affecting environmental service systems.</b>		
ESS.02.01.02.c. Evaluate the impact and effectiveness of government agencies (i.e., local, state, and federal) associated with environmental service systems (e.g., regulation of consumption, prevention of damage to natural resources systems, management of ecological interactions, etc.).	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Agribusiness Systems Pathway, Statement 1 AFNR Career Cluster, Natural Resources Systems Pathway, Statement 2 STEM Career Cluster, Statement 3
<b>ESS.02.02. Performance Indicator: Compare and contrast the impact of current trends on regulation of environmental service systems (e.g., climate change, population growth, international trade, etc.).</b>		
ESS.02.02.03.b. Analyze the correlation between increased population size and the need for regulation of environmental service systems.	Team Activity, Data Analysis	
ESS.02.02.03.c. Predict the impact of future population growth on the regulation of environmental service systems and evaluate how changes made today will impact future regulation.	Team Activity	
ESS.02.02.04.b. Assess whether current policies related to fracking and shale oil gas sufficiently address the needs of environmental service systems.	Team Activity	
ESS.02.02.04.c. Evaluate current fracking policies and create suggestions for modification of these policies to more thoroughly address the needs related to environmental, economic and social sustainability.	Team Activity	

## Agriculture, Food and Natural Resources Content Standards continued

<b>ESS.02.03. Performance Indicator: Examine the impact of public perceptions and social movements on the regulation of environmental service systems.</b>		
<b>ESS.02.03.01.b.</b> Analyze and summarize specific changes to perceptions and regulations of environmental service systems and their impact on reducing the ecological, economical and sociological impact.	Team Activity	
<b>ESS.02.03.01.c.</b> Evaluate the impact of specific historical figures, or organizations, on the perception and regulation of environmental service systems.	Team Activity	
<b>ESS.03.01. Performance Indicator: Apply meteorology principles to environmental service systems.</b>		
<b>ESS.03.01.02.b.</b> Analyze and articulate the relationship between meteorological conditions, air quality and air pollutants.	Data Analysis	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-6 HS-ESS3-5
<b>ESS.03.01.04.b.</b> Analyze the basics of the greenhouse effect and describe how the greenhouse effect alters the earth's balance of energy.	Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-6 HS-ESS3-5
<b>ESS.03.02. Performance Indicator: Apply soil science and hydrology principles to environmental service systems.</b>		
<b>ESS.03.02.01.b.</b> Use a soil survey to determine the land capability classes for different parcels of land in an area.	Team Activity, Soils Analysis, Data Analysis, Written Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6

## Agriculture, Food and Natural Resources Content Standards continued

<b>ESS.03.02.01.c.</b> Design a master land-use management plan for a given area that utilizes land capability classes in order to minimize erosion and flooding, maximize development and preservation of topsoil, et cetera.	Team Activity, Soils Analysis, Data Analysis, Written Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.02.02.b.</b> Differentiate rock types and relate the chemical composition of mineral matter in soils to the parent material.	Team Activity, Soils Analysis, Data Analysis, Written Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.02.02.c.</b> Evaluate the soil composition in order to predict the impact of that soil on environmental service systems.	Team Activity, Soils Analysis, Data Analysis, Written Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.02.03.b.</b> Assess the physical qualities of the soil that determine its potential for filtration of groundwater supplies and likelihood for flooding.	Team Activity, Soils Analysis, Data Analysis, Written Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.02.03.c.</b> Conduct tests of soil to determine its potential for filtration of groundwater supplies and likelihood for flooding.	Team Activity, Soils Analysis, Data Analysis, Written Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6

## Agriculture, Food and Natural Resources Content Standards continued

<b>ESS.03.02.04.b.</b> Assess precautions taken to prevent or reduce contamination of groundwater supplies.	Team Activity, Soils Analysis, Data Analysis, Written Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.02.04.c.</b> Evaluate the methods used in a given example to protect groundwater supplies.	Team Activity, Soils Analysis, Data Analysis, Written Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.02.05.b.</b> Analyze how interactions between groundwater and surface water affect flow and availability of water.	Team Activity, Soils Analysis, Data Analysis, Written Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.02.05.c.</b> Construct explanations and solutions to situations involving the declining availability of water that incorporate groundwater flow equations as well as human activity.	Team Activity, Soils Analysis, Data Analysis, Written Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.02.06.b.</b> Analyze the importance of the roles played by wetlands in regards to water availability, prevention of flooding and other factors.	Team Activity, Soils Analysis, Data Analysis, Written Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6

## Agriculture, Food and Natural Resources Content Standards continued

ESS.03.02.06.c Evaluate and select strategies for wetlands preservation and restoration that maximize services provided by wetlands while taking human concerns into consideration.	Team Activity, Soils Analysis, Data Analysis, Written Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.03. Performance Indicator: Apply chemistry principles to environmental service systems.</b>		
ESS.03.03.01b. Analyze the soil chemistry of a sample.	Water Analysis, Data Analysis, Soil Analysis	CCSS.ELA-LITERACY.RST.9-10.7 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-6
ESS.03.03.01.c. Evaluate a sample's soil chemistry and assess the impact on considerations in environmental service systems.	Water Analysis, Data Analysis, Soil Analysis	CCSS.ELA-LITERACY.RST.9-10.7 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-6
ESS.03.03.02.b. Analyze the water chemistry of a sample.	Water Analysis, Data Analysis, Soil Analysis	CCSS.ELA-LITERACY.RST.9-10.7 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-6
ESS.03.03.02.c. Evaluate a sample's water chemistry and assess its impact on considerations in environmental service systems.	Water Analysis, Data Analysis, Soil Analysis	CCSS.ELA-LITERACY.RST.9-10.7 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-6

## Agriculture, Food and Natural Resources Content Standards continued

<b>ESS.03.03.04.b.</b> Assess how different kinds of wetlands are formed based on the different kinds of soil and water chemistry present in each case.	Team Activity, Exam, Data Analysis, Soils Analysis	CCSS.ELA-LITERACY.RST.9-10.7 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-6
<b>ESS.03.03.04.c.</b> Evaluate the services provided by types of wetlands and predict how different types of wetlands respond to pressures due to human activity.	Team Activity, Exam, Data Analysis, Soils Analysis	CCSS.ELA-LITERACY.RST.9-10.7 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-6
<b>ESS.03.04. Performance Indicator: Apply microbiology principles to environmental service systems.</b>		
<b>ESS.03.04.01.c.</b> Evaluate how soil microorganisms in environmental service systems can be used to minimize waste, maximize nutrient cycling and increase ecosystem biodiversity.	Team Activity, Soils Analysis	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSF.BF.A.1 HS-LS2-3 HS-LS3-2 HS-ET1-2
<b>ESS.03.04.02.c.</b> Develop strategies for negating air pollutants based on soil microbial populations (e.g., carbon sequestration and rates of decomposition).	Team Activity, Soils Analysis	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSF.BF.A.1 HS-LS2-3 HS-LS3-2 HS-ET1-2

## Agriculture, Food and Natural Resources Content Standards continued

<b>ESS.03.04.03.b.</b> Assess the impact of wastewater treatment on environmental service systems.	Water Analysis	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSF.BF.A.1 HS-LS2-3 HS-LS3-2 HS-ET1-2
<b>ESS.03.04.03.c.</b> Evaluate modern uses of microbial waste water treatment and devise strategies to further reduce the environmental, economic and social impact of wastewater treatment.	Team Activity, Soils Analysis, Water Analysis	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSF.BF.A.1 HS-LS2-3 HS-LS3-2 HS-ET1-2
<b>ESS.03.05. Performance Indicator: Apply ecology principles to environmental service systems.</b>		
<b>ESS.03.05.01.c.</b> Evaluate the biodiversity of an area and predict the impact of changing the levels of biodiversity on environmental service systems.	Team Activity	CCSS.ELA-LITERACY.RST.9-10.8 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-1 HS-LS4-4
<b>ESS.03.05.02.b.</b> Assess the impact of the current rate of habitat loss on environmental service systems.	Team Activity	CCSS.ELA-LITERACY.RST.9-10.8 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-1 HS-LS4-4

*Agriculture, Food and Natural Resources Content Standards continued*

<b>ESS.03.05.02.c.</b> Evaluate the importance of habitat to environmental service systems and devise strategies to minimize the future loss of habitats.	Team Activity	CCSS.ELA-LITERACY.RST.9-10.8 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-1 HS-LS4-4
<b>ESS.03.05.03.b.</b> Assess the impact of a population exceeding its carrying capacity on environmental service systems.	Team Activity	CCSS.ELA-LITERACY.RST.9-10.8 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-1 HS-LS4-4
<b>ESS.03.05.03.c.</b> Devise a strategy for monitoring and supporting environmental service systems through management of a species' carrying capacity.	Team Activity	CCSS.ELA-LITERACY.RST.9-10.8 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-1 HS-LS4-4
<b>ESS.03.05.04.a.</b> Examine how ecological interactions can be used to assess environmental service systems (i.e., macroinvertebrates and/or amphibians as bioindicators).	Team Activity	CCSS.ELA-LITERACY.RST.9-10.8 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-1 HS-LS4-4



## Agriculture, Food and Natural Resources Content Standards continued

ESS.03.05.04.c. Utilize evidence from bioindicator species to detect pollutants in a given area.	Data Analysis, Waste Management	CCSS.ELA-LITERACY.RST.9-10.8 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-1 HS-LS4-4
<b>ESS.04.01. Performance Indicator: Use pollution control measures to maintain a safe facility and environment.</b>		
ESS.04.01.01.b. Assess how industrial and nonindustrial pollution has damaged the environment.	Waste Management	HS-ETS1-2
ESS.04.01.01.c. Evaluate evidence for a given area for industrial and nonindustrial pollution.	Team Activity, Waste Management	HS-ETS1-2
ESS.04.01.02.c. Create a plan for pollution remediation, management or prevention for a given area.	Team Activity, Waste Management	HS-ETS1-2
ESS.04.01.03.a. Interpret the conditions necessary for waste to be labeled as hazardous.	Team Activity, Waste Management	HS-ETS1-2
ESS.04.01.03.b. Classify examples of pollution as hazardous or nonhazardous.	Data Analysis, Waste Management	HS-ETS1-2
ESS.04.01.03.c. Construct a plan for handling hazardous waste in given situations.	Team Activity, Waste Management	HS-ETS1-2
<b>ESS.04.02. Performance Indicator: Manage safe disposal of all categories of solid waste in environmental service systems.</b>		
ESS.04.02.01.b. Analyze environmental hazards created by different types of solid waste, solid waste accumulation and solid waste disposal.	Waste Management	HS-ETS1-2
ESS.04.02.01.c. Develop a plan for solid waste disposal for a given situation that considers the environmental hazards, economic realities and social concerns associated with this task.	Team Activity, Waste Management	HS-ETS1-2
ESS.04.02.03.b. Apply scientific principles to explain the benefits and processes of composting.	Exam	HS-ETS1-2
ESS.04.02.03.c. Evaluate the appropriateness of composting methods in different situations.	Team Activity, Waste Management	HS-ETS1-2

## Agriculture, Food and Natural Resources Content Standards continued

ESS.04.02.04.b. Analyze and document different recycling methods and classify materials that can be recycled.	Data Analysis	HS-ETS1-2
ESS.04.02.04.c. Survey and evaluate recycling programs and procedures.	Waste Management	HS-ETS1-2
<b>ESS.04.03. Performance Indicator: Apply techniques to ensure a safe supply of drinking water and adequate treatment of wastewater according to applicable rules and regulations.</b>		
ESS.04.03.01.c. Evaluate samples of water and the processes necessary to ensure the samples are safe for consumption.	Waste Management	HS-ETS1-2 HS-ETS1-4
ESS.04.03.02.b. Analyze and document the steps necessary to ensure that wastewater and septic waste can be safely released into the environment.	Waste Management	HS-ETS1-2 HS-ETS1-4
ESS.04.03.02.c. Evaluate examples of wastewater and/or septic waste for its potential to cause environmental, economic and/or social problems.	Waste Management	HS-ETS1-2 HS-ETS1-4
<b>ESS.04.04. Performance Indicator: Compare and contrast the impact of conventional and alternative energy sources on the environment and operation of environmental service systems.</b>		
ESS.04.04.02.b. Identify advantages and disadvantages of alternative energy sources as they pertain to environmental service systems.	Team	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ETS1-2 HS-ETS1-4

## Agriculture, Food and Natural Resources Content Standards continued

ESS.04.04.02.c. Evaluate the impact alternative energy sources have on environmental conditions.	Team Activity	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.ELA-LITERACY.WHST 11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ETS1-2 HS-ETS1-4
ESS.04.04.04.c. Devise a strategy for improving future energy consumption in a manner consistent with the intents of environmental service systems.	Team Activity	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.ELA-LITERACY.WHST 11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ETS1-2 HS-ETS1-4
ESS.04.04.05.c. Use data from environmental monitoring to evaluate methods for reducing the imbalance in the carbon cycle through changes to energy consumption.	Data Analysis	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.ELA-LITERACY.WHST 11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ETS1-2 HS-ETS1-4
<b>ESS.05.01. Performance Indicator: Use technological and mathematical tools to map land, facilities and infrastructure for environmental service systems.</b>		
ESS.05.01.01.b. Apply surveying and mapping principles to a situation involving environmental service systems and identify and explain the use of equipment for surveying and mapping.	Gps	HS-ETS1-4

## Agriculture, Food and Natural Resources Content Standards continued

ESS.05.01.01.c. Demonstrate surveying and cartographic skills to make site measurements in order to address concerns and needs within an environmental service systems situation.	Gps	HS-ETS1-4
ESS.05.01.02.b. Apply GIS skills to a situation specific to environmental service systems.	Gps	HS-ETS1-4
ESS.05.01.02.c. Interpret and evaluate GIS data to come to a conclusion about a scenario specific to environmental service systems.	Team Activity, Data Analysis, Waste Management	HS-ETS1-4
<b>ESS.05.02. Performance Indicator: Perform assessments of environmental conditions using equipment, machinery and technology.</b>		
ESS.05.02.02.b. Assess different measurements of soil quality (e.g., soil horizons, soil texture, organic matter, soil respiration, etc.) to determine their effectiveness and limitations.	Data Analysis	HS-ETS1-4 HS-ETS1-2
ESS.05.02.03.b. Assess different measurements of air quality (e.g., ozone, carbon monoxide, particulate matter, etc.) to determine their effectiveness and limitations.	Data Analysis	HS-ETS1-4 HS-ETS1-2
ESS.05.02.04.c. Evaluate a habitat to determine its ecological quality and if it is threatened.	Waste Management	HS-ETS1-4 HS-ETS1-2
<b>NRS.01.01. Performance Indicator: Apply methods of classification to examine natural resource availability and ecosystem function in a particular region.</b>		
NRS.01.01.01.b. Assess the characteristics of a natural resource to determine its classification.	Exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster, Statement 2 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9

## Environmental and Natural Resources

## Agriculture, Food and Natural Resources Content Standards continued

<b>NRS.01.01.01.c.</b> Devise strategies for the preservation of natural resources based on their classification.	Team Activity	AFNR Career Cluster, Statement 1 AFNR Career Cluster, Statement 2 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9
<b>NRS.01.01.02.b.</b> Analyze the interdependence of organisms within an ecosystem (e.g., food webs, niches, impact of keystone species, etc.) and assess the dependence of organisms on nonliving components (climate, geography, energy flow, nutrient cycling, etc.).	Exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster, Statement 2 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9
<b>NRS.01.01.02.c.</b> Conduct analyses of ecosystems and document the interactions of living species and non-living resources. Team A <b>NRS.01.01.03.a.</b> Summarize and classify different kinds of living species based on evolutionary traits.	Exam Team Activity	AFNR Career Cluster, Statement 1 AFNR Career Cluster, Statement 2 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9
<b>NRS.01.01.03.b.</b> Analyze how biodiversity develops through evolution, natural selection and adaptation; assess the importance of biodiversity to ecosystem function and availability of natural resources.	Exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster, Statement 2 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9

## Agriculture, Food and Natural Resources Content Standards continued

<b>NRS.01.01.03.c.</b> Evaluate biodiversity in ecosystems and devise strategies to enhance the function of an ecosystem and the availability of natural resources by increasing the level of biodiversity.	Team Activity	AFNR Career Cluster, Statement 1 AFNR Career Cluster, Statement 2 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9
<b>NRS.01.02. Performance Indicator: Classify different types of natural resources in order to enable protection, conservation, enhancement and management in a particular geographical region.</b>		
<b>NRS.01.02.01.b.</b> Apply identification techniques to determine the species of a tree or woody plant.	Identification	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
<b>NRS.01.02.02.b.</b> Apply identification techniques to determine the species of an herbaceous plant.	Identification	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2

*Environmental and Natural Resources**Agriculture, Food and Natural Resources Content Standards continued*

<b>NRS.01.02.03.b.</b> Apply identification techniques to determine the species of wildlife or insect.	Identification	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
<b>NRS.01.02.04.b.</b> Apply identification techniques to determine the species of an aquatic organism.	Identification	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
<b>NRS.01.02.05.b.</b> Apply identification techniques to determine the types of non-living resources in an area.	Identification	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2

## Agriculture, Food and Natural Resources Content Standards continued

<b>NRS.01.03. Performance Indicator: Apply ecological concepts and principles to atmospheric natural resource systems.</b>		
<b>NRS.01.03.02.b.</b> Analyze the impact that climate has on natural resources and how this impact has changed due to human activity.	Team Activity	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS2-4 HS-ESS2-6 HS-ESS3-4 HS-ESS3-5
<b>NRS.01.03.02.c.</b> Identify the primary causes of climate change and design strategies to lessen its impact on natural resource systems.	Exam	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS2-4 HS-ESS2-6 HS-ESS3-4 HS-ESS3-5
<b>NRS.01.04. Performance Indicator: Apply ecological concepts and principles to aquatic natural resource systems.</b>		
<b>NRS.01.04.01.b.</b> Assess the function of watersheds and their effect on natural resources.	Team Soils	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS2-4 HS-ESS2-6 HS-ESS3-4 HS-ESS3-5



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<p><b>NRS.01.04.01.c.</b> Evaluate and defend the importance of watersheds to ecosystem function.</p>	<p>Team Soils</p>	<p>AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS2-4 HS-ESS2-6 HS-ESS3-4 HS-ESS3-5</p>
<p><b>NRS.01.04.02.c.</b> Devise strategies to manage, protect, enhance or improve sources of groundwater or surface water based on its properties.</p>	<p>Team Activity</p>	<p>AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS2-4 HS-ESS2-6 HS-ESS3-4 HS-ESS3-5</p>
<p><b>NRS.01.04.03.b.</b> Assess techniques used in the creation, enhancement and management of riparian zones and riparian buffers. Soils analysis,</p>	<p>Team Activity</p>	<p>AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS2-4 HS-ESS2-6 HS-ESS3-4 HS-ESS3-5</p>

## Agriculture, Food and Natural Resources Content Standards continued

<b>NRS.01.04.03.c.</b> Devise strategies for the creation, enhancement and management of riparian zones and riparian buffers.	Team Activity	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS2-4 HS-ESS2-6 HS-ESS3-4 HS-ESS3-5
<b>NRS.01.05. Performance Indicator: Apply ecological concepts and principles to terrestrial natural resource systems.</b>		
<b>NRS.01.05.01.b.</b> Analyze and summarize examples of stages of succession.	Team Activity, Exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS3-4 HS-ESS3-2
<b>NRS.01.05.01.c.</b> Evaluate the stages of succession present in an ecosystem and predict which species will become more prevalent through future stages of succession.	Team Activity	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS3-4 HS-ESS3-2

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<b>NRS.01.05.02.b.</b> Analyze and summarize examples of habitat disturbances and habitat resilience.	Team Activity	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS3-4 HS-ESS3-2
<b>NRS.01.05.02.c.</b> Interpret signs of habitat disturbances and resilience in an ecosystem and use these signs to assess the health of an ecosystem.	Team Activity	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS3-4 HS-ESS3-2
<b>NRS.01.05.03.c.</b> Devise a forest management plan that improves the habitat while sustainably maximizing the amount of timber that can be harvested.	Team Activity	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS3-4 HS-ESS3-2
<b>NRS.01.05.04.b.</b> Analyze a plot of land in order to determine which soil management techniques would be most applicable.	Team Activity, Soils Analysis	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS3-4 HS-ESS3-2

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<p><b>NRS.01.05.04.c.</b> Devise a soil management plan to minimize erosion and maximize biodiversity, plant productivity, and the formation of topsoil.</p>	<p>Team Activity, Soils Analysis</p>	<p>AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS3-4 HS-ESS3-2</p>
<p><b>NRS.01.06. Performance Indicator: Apply ecological concepts and principles to living organisms in natural resource systems.</b></p>		
<p><b>NRS.01.06.01.c.</b> Create a management plan for a population of a species in an ecosystem given its population ecology, population density and population dispersion.</p>	<p>Team Activity</p>	<p>AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 HS-LS4-4 HS-LS4-6 HS-ESS3-4</p>
<p><b>NRS.01.06.02.b.</b> Analyze factors that influence the establishment and spread of invasive species and determine the appropriate steps to prevent or minimize the impact of invasive species.</p>	<p>Team Activity</p>	<p>AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 HS-LS4-4 HS-LS4-6 HS-ESS3-4</p>

## Agriculture, Food and Natural Resources Content Standards continued

<b>NRS.01.06.02.c.</b> Evaluate the presence and impact of invasive species on natural resources in a given area and devise a plan to prevent, control or eliminate invasive species from that habitat.	Team Activity	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 HS-LS4-4 HS-LS4-6 HS-ESS3-4
<b>NRS.02.01. Performance Indicator: Examine and interpret the purpose, impact and effectiveness of laws and agencies related to natural resource management, protection, enhancement and improvement.</b>		
<b>NRS.02.01.02.b.</b> Analyze the specific purpose of agencies associated with natural resources systems.	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2 STEM Career Cluster, Statement 3
<b>NRS.02.01.02.c.</b> Evaluate the impact and effectiveness of agencies associated with natural resources systems (e.g., regulation of consumption, prevention of damage to natural resources systems, management of ecological interactions, etc.).	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2 STEM Career Cluster, Statement 3
<b>NRS.02.02. Performance Indicator: Assess the impact of human activities on the availability of natural resources.</b>		
<b>NRS.02.02.01.b.</b> Assess how different kinds of human activity affect the use and availability of natural resources (i.e., agriculture, industry, transportation, etc.).	Team Activity	AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 2 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-7 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4 HS-ESS3-5 HS-ESS3-6

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<p><b>NRS.02.02.01.c.</b> Evaluate how the availability of natural resources can be improved through changes to human activity.</p>	<p>Team Activity</p>	<p>AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 2 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-7 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4 HS-ESS3-5 HS-ESS3-6</p>
<p><b>NRS.02.02.02.b.</b> Assess causes of extinction and how those causes related to loss of biodiversity.</p>	<p>Team Activity</p>	<p>AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 2 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-7 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4 HS-ESS3-5 HS-ESS3-6</p>

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<p><b>NRS.02.02.02.c.</b> Devise a strategy for preventing the loss of species and biodiversity that takes into account the primary causes of species extinction from human activity.</p>	<p>Team Activity</p>	<p>AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 2 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-7 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4 HS-ESS3-5 HS-ESS3-6</p>
<p><b>NRS.02.02.03.b.</b> Identify solutions to improve the sustainability of modern lifestyles.</p>	<p>Team Activity</p>	<p>AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 2 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-7 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4 HS-ESS3-5 HS-ESS3-6</p>

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<b>NRS.02.02.03.c.</b> Evaluate how modern lifestyles affect resource consumption and energy use and devise a strategy to prevent the complete loss of a natural resource.	Team Activity	AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 2 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-7 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4 HS-ESS3-5 HS-ESS3-6
<b>NRS.02.03. Performance Indicator: Analyze how modern perceptions of natural resource management, protection, enhancement and improvement change and develop over time.</b>		
<b>NRS.02.03.01.b.</b> Analyze how social considerations can affect the use and sustainability of natural resources.	Team Activity	AFNR Career Cluster, Statement 7
<b>NRS.02.03.02.b.</b> Examine the relationship between current trends in natural resource systems and historical figures that played a prominent role in shaping how natural resources are viewed and used today.	Exam	AFNR Career Cluster, Statement 7
<b>NRS.02.03.03.b.</b> Analyze and document how some technological advancements changed how natural resources were used and viewed (e.g., Industrial Revolution, fossil fuels, green technology, etc.). Team Activity NRS.02.03.03.c. Anticipate and predict how future technological advancements may affect the use and views of natural resources.	Team Activity, Waste Management	AFNR Career Cluster, Statement 7



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<b>NRS.02.04. Performance Indicator: Examine and explain how economics affects the use of natural resources.</b>		
<b>NRS.02.04.01.c.</b> Devise a plan to improve the conservation, protection, improvement and enhancement of natural resources based on economic value and practices.	Team Activity	AFNR Career Cluster, Statement 4 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 4 AFNR Career Cluster – Plant Systems Pathway, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.ELA-LITERACY.SL.11-12.4
<b>NRS.02.04.02.c.</b> Anticipate and predict how changes to the availability of natural resources because of human activity may impact a local, state and national economy.	Team Activity	AFNR Career Cluster, Statement 4 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 4 AFNR Career Cluster – Plant Systems Pathway, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.ELA-LITERACY.SL.11-12.4
<b>NRS.02.04.03.c.</b> Anticipate and predict the economic impact green technology and alternative energy.	Team Activity	AFNR Career Cluster, Statement 4 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 4 AFNR Career Cluster – Plant Systems Pathway, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.ELA-LITERACY.SL.11-12.4
<b>NRS.02.05. Performance Indicator: Communicate information to the public regarding topics related to the management, protection, enhancement, and improvement of natural resources.</b>		
<b>NRS.02.05.01.c.</b> Devise a strategy for communicating a natural resources message through media.	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3

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<b>NRS.02.05.02.c.</b> Anticipate and predict how messages about the conservation, management, enhancement and improvement of natural resources will change because of social media and the Internet.	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
<b>NRS.02.05.03.c.</b> Create a communication plan to influence the behavior of people, call people to action and instill a sense of civic behavior related to the conservation, management, enhancement and improvement of natural resources.	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
<b>NRS.03.01. Performance Indicator: Sustainably produce, harvest, process and use natural resource products (e.g., forest products, wildlife, minerals, fossil fuels, shale oil, alternative energy, recreation, aquatic species, etc.).</b>		
<b>NRS.03.01.04.b.</b> Assess the economic impact of fossil fuel extraction in regards to the costs and benefits to a local, state and/or national economy.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Plant Systems Pathway, Statement 4 CCSS.ELA-LITERACY.RST.11-12.8 HS-ESS3-2 HS-ESS3-3
<b>NRS.03.01.04.c.</b> Evaluate methods used to extract and process fossil fuels for economic, environmental and social sustainability.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Plant Systems Pathway, Statement 4 CCSS.ELA-LITERACY.RST.11-12.8 HS-ESS3-2 HS-ESS3-3
<b>NRS.03.01.05.b.</b> Assess the economic impact of shale oil extraction (i.e., fracking) in regards to the costs and benefits to a local, state and/or national economy.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Plant Systems Pathway, Statement 4 CCSS.ELA-LITERACY.RST.11-12.8 HS-ESS3-2 HS-ESS3-3
<b>NRS.03.01.05.c.</b> Evaluate methods used to extract and process shale oil for economic, environmental and social sustainability.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Plant Systems Pathway, Statement 4 CCSS.ELA-LITERACY.RST.11-12.8 HS-ESS3-2 HS-ESS3-3
<b>NRS.03.01.06.b.</b> Assess and evaluate factors that affect the economic, environmental and social sustainability in regards to the use of alternative sources of energy.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Plant Systems Pathway, Statement 4 CCSS.ELA-LITERACY.RST.11-12.8 HS-ESS3-2 HS-ESS3-3
<b>NRS.03.01.06.c.</b> Assess trends in energy production and consumption in order to predict how the impact of alternative energy will change in the future.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Plant Systems Pathway, Statement 4 CCSS.ELA-LITERACY.RST.11-12.8 HS-ESS3-2 HS-ESS3-3

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<b>NRS.03.01.07.b.</b> Assess different options for improving the sustainability of outdoor recreation based on its impact on natural resources and likelihood of acceptance.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Plant Systems Pathway, Statement 4 CCSS.ELA-LITERACY.RST.11-12.8 HS-ESS3-2 HS-ESS3-3
<b>NRS.03.01.07.c.</b> Evaluate an example of outdoor recreation and develop suggestions for how that activity can be made more sustainable in a manner that is acceptable to those who take part in that activity.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Plant Systems Pathway, Statement 4 CCSS.ELA-LITERACY.RST.11-12.8 HS-ESS3-2 HS-ESS3-3
<b>NRS.03.01.08.b.</b> Analyze and document techniques used to acquire aquatic species for their environmental, economic and social sustainability.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Plant Systems Pathway, Statement 4 CCSS.ELA-LITERACY.RST.11-12.8 HS-ESS3-2 HS-ESS3-3
<b>NRS.03.01.08.c.</b> Develop recommendations for the sustainable harvest of aquatic species.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Plant Systems Pathway, Statement 4 CCSS.ELA-LITERACY.RST.11-12.8 HS-ESS3-2 HS-ESS3-3
<b>NRS.03.02. Performance Indicator: Demonstrate cartographic skills, tools and technologies to aid in developing, implementing and evaluating natural resource management plans.</b>		
<b>NRS.03.02.01.b.</b> Apply cartographic skills and tools (e.g., land surveys, geographic coordinate systems, etc.) to locate natural resources.	Gps	
<b>NRS.03.02.01.c.</b> Evaluate the availability of and threats to natural resources using cartographic skills (e.g., spread of invasive species, movement of wildlife populations, changes to biodiversity of edge of habitat versus interior, etc.).	Data Analysis, Waste Management, Team Activity	
<b>NRS.03.02.02.b.</b> Analyze how an area's natural resources could be assessed using GIS technology.	Gps, Data Analysis	
<b>NRS.03.02.02.c.</b> Use GIS data for a given area to devise a management plan for the management, conservation, improvement, and enhancement of its natural resources. Waste Management,	Team Activity	

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<b>NRS.04.01. Performance Indicator: Demonstrate natural resource protection, maintenance, enhancement and improvement techniques.</b>		
<b>NRS.04.01.01.b.</b> Assess indicators of the biological health of a stream.	Exam	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3 AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5 AFNR Career Cluster – Plant Systems Pathway, Statement 2 AFNR Career Cluster – Plant Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.SL.11-12.4 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4
<b>NRS.04.01.01.c.</b> Create an enhancement plan for a stream.	Team Activity	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3 AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5 AFNR Career Cluster – Plant Systems Pathway, Statement 2 AFNR Career Cluster – Plant Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.SL.11-12.4 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4
<b>NRS.04.01.02.b.</b> Assess the methods used to improve a forest stand.	Exam	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3 AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5 AFNR Career Cluster – Plant Systems Pathway, Statement 2 AFNR Career Cluster – Plant Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.SL.11-12.4 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4

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<b>NRS.04.01.02.c.</b> Create a timber stand improvement plan for a forest.	Team Activity	<p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3</p> <p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4</p> <p>AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2</p> <p>AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5</p> <p>AFNR Career Cluster – Plant Systems Pathway, Statement 2</p> <p>AFNR Career Cluster – Plant Systems Pathway, Statement 3</p> <p>CCSS.ELA-LITERACY.RST.11-12.8</p> <p>CCSS.ELA-LITERACY.SL.11-12.4</p> <p>HS-ESS3-2</p> <p>HS-ESS3-3</p> <p>HS-ESS3-4</p>
<b>NRS.04.01.03.b.</b> Assess methods of wildlife habitat improvement.	Exam	<p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3</p> <p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4</p> <p>AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2</p> <p>AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5</p> <p>AFNR Career Cluster – Plant Systems Pathway, Statement 2</p> <p>AFNR Career Cluster – Plant Systems Pathway, Statement 3</p> <p>CCSS.ELA-LITERACY.RST.11-12.8</p> <p>CCSS.ELA-LITERACY.SL.11-12.4</p> <p>HS-ESS3-2</p> <p>HS-ESS3-3</p> <p>HS-ESS3-4</p>
<b>NRS.04.01.03.c.</b> Devise a comprehensive improvement plan for a wildlife habitat.	Team Activity	<p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3</p> <p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4</p> <p>AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2</p> <p>AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5</p> <p>AFNR Career Cluster – Plant Systems Pathway, Statement 2</p> <p>AFNR Career Cluster – Plant Systems Pathway, Statement 3</p> <p>CCSS.ELA-LITERACY.RST.11-12.8</p> <p>CCSS.ELA-LITERACY.SL.11-12.4</p> <p>HS-ESS3-2</p> <p>HS-ESS3-3</p> <p>HS-ESS3-4</p>

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<b>NRS.04.01.04.b.</b> Assess method of rangeland improvement.	Exam	<p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3</p> <p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4</p> <p>AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2</p> <p>AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5</p> <p>AFNR Career Cluster – Plant Systems Pathway, Statement 2</p> <p>AFNR Career Cluster – Plant Systems Pathway, Statement 3</p> <p>CCSS.ELA-LITERACY.RST.11-12.8</p> <p>CCSS.ELA-LITERACY.SL.11-12.4</p> <p>HS-ESS3-2</p> <p>HS-ESS3-3</p> <p>HS-ESS3-4</p>
<b>NRS.04.01.04.c.</b> Evaluate and revise a rangeland management plan.	Team Activity	<p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3</p> <p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4</p> <p>AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2</p> <p>AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5</p> <p>AFNR Career Cluster – Plant Systems Pathway, Statement 2</p> <p>AFNR Career Cluster – Plant Systems Pathway, Statement 3</p> <p>CCSS.ELA-LITERACY.RST.11-12.8</p> <p>CCSS.ELA-LITERACY.SL.11-12.4</p> <p>HS-ESS3-2</p> <p>HS-ESS3-3</p> <p>HS-ESS3-4</p>
<b>NRS.04.01.05.b.</b> Assess management techniques for improving outdoor recreation opportunities.	Exam	<p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3</p> <p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4</p> <p>AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2</p> <p>AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5</p> <p>AFNR Career Cluster – Plant Systems Pathway, Statement 2</p> <p>AFNR Career Cluster – Plant Systems Pathway, Statement 3</p> <p>CCSS.ELA-LITERACY.RST.11-12.8</p> <p>CCSS.ELA-LITERACY.SL.11-12.4</p> <p>HS-ESS3-2</p> <p>HS-ESS3-3</p> <p>HS-ESS3-4</p>

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<p><b>NRS.04.01.05.c.</b> Evaluate the impact of recreational activities on natural resources and create an improvement plan.</p>	<p>Team Activity</p>	<p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3 AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5 AFNR Career Cluster – Plant Systems Pathway, Statement 2 AFNR Career Cluster – Plant Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.SL.11-12.4 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4</p>
<p><b>NRS.04.01.06.b.</b> Assess methods to improve marine and coastal natural resources.</p>	<p>Exam</p>	<p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3 AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5 AFNR Career Cluster – Plant Systems Pathway, Statement 2 AFNR Career Cluster – Plant Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.SL.11-12.4 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4</p>
<p><b>NRS.04.01.06.c.</b> Create an improvement plan for marine or coastal natural resources.</p>	<p>Team Activity</p>	<p>AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3 AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5 AFNR Career Cluster – Plant Systems Pathway, Statement 2 AFNR Career Cluster – Plant Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.SL.11-12.4 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4</p>

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<b>NRS.04.02. Performance Indicator: Diagnose plant and wildlife diseases and follow protocols to prevent their spread</b>		
<b>NRS.04.02.01.c.</b> Create a management plan to reduce infection and the spread of plant diseases in natural resource systems.	Team Activity	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3 AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5 AFNR Career Cluster – Plant Systems Pathway, Statement 2 AFNR Career Cluster – Plant Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.SL.11-12.4 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4
<b>NRS.04.02.02.c.</b> Create a management plan to reduce infection and spread of wildlife or aquatic species diseases in natural resource systems.	Team Activity	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3 AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5 AFNR Career Cluster – Plant Systems Pathway, Statement 2 AFNR Career Cluster – Plant Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.SL.11-12.4 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4
<b>NRS.04.03. Performance Indicator: Prevent or manage introduction of ecologically harmful species in a particular region.</b>		
<b>NRS.04.03.01.c.</b> Create a management plan to reduce spread of harmful insects in natural resource systems.	Team Activity	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-LS2-7 HS-LS4-6



## Environmental and Natural Resources

## Agriculture, Food and Natural Resources Content Standards continued

<b>NRS.04.03.02.c.</b> Create a management plan to reduce spread of harmful invasive species in natural resource systems.	Team Activity	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-LS2-7 HS-LS4-6
<b>NRS.04.03.03.c.</b> Identify potentially invasive species and devise strategies to prevent ecological damage that would result from the introduction of that species.	Team Activity	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-LS2-7 HS-LS4-6
<b>NRS.04.04. Performance Indicator: Manage fires in natural resource systems.</b>		
<b>NRS.04.04.01.a.</b> Differentiate between desirable and undesirable fires and research the role fire plays in a healthy ecosystem.	Exam	
<b>NRS.04.04.01.c.</b> Develop a prevention plan for harmful fires for a particular region.	Team Activity	
<b>NRS.04.04.02.c.</b> Anticipate and predict how fire management techniques will evolve in the future.	Team Activity	
<b>PS.01.02. Performance Indicator: Prepare and manage growing media for use in plant systems.</b>		
<b>PS.01.02.02.b.</b> Discuss how soil drainage and water-holding capacity can be improved.	Soil Management Practicum, Exam	
<b>PS.01.02.02.c.</b> Determine the hydraulic conductivity for soil and how the results influence irrigation practices.	Soils Management Practicum	

## Agriculture, Food and Natural Resources Content Standards continued

<b>PS.01.03. Performance Indicator: Develop and implement a fertilization plan for specific plants or crops.</b>		
<b>PS.01.03.01.b.</b> Analyze the effects of nutrient deficiencies and symptoms and recognize environmental causes of nutrient deficiencies.	Soils Management Practicum	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>PS.01.03.02.c.</b> Adjust the pH of growing media for specific plants or crops.	Soils Management Practicum	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>PS.01.03.03.b.</b> Interpret laboratory analyses of soil and tissue samples.	Soils Management Practicum	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>PS.01.03.03.c.</b> Prescribe fertilizer applications based on the results of a laboratory analysis of soil and plant tissue samples.	Soils Management Practicum	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>PS.01.03.04.b.</b> Calculate the amount of fertilizer to be applied based on nutrient recommendation and fertilizer analysis.	Soils Management Practicum	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>PS.01.03.05.c.</b> Devise a plan for soil management for a selected production method.	Soils Management Practicum	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>PS.01.03.06.b.</b> Assess environmental factors on a crop.	Soils Management Practicum	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>PS.01.03.06.c.</b> Devise a plan to meet plant nutrient needs based on environmental factors present.	Soils Management Practicum	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>PS.02.01. Performance Indicator: Classify plants according to taxonomic systems.</b>		
<b>PS.02.01.02.a.</b> Describe the morphological characteristics used to identify agricultural and herbaceous plants (e.g., life cycles, growth habit, plant use and as monocotyledons or dicotyledons, woody, herbaceous, etc.).	Exam, Identification	
<b>PS.02.01.02.b.</b> Identify and describe important plants to agricultural and ornamental plant systems by common names.	Identification	
<b>PS.03.01. Performance Indicator: Demonstrate plant propagation techniques in plant system activities.</b>		
<b>PS.03.01.05.c.</b> Evaluate the impact of using genetically modified crops on other production practices.	Team Activity	
<b>PS.03.03. Performance Indicator: Develop and implement a plan for integrated pest management for plant production.</b>		
<b>PS.03.03.01.c.</b> Devise solutions for plant pests, diseases and disorders.	Team Activity	

## Agriculture, Food and Natural Resources Content Standards continued

<b>PS.03.05. Performance Indicator: Harvest, handle and store crops according to current industry standards.</b>		
<b>PS.03.05.01.b.</b> Assess the stage of growth to determine crop maturity or marketability and demonstrate proper harvesting techniques.	Team Activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
<b>PS.03.05.01.c.</b> Analyze the processed used by mechanical harvesting equipment.	Team Activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
<b>PS.04.02. Performance Indicator: Create designs using plants.</b>		
<b>PS.04.02.03.c.</b> Utilize green technologies and sustainable practices that prevent or limit negative environmental impacts.	Team Activity	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 AFNR Career Cluster – Plant Systems Pathway, Statement 2 STEM Career Cluster, Statement 4
<b>PST.01.01. Performance Indicator: Apply physical science and engineering principles to assess and select energy sources for AFNR power, structural and technical systems.</b>		
<b>PST.01.01.01.b.</b> Assess the environmental impacts of renewable and nonrenewable energy sources used in AFNR.	Team Activity	AFNR Career Cluster, Statement 4 AFNR Career Cluster, Statement 5 HS-ESS3-3 HS-PS3-3
<b>PST.01.01.01.c.</b> Design and implement methods to evaluate the efficiency of renewable and nonrenewable energy sources used in AFNR.	Team Activity	AFNR Career Cluster, Statement 4 AFNR Career Cluster, Statement 5 HS-ESS3-3 HS-PS3-3
<b>PST.01.01.02.c.</b> Devise a strategy to incorporate the use of selected energy sources in an ANFR enterprise or business.	Team Activity	AFNR Career Cluster, Statement 4 AFNR Career Cluster, Statement 5 HS-ESS3-3 HS-PS3-3
<b>PST.05.03. Performance Indicator: Apply geospatial technologies to solve problems and increase the efficiency of AFNR systems.</b>		
<b>PST.05.03.01.b.</b> Assess and analyze data collected utilizing geospatial technologies.	Gps	HS-ESS3-4 HS-ETS1-3 HS-ESS3-2
<b>PST.05.03.01.c.</b> Collect data and create maps utilizing geospatial technologies.	Gps	HS-ESS3-4 HS-ETS1-3 HS-ESS3-2
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
<b>CRP.02.01.01.b.</b> Assess workplace problems and identify the most appropriate academic knowledge and skills to apply.	Data Analysis, Team Activity	
<b>CRP.02.01.02.b.</b> Assess community problems and identify the most appropriate academic knowledge and skills to apply.	Team Activity	

## Agriculture, Food and Natural Resources Content Standards continued

CRP.02.01.02.c. Apply academic knowledge and skills to solve problems in the community and reflect upon results achieved.	Team Activity	
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
CRP.02.02.01.b. Assess workplace problems and distinguish the most appropriate technical concepts to apply.	Team Activity	
CRP.02.02.01.c. Apply technical concepts to solve problems in the workplace and reflect upon the results achieved.	Team Activity	
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Team Activity	
<b>CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.</b>		
CRP.04.02.02.c. Compose clear and coherent written documents (e.g., agendas, audio-visuals, drafts, forms, etc.) for formal and informal settings.	Team Activity	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Team Activity	
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	Team Activity	
<b>CRP.05.02. Performance Indicator: Make, defend and evaluate decisions at work and in the community using information about the potential environmental, social and economic impacts.</b>		
CRP.05.02.01.b. Apply a structured decision-making process to improve workplace and community situations.	Data Analysis, Team Activity	
CRP.05.02.01.c. Evaluate and defend decisions applied in the workplace and community situations.	Data Analysis, Team Activity	
CRP.05.02.02.b. Assess past decisions made in workplace and community and analyze their effects on environmental, social and economic situations.	Data Analysis, Team Activity	

## Agriculture, Food and Natural Resources Content Standards continued

CRP.05.02.02.c. Evaluate workplace and community situations and propose decisions to be made based upon the positive impact made on environment, social and economic areas. Data Analysis,	Team Activity	
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
CRP.06.01.01.b. Synthesize information, knowledge and experiences to generate ideas for workplace and community situations.	Team Activity	
<b>CRP.06.03. Performance Indicator: Create and execute a plan of action to act upon new ideas and introduce innovations to workplace and community organizations.</b>		
CRP.06.03.01.c. Design a plan of action to introduce a new idea or innovation into the workplace and community.	Team Activity	
CRP.06.03.02.b. Elicit and assimilate input and feedback from individuals and organizations about new ideas or innovations for the workplace or community.	Data Analysis, Team Activity	
<b>CRP.07.02. Performance Indicator: Evaluate the validity of sources and data used when considering the adoption of new technologies, practices and ideas in the workplace and community.</b>		
CRP.07.02.02.b. Assimilate data to assist in making a decision about the adoption of a new technology, practice or idea by workplaces and community organizations.	Data Analysis, Team Activity	
CRP.07.02.02.c. Create and defend proposals for new technologies, practices and ideas using valid and reliable data sources.	Data Analysis, Team Activity	
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Team Activity	
CRP.08.01.02.b. Assess solutions to workplace and community problems for evidence of reason, logic and consideration of multiple perspectives.	Team Activity	

## Agriculture, Food and Natural Resources Content Standards continued

<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.01.b. Assimilate and prioritize potential solutions to solve problems in the workplace and community.	Team Activity	
CRP.08.02.01.c. Devise strategies to evaluate the effectiveness of solutions for resolving workplace and community problems.	Team Activity	
CRP.08.02.02.b. Apply decision-making processes to generate possible solutions to solve workplace and community problems.	Team Activity	
<b>CRP.08.03. Performance Indicator: Establish plans to solve workplace and community problems and execute them with resiliency.</b>		
CRP.08.03.02.b. Create plans to solve workplace and community problems.	Team Activity	
<b>CRP.09.01. Performance Indicator: Model characteristics of ethical and effective leaders in the workplace and community (e.g. integrity, self-awareness, self-regulation, etc.).</b>		
CRP.09.01.02.c. Model characteristics and actions of ethical and effective leaders in workplace and community situations (e.g., integrity, self-awareness, etc.).	Team Activity	
<b>CRP.09.03. Performance Indicator: Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community (e.g., positively influencing others, effectively communicating, etc.).</b>		
CRP.09.03.02.c. Model respectful and purposeful behaviors that contribute to positive morale and culture in the workplace and community (e.g., effectively communicating, recognizing accomplishments of others, etc.).	Team Activity	
<b>CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).</b>		
CRP.12.02.01.c. Create novel strategies to engage team members based on the situation.	Team Activity	



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# EXTEMPORANEOUS PUBLIC SPEAKING

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS



## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The National FFA Extemporaneous Public Speaking Leadership Development Event is designed to develop the ability of all FFA members to express themselves on a given subject without having prepared or rehearsed its content in advance. This gives FFA members an opportunity to formulate their remarks for presentation in a very limited amount of time. The event will be held in connection with the national FFA convention and expo.*



## Event Rules

*The National FFA Extemporaneous Public Speaking Leadership Development Event will be limited to one participant from each state association.*

- It is highly recommended that participants wear FFA Official Dress for this event.
- Copies of the rules and score sheet will be supplied to participants in advance of the national event.
- Three to eight competent and impartial persons will be selected to judge the event. At least one judge should have an agricultural background. Each state with a speaker shall provide a judge for preliminary rounds of the national event. Any advisor who has a student competing in a speaking event may not serve as a judge for that respective speaking event.
- Any participant in possession of any electronic device, not provided by the event committee, in the preparation room is subject to disqualification.



## Event Format

*Event officials will randomly draw speaking order. The superintendent will announce each participant by name and in order of the drawing.*

The selection of topics will be held 30 minutes before the event. The participants will draw three specific topics, selected at random from the pool of 18, relating to the industry of agriculture. After selecting the topic they desire to speak on, all three topics will be returned for the next drawing.

Eighteen topics will be prepared by the event superintendent and will include three each from the following categories:

- Agricultural literacy and advocacy
- Current agricultural issues
- Advancing agriculture through agriculture science
- Current technology uses and applications in agriculture
- Agrimarketing and international agriculture
- Food and fiber systems

*Extemporaneous Public Speaking continued*

Participants will be admitted to the preparation room at 15 minute intervals and given exactly 30 minutes for topic selection and preparation.

The officials in charge of the event will screen reference material on the following basis:

- Must be limited to five items
- Printed material such as books or magazines
- Printed compilations of materials collected from Internet research
  - Participants may have 10 mins to conduct online research. Computers may be provided. Access to email, Dropbox or any prepared materials are prohibited.
- To be counted as one item, a notebook or folder of collected materials may contain no more than 100 single-sided pages or 50 pages double-sided numbered consecutively.
- References should be in original format.
- There can be no notes or speeches prepared by the participant or by another person for the purpose of use in this event. Cutting and pasting into a Microsoft Word document will be considered prepared notes.

Each speech should be the result of the participant's own effort using approved reference material which the participant may bring to the preparation room. No other assistance may be provided. Participants must use the uniform note cards provided. Any notes for speaking must be made during the 30 minute preparation period. A participant will be permitted to use notes while speaking, but deductions in scoring may be made for this practice if it detracts from the effectiveness of the presentation.

A list of all possible topics will be given to and reviewed by the judges prior to the beginning of the event.

Each speech should be no less than four and no more than six minutes in length. An additional five minutes will be allowed for the questioner to ask related questions. The room coordinator of the event will

introduce the participant by name and state. The participant may introduce his or her speech by title only. Participants will be penalized one point per second on each judge's score sheet for being over six minutes or under four minutes. Time commences when the speaker begins talking. Speakers may use a watch to keep a record of their time. Event officials or observers will give no time warnings.

The national event will be conducted in three rounds: preliminaries, semifinals and finals. No ranking will be given except for the final four speakers. Comment cards for all participants will be distributed at the awards function.

Timekeepers will record the time for each participant in delivering his or her speech, noting under time or over time, if any, for which deductions should be made.

At the time of the event, the judges will be seated in a designated section of the room in which the event is held. They will score each participant on the delivery of the production using the score sheet provided.

Each room in all rounds will have one person designated as a questioner. This individual will ask and score all questions for the event round. Questions will pertain directly to the speaker's subject. Questions containing two or more parts should be avoided. Judges will score each participant on the ability to answer. The full five minutes should be used.

When all participants have finished speaking, each judge will total the score on each participant. The timekeepers' record will be used in computing the final score for each participant. The judges' score sheets will then be submitted to event officials to determine final ratings of participants.

During preliminary and semifinal rounds, recording of presentations is permitted by one person from each participant's association, including advisor or family member, for that participant only.

## Scoring

*Participants will be ranked in numerical order on the basis of the final score to be determined by each judge without consultation. The judges' ranking of each participant then will be added, and the winner will be the participant whose total ranking is the lowest. Other placings will be determined in the same manner (low rank method of selection).*

## TIEBREAKERS

Ties will be broken based on the greatest number of low ranks. The participant's low ranks will be counted and the participant with the greatest number of low ranks will be declared the winner. If a tie still exists, then the event superintendent will rank the participant's response to questions. The participant with the greatest number of low ranks from the response to question will be declared the winner. If a tie still exists then the participant's raw scores will be totaled. The participant with the greatest total of raw points will be declared the winner.



## Awards

*Awards will be presented at the awards function.*

Awards are presented to individuals based upon their rankings. Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

## Resources

*This list of references is not intended to be all-inclusive. Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.*

### **NATIONAL FFA CORE CATALOG:**

- Figures of Speech DVD—<http://shop.FFA.org>
- Great Speeches and Presentations—<http://shop.FFA.org>
- CDE Q&A's [www.FFA.org](http://www.FFA.org)
- American Farm Bureau Federation – [www.fb.org](http://www.fb.org)
- United States Department of Agriculture – [www.usda.gov](http://www.usda.gov)





NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Extemporaneous Public Speaking Rubric

1000 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_

INDICATORS	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 1-0 points	Points Earned	Weight	Total Score
<b>Oral Communication – 600 points</b>						
<b>Examples</b>	<ul style="list-style-type: none"> <li>Examples are vivid, precise and clearly explained.</li> <li>Examples are original, logical and relevant</li> </ul>	<ul style="list-style-type: none"> <li>Examples are usually concrete, sometimes needs clarification.</li> <li>Examples are effective, but need more originality or thought.</li> </ul>	<ul style="list-style-type: none"> <li>Examples are abstract or not clearly defined.</li> <li>Examples are sometimes confusing, leaving the listeners with questions.</li> </ul>		X 10	
<b>Speaking without hesitation</b>	<ul style="list-style-type: none"> <li>Speaks very articulately without hesitation.</li> <li>Never has the need for unnecessary pauses or hesitation when speaking.</li> </ul>	<ul style="list-style-type: none"> <li>Speaks articulately, but sometimes hesitates.</li> <li>Occasionally has the need for a long pause or moderate hesitation when speaking.</li> </ul>	<ul style="list-style-type: none"> <li>Speaks articulately, but frequently hesitates.</li> <li>Frequently hesitates or has long, awkward pauses while speaking.</li> </ul>		X 10	
<b>Tone</b>	<ul style="list-style-type: none"> <li>Appropriate tone is consistent.</li> <li>Speaks at the right pace to be clear.</li> <li>Pronunciation of words is very clear and intent is apparent.</li> </ul>	<ul style="list-style-type: none"> <li>Appropriate tone is usually consistent.</li> <li>Speaks at the right pace most of the time, but shows some nervousness.</li> <li>Pronunciation of words is usually clear, sometimes vague.</li> </ul>	<ul style="list-style-type: none"> <li>Has difficulty using an appropriate tone.</li> <li>Pace is too fast; nervous.</li> <li>Pronunciation of words is difficult to understand; unclear.</li> </ul>		X 10	
<b>Being detail-oriented</b>	<ul style="list-style-type: none"> <li>Is able to stay fully detail-oriented.</li> <li>Always provides details which support the issue; is well organized.</li> </ul>	<ul style="list-style-type: none"> <li>Is mostly good at being detail-oriented.</li> <li>Usually provides details which are supportive of the issue; displays good organizational skills.</li> </ul>	<ul style="list-style-type: none"> <li>Has difficulty being detail-oriented.</li> <li>Sometimes overlooks details that could be very beneficial to the issue; lacks organization.</li> </ul>		X 30	
<b>Connecting and articulating facts and issues</b>	Exemplary in connecting facts and issues and articulating how they impact the issue locally and globally. <ul style="list-style-type: none"> <li>Possesses a strong knowledge base and is able to effectively articulate information regarding related facts and current issues.</li> </ul>	Sufficient in connecting facts and issues and articulating how they impact the issue locally and globally. <ul style="list-style-type: none"> <li>Possesses a good knowledge base and is able to, for the most part, articulate information regarding related facts and current issues.</li> </ul>	Has difficulty with connecting facts and issues and articulating how they impact the issue locally and globally. <ul style="list-style-type: none"> <li>Possesses some knowledge base but is unable to articulate information regarding related facts and current issues.</li> </ul>		X 30	
<b>Speaking unrehearsed (questions &amp; answers)</b>	Speaks unrehearsed with comfort and ease. <ul style="list-style-type: none"> <li>Is able to speak quickly with organized thoughts and concise answers.</li> </ul>	Speaks unrehearsed mostly with comfort and ease, but sometimes seems nervous or unsure. <ul style="list-style-type: none"> <li>Is able to speak effectively, has to stop and think and some- times gets off focus.</li> </ul>	Shows nervousness or seems unprepared when speaking unrehearsed. <ul style="list-style-type: none"> <li>Seems to ramble or speaks before thinking.</li> </ul>		X 30	
<b>Oral Communications Total</b>						

Extemporaneous Public Speaking

Extemporaneous Public Speaking Rubric continued

INDICATORS	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 1-0 points	Points Earned	Weight	Total Score
<b>Non-verbal Communication – 400 points</b>						
<b>Attention (eye contact)</b>	<ul style="list-style-type: none"> <li>• Eye contact constantly used as an effective connection.</li> <li>• Constantly looks at the entire audience (90-100% of the time).</li> </ul>	<ul style="list-style-type: none"> <li>• Eye contact is mostly effective and consistent.</li> <li>• Mostly looks around the audience (60-80% of the time).</li> </ul>	<ul style="list-style-type: none"> <li>• Eye contact does not always allow connection with the speaker.</li> <li>• Occasionally looks at someone or some groups (less than 50% of the time).</li> </ul>		X 20	
<b>Mannerisms</b>	<ul style="list-style-type: none"> <li>• Does not have distracting mannerisms that affect effectiveness.</li> <li>• No nervous habits</li> </ul>	<ul style="list-style-type: none"> <li>• Sometimes has distracting mannerisms that pull from the presentation.</li> <li>• Sometimes exhibits nervous habits or ticks.</li> </ul>	<ul style="list-style-type: none"> <li>• Has mannerisms that pull from the effectiveness of the presentation.</li> <li>• Displays some nervous habits – fidgets or anxious ticks.</li> </ul>		X 20	
<b>Gestures</b>	<ul style="list-style-type: none"> <li>• Gestures are purposeful and effective.</li> <li>• Hand motions are expressive and used to emphasize talking points.</li> <li>• Great posture (confident) with positive body language.</li> </ul>	<ul style="list-style-type: none"> <li>• Usually uses purposeful gestures.</li> <li>• Hands are sometimes used to express or emphasize.</li> <li>• Occasionally slumps; sometimes negative body language.</li> </ul>	<ul style="list-style-type: none"> <li>• Occasionally gestures are used effectively.</li> <li>• Hands are not used to emphasize talking points; hand motions are sometimes distracting.</li> <li>• Lacks positive body language; slumps.</li> </ul>		X 20	
<b>Well-poised</b>	<ul style="list-style-type: none"> <li>• Is extremely well-poised.</li> <li>• Poised and in control at all times</li> </ul>	<ul style="list-style-type: none"> <li>• Usually is well-poised.</li> <li>• Poised and in control most of the time; rarely loses composure</li> </ul>	<ul style="list-style-type: none"> <li>• Isn't always well-poised.</li> <li>• Sometimes seems to lose composure.</li> </ul>		X 20	
<b>Non-verbal Communication Total Points</b>						
<b>Oral Communication Total Points</b>						
<b>Time Deduction *</b>						
<b>NET TOTAL POINTS</b>						
<b>RANK</b>						

\* –1 point per second under 4 minutes or over 6 minutes, determined by the timekeepers



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Agriculture, Food and Natural Resources Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CS.01. Performance Element: Analyze how issues, trends, technologies and public policies impact systems in the Agriculture, Food &amp; Natural Resources Career Cluster.</b>		
CS.01.01.01.c. Evaluate and explain AFNR issues and their impacts to audiences with limited AFNR knowledge.	Entire event	
<b>CS.01.02. Performance Indicator: Examine technologies and analyze their impact on AFNR systems.</b>		
CS.01.02.02.c. Evaluate the importance of technology use and how it impacts AFNR systems.	Entire event	
<b>CS.01.03. Performance Indicator: Identify public policies and their impact on AFNR systems.</b>		
CS.01.03.01.c. Evaluate a public policy within AFNR systems and defend or challenge it.	Entire event	
<b>CS.03.01. Performance Indicator: Identify required regulations to maintain and improve safety, health and environmental management systems.</b>		
CS.03.01.01.b. Assess health, safety and environmental procedures to comply with regulatory and safety standards.	Entire event	
CS.03.01.01.c. Evaluate how AFNR organizations/ businesses promote improved health, safety and environmental management.	Entire event	
CS.03.01.02.b. Analyze existing required regulations within an AFNR workplace.	Entire event	
<b>CS.04.01. Performance Indicator: Identify and implement practices to steward natural resources in different AFNR systems.</b>		
CS.04.01.02.b. Analyze and assess sustainability practices that can be applied in AFNR systems (e.g., energy efficiency, recycle/reuse/repurpose, green resources, etc.).	Entire event	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
CS.04.01.02.c. Evaluate sustainability policies and plans and prepare summary of potential improvements for AFNR businesses or organizations.	Entire event	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3

## Extemporaneous Public Speaking

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CS.04.02. Performance Indicator: Assess the natural resource related trends, technologies and policies that impact AFNR systems.</b>		
CS.04.02.01.b. Analyze natural resources trends and technologies and document how they impact AFNR systems (e.g., climate change, green technologies, water resources, etc.).	Entire event	AFNR Career Cluster, Statement 7
CS.04.02.01.c. Defend or challenge natural resources trends and technologies based upon an assessment of their impact on AFNR systems.	Entire event	AFNR Career Cluster, Statement 7
CS.04.02.02.b. Create and propose a hypothetical natural resources policy that will impact current AFNR systems (e.g., for water resources, land use, air quality, etc.).	Entire event	AFNR Career Cluster, Statement 7
CS.04.02.02.c. Design strategies for implementing a new natural resources policy that will positively impact AFNR systems.	Entire event	AFNR Career Cluster, Statement 7
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
CRP.06.01.01.b. Synthesize information, knowledge and experiences to generate ideas for workplace and community situations.	Entire event	
CRP.06.01.02.b. Analyze how assumptions can impact outcomes in a variety of workplace and community situations.	Entire event	
CRP.06.01.02.c. Devise strategies (e.g., ask questions, brainstorm ideas, present facts and information etc.) to challenge common assumptions in workplace and community situations.	Entire event	
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.01.b. Assimilate and prioritize potential solutions to solve problems in the workplace and community.	Entire event	



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# FARM AND AGRIBUSINESS MANAGEMENT

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The National FFA Farm and Agribusiness Management Career Development Event provides competition that fosters information assimilation, critical thinking and problem-solving skills necessary for successful business management. The skills learned in this event can be used to successfully manage a farm, agribusiness, pursue agricultural business careers and can be applied to personal financial management. The National FFA Farm and Agribusiness Management Career Development Event enhances and encourages opportunities for all participants to receive instruction that develops business management and entrepreneurial skills.*





## Objectives

The event objectives are for participants to demonstrate their ability to:

- Analyze business management information.
- Apply economic principles and concepts of business management to the decision-making process.
- Evaluate business management decisions.
- Work together cooperatively as a team.





## Principles and Concepts

The principles and concepts listed below may be included in each section event.

### **ECONOMIC PRINCIPLES RELATED TO BUSINESS MANAGEMENT**

- Production functions
  - Diminishing returns
  - Profit maximization
- Cost concepts
- Input combinations
- Enterprise selection
  - Equi-marginal returns
  - Specialization and diversification
- Supply and demand concepts
- Types of market competition
  - Perfectly competitive markets
  - Oligopoly markets
  - Monopolistic competitions
  - Monopoly markets

## **CONCEPTS RELATED TO THE USE AND ANALYSIS OF RECORDS TO MANAGE RESOURCES**

- Financial statements balance sheet
  - Income statement
  - Statement of owner equity
  - Statement of cash flow
- Financial analysis
- Budgeting
  - Partial budgets
  - Whole farm or business budgets
  - Enterprise budgets
  - General operating budgets
- Cash flow analysis
- Managerial accounting
- Tax management

## **CONCEPTS AND FUNCTIONS OF RISK MANAGEMENT**

- Categories of risk financial
  - Market
  - Legal
  - Production
  - Human resources
- Risk management process
- Risk management plan

## **BUSINESS MANAGEMENT**

- Strategic management
  - Vision statement
  - Mission statement
  - Goals
- Tactical planning
- Operational planning
- Succession planning
- Estate planning
- Cost analysis
  - Fixed costs
  - Variable costs
- Business structure
- Commodity and agribusiness marketing
- Real estate acquisition

## Event Rules

- A team consists of four members. A team score consists of the total of four individuals' scores on the written exam plus the team activity score (all certified members must participate in the team activity).
- It is highly recommended that participants wear FFA Official Dress for this event.
- Copies of the complete event with answers are distributed to all who are present at the event evaluation meeting.

## EQUIPMENT PROVIDED

- Two sharpened No. 2 pencils or equivalent.
- Non-programmable calculator – **participants will not be allowed to provide their own calculator.**

## ELECTRONIC DEVICES

Each state team or individual may be required to provide laptop or similar equipment for participation in the farm and agribusiness management event. Minimum specifications will be determined and posted on the event webpage and in the team orientation packet prior to the event.

## TEAM ACTIVITY

The team activity evaluates the ability of team members to work together to use decision making and problem analysis skills while applying economic principles and concepts taught in business management.

- Members of a team work together cooperatively to complete this section.
- Ninety minutes are allowed for completion of the team activity. Participants may be required to submit a written report or provide an oral presentation, as outlined in the team orientation packet.

All topics in the outline under the “Principles and Concepts” section can be included in the team activity.

- The team activity has a maximum value of 300 points per team and is only included in the team score. Points are divided as follows:

#### **Team Evaluation (100 points)**

During the team activity section, the team is observed by event judges and is evaluated on the team’s ability to work cooperatively as a group.

#### **Team written answer sheet (200 points)**

All team members must be involved in the team activity to receive credit. If a team has three or fewer participants, no credit will be allowed in the team portion of the event.

### **INDIVIDUAL WRITTEN EXAM ACTIVITY (300 POINTS)**

The written exam tests the ability of the participants to use decision-making and problem-analysis skills while applying economic principles and concepts taught in business management.

- Each team member works independently to complete the written exam. Each team member receives an individual score on the written exam.
- Three hours are allowed for completion of the written exam.
- The written exam may include any type of question (such as multiple choice, short answer and fill-in-the-blank). The questions may require calculations to determine the correct answer.
- All topics in the outline under the “Principles and Concepts” section can be included in the written exam. Business management forms and procedures follow the samples and procedures as presented in the most current farm and ranch business management text published by John Deere Publishing.
- The written exam has a maximum value of 300 points per team member.
- Individual scores on the written exam are used to calculate both the individual and team score.



## Scoring

The following table summarizes the breakdown of points, event section for each point allocation and the amount of time allowed for each section of the event.

POINTS			
Section	Time	Individual	Team
Written Exam	180 Minutes	300	1,200
Team Activity	90 Minutes		300
TOTAL		300	1,500

## TIEBREAKERS

Judges will break ties on team scores using the following sequence:

- The score on the written section of the team activity.
- The score on pre-selected questions of the written exam.

Judges will break ties on individual scores using pre-selected sections of the written exam.



## Awards

*Awards will be presented to individuals and/or teams based upon their rankings at the awards ceremony.*

Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/ or by the general fund of the National FFA Foundation.



## References

*This list of references is not intended to be all-inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the best instructional materials available. The following list contains references that may prove helpful during event preparation.

Numerous sources of materials exist, and participating teams should consult with their state's cooperative extension service, the colleges and universities teaching farm and ranch business management and other material services available to the participating school. For the most current listing of resources and definitions for economic terms, refer to the national FFA website—Farm and agribusiness management CDE section at [FFA.org](http://FFA.org).

### PRIMARY

- Jobes, Steward, Casey and Purcell (2010). Farm and Ranch Business Management (latest edition). Deere & Company, John Deere Publishing, East Moline, Illinois 61244. [http:// www.deere.com/ publications](http://www.deere.com/publications)
- Kay, Edwards and Duffy. Farm Management. McGraw-Hill Book Co., New York, NY. (most current edition)
- CDE NCQ, [FFA.org](http://FFA.org) Good source for examples of enterprise budgets and financial statements used in the CDE.

### SECONDARY

- Boehlje and Eidman (1984). Farm Management. John Wiley and Sons, New York, NY.
- Bowers, Love and Kletke (1994). Machinery Replacement Strategies. Deere & Company, John Deere Publishing, East Moline, Illinois 61244. Deere & Company. <http://www.deere.com>

- Dicks, Michael (1998). *Agricultural Policy and How it Affects You*, Deere & Company, John Deere Publishing, East Moline, Illinois 61244.
- Oltmans, Klinefleter, and Frey (2001) *Agricultural Financial Reporting and Analysis*. Doane Agricultural Services, St. Louis, MO.
- Purcell, Wayne D. (1995). *Marketing Agricultural Commodities*. Deere & Company, John Deere Publishing, East Moline, Illinois 61244.
- Wilson, Purcell, Burton, and Wahlberg (1994). *Managing Livestock Production*. Deere & Company, John Deere Publishing, East Moline, Illinois 61244.
- Wilson, Purcell, Burton, and Wahlberg (1994). *Managing Agricultural Commodities*.
- Deere & Company, John Deere Publishing, East Moline, Illinois 61244

## TECHNICAL REFERENCES

- Farmers Tax Guide, published by the Department of the Treasury, Internal Revenue Service, can be obtained from the IRS Forms Distribution center in your state or the IRS website. <http://www.irs.gov/publications/p225/index.html>
- Farm Financial Standards Council, *Financial Guidelines for Agriculture Producers*, 1998 <http://www.ffsc.org/>.
- Assorted educational materials are available on hedging, forward contracting, and commodity futures trading from any of the following addresses.
  - Chicago Mercantile Exchange, 30 South Wacker Drive, Chicago, Illinois 60604. <http://www.cmegroup.com>
  - Kansas City Board of Trade, 4800 West Main Street, Kansas City, Missouri 64112
  - New York Cotton Exchange, New York Mercantile Exchange Building, One North End Avenue, New York, NY 10282-1101

- New York Mercantile Exchange, Commodity Exchange Ctr., One North End Avenue, New York, NY 10282-1101
- Doane Agricultural Services, Vance Publishing Corp., 77 Westport Plaza, #250, St. Louis, MO 63416. Doane provides a variety of educational materials related to farm and ranch management.
- Cooperative Extension Service in your state. Contact your local extension agent for access to farm and ranch management educational materials.



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Team Activity Evaluation — Observers Rubric

100 points

CHAPTER \_\_\_\_\_

STATE \_\_\_\_\_

TEAM NUMBER \_\_\_\_\_

## CRITERIA

- All team members were involved and contributed to the activity in an organized manner.
- Team members demonstrated effective listening and oral communication skills in resolving issues related to the presented task(s).
- Team members demonstrated cooperation in negotiating possible solutions that were relevant to the activity as presented.

INDICATOR	High 5–4 points	Medium 3–2 points	Low 0–1 points	Weight	Points Earned
Leadership Identified	Clearly identifies and lists leaders	Leadership evident, listing incomplete	Leadership not evident, no listing completed	X2	
Effective listening and oral communication	Clearly evident that all team members are listening and discussing issues	Listening and communications occurring, but two to three members dominating.	Not listening to each other, talking over other team member, one member dominating.	X6	
Demonstrated cooperation	Clearly all team members completing tasks, sharing written and oral computations/solutions.	Tasks primarily completed by two to three members, other member(s) assist occasionally.	Tasks primarily completed by one member, other members contributing only slightly.	X6	
Participated in the team	Clearly all members are engaged, attentive and making notes for the full term of event.	Members are engaged and attentive, with two to three making notes, participation fades over time.	One to two members form the primary team, other members participate occasionally early, fade over time.	X6	
TOTAL POINTS					

JUDGE'S NAME \_\_\_\_\_

JUDGE'S SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Team Activity Evaluation Summary Scorecard

CHAPTER \_\_\_\_\_

STATE \_\_\_\_\_

TEAM NUMBER \_\_\_\_\_

### CRITERIA:

- All team members were involved and contributed to the activity in an organized manner.
- Team members demonstrated effective listening and oral communication skills in resolving issues related to the presented task(s).
- Team members demonstrated cooperation in negotiating possible solutions that were relevant to the activity as presented.

TEAMWORK EVALUATION (OBSERVATION)	Points possible	Points earned
Team leadership roles were identified and demonstrated.	10	
Team members demonstrated effective listening and oral communication skills in resolving issues related to the present tasks.	30	
Team members demonstrated cooperation in negotiating possible solutions that were relevant to the activity as presented.	30	
Each team member participated in the team activity and contributed to the results reached by the team	30	
<b>Subtotal for Observation (Out of possible 100)</b>		
TEAM ACTIVITY SOLUTION EVALUATION (WRITTEN ANSWER SHEET)	Points possible	Points earned
Team demonstrated knowledge of farm business management principles and concepts and summarized consensus in the team activity answer sheet.	200	
<b>Subtotal for Solution (Out of possible 200)</b>		
<b>TOTAL (Out of possible 300)</b>		

### NOTES

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JUDGE'S NAME \_\_\_\_\_

JUDGE'S SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Agriculture, Food and Natural Resources Content Standards

## Agribusiness Systems Career Pathway Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.01.01. Performance Indicator: Apply micro- and macroeconomic principles to plan and manage inputs and outputs in an AFNR business.</b>		
<b>ABS.01.01.01.c.</b> Create strategies to maximize the efficiency of AFNR business inputs and outputs using microeconomic principles.	Exam Categories: <ul style="list-style-type: none"> <li>Economic principles</li> <li>Investment analysis</li> <li>Marketing</li> <li>Risk management</li> <li>Family living</li> <li>Analysis of business</li> </ul> Team Activity - Product	CCSS.ELA-Literacy.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 Financial Investing: Benchmarks: Grade 12, Statement 9
<b>ABS.01.01.02.b.</b> Analyze and describe the relationship between AFNR business and industry outputs and domestic and global macroeconomic trends (e.g., Gross Domestic Product, national income, rate of growth, price levels, etc.).	Exam Categories: <ul style="list-style-type: none"> <li>Marketing</li> <li>Risk management</li> </ul> Team Activity - Product	CCSS.ELA-Literacy.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 Financial Investing: Benchmarks: Grade 12, Statement 9
<b>ABS.01.02. Performance Indicator: Read, interpret, evaluate and write statements of purpose to guide business goals, objectives and resource allocation.</b>		
<b>ABS.01.02.01.c.</b> Create and disseminate statements of purpose for activities in AFNR businesses.	Team Activity - Product	CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RI.9-10.4 CCSS.ELA-LITERACY.RI.11-12.4
<b>ABS.01.02.02.c.</b> Evaluate AFNR business goals and objectives, then make revisions based on data and observations.	Exam Categories: <ul style="list-style-type: none"> <li>Budgeting</li> <li>Business planning</li> <li>Risk management</li> <li>Marketing</li> <li>Analysis of business</li> <li>Cash flow</li> <li>Income Tax</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RI.9-10.4 CCSS.ELA-LITERACY.RI.11-12.4

## Agribusiness Systems Career Pathway Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.01.03. Performance Indicator: Devise and apply management skills to organize and run an AFNR business in an efficient, legal and ethical manner.</b>		
<b>ABS.01.03.01.c.</b> Devise strategies to improve the operation of AFNR businesses using management skills.	Exam Categories: <ul style="list-style-type: none"> <li>Financial statements</li> <li>Budgeting</li> <li>Cash flow</li> <li>Marketing</li> <li>Income Tax</li> <li>Investment analysis</li> <li>Risk Management</li> <li>Business Organization</li> <li>Analysis of business</li> <li>Family living</li> <li>Business planning</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.01.03.02.c.</b> Devise management or operational strategies to address and adhere to local, state, federal, international and industry regulations.	Financial statements <ul style="list-style-type: none"> <li>Budgeting Exam</li> </ul> Categories: <ul style="list-style-type: none"> <li>Cash flow</li> <li>Marketing</li> <li>Income Tax</li> <li>Investment analysis</li> <li>Risk Management</li> <li>Business Organization</li> <li>Analysis of business</li> <li>Family living</li> <li>Business planning</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.01.03.03.a.</b> Identify and observe ethical standards in planning and operating AFNR businesses.	Exam Categories: <ul style="list-style-type: none"> <li>Risk management</li> <li>Business planning</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4

## Agribusiness Systems Career Pathway Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.01.04. Performance Indicator: Evaluate, develop and implement procedures used to recruit, train and retain productive human resources for AFNR businesses.</b>		
<b>ABS.01.04.01.b.</b> Create methods to describe specific positions and structures of an AFNR business to share with human resources (e.g., job descriptions, business information sheet, pamphlet, etc.).	Exam Categories: <ul style="list-style-type: none"> <li>• Risk management</li> <li>• Business planning</li> <li>• Analysis of business</li> <li>• Business organization</li> <li>• Budgeting</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RI.9-10.4 CCSS.ELA-LITERACY.RI.11-12.4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 Earning Income: Benchmarks: Grade 12, Statements 1 Earning Income: Benchmarks: Grade 12, Statements 2 Earning Income: Benchmarks: Grade 12, Statements 4 Protecting and Insuring: Benchmarks: Grade 12, Statements 8 Protecting and Insuring: Benchmarks: Grade 12, Statements 9 Protecting and Insuring: Benchmarks: Grade 12, Statements 10 Protecting and Insuring: Benchmarks: Grade 12, Statements 12
<b>ABS.01.04.01.c.</b> Establish and maintain appropriate records and reports on human resources in AFNR businesses (e.g., personal records, absenteeism record, payroll data, employee requests, etc.).	Exam Categories: <ul style="list-style-type: none"> <li>• Risk management</li> <li>• Business planning</li> <li>• Analysis of business</li> <li>• Business organization</li> <li>• Budgeting</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RI.9-10.4 CCSS.ELA-LITERACY.RI.11-12.4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 Earning Income: Benchmarks: Grade 12, Statements 1 Earning Income: Benchmarks: Grade 12, Statements 2 Earning Income: Benchmarks: Grade 12, Statements 4 Protecting and Insuring: Benchmarks: Grade 12, Statements 8 Protecting and Insuring: Benchmarks: Grade 12, Statements 9 Protecting and Insuring: Benchmarks: Grade 12, Statements 10 Protecting and Insuring: Benchmarks: Grade 12, Statements 12



## Farm and Agribusiness Management

## Agribusiness Systems Career Pathway Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.01.04.02.b.</b> Analyze and evaluate programs used to recruit, train and retain employees based on their effectiveness.	Exam Categories: <ul style="list-style-type: none"> <li>• Risk management</li> <li>• Business planning</li> <li>• Marketing</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RI.9-10.4 CCSS.ELA-LITERACY.RI.11-12.4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 Earning Income: Benchmarks: Grade 12, Statements 1 Earning Income: Benchmarks: Grade 12, Statements 2 Earning Income: Benchmarks: Grade 12, Statements 4 Protecting and Insuring: Benchmarks: Grade 12, Statements 8 Protecting and Insuring: Benchmarks: Grade 12, Statements 9 Protecting and Insuring: Benchmarks: Grade 12, Statements 10 Protecting and Insuring: Benchmarks: Grade 12, Statements 12
<b>ABS.01.04.02.c.</b> Design guidelines and programs to recruit, train and retain employees in AFNR businesses.	Exam Categories: <ul style="list-style-type: none"> <li>• Risk management</li> <li>• Business planning</li> <li>• Marketing</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RI.9-10.4 CCSS.ELA-LITERACY.RI.11-12.4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 Earning Income: Benchmarks: Grade 12, Statements 1 Earning Income: Benchmarks: Grade 12, Statements 2 Earning Income: Benchmarks: Grade 12, Statements 4 Protecting and Insuring: Benchmarks: Grade 12, Statements 8 Protecting and Insuring: Benchmarks: Grade 12, Statements 9 Protecting and Insuring: Benchmarks: Grade 12, Statements 10 Protecting and Insuring: Benchmarks: Grade 12, Statements 12

## Agribusiness Systems Career Pathway Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.01.04.03.c.</b> Create recommendations for AFNR employers to improve current benefit and compensation plans (e.g., how to motivate employees, recognize productivity, equitably compensate, etc.).	Exam Categories: <ul style="list-style-type: none"> <li>• Risk management</li> <li>• Business planning</li> <li>• Marketing</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RI.9-10.4 CCSS.ELA-LITERACY.RI.11-12.4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 Earning Income: Benchmarks: Grade 12, Statements 1 Earning Income: Benchmarks: Grade 12, Statements 2 Earning Income: Benchmarks: Grade 12, Statements 4 Protecting and Insuring: Benchmarks: Grade 12, Statements 8 Protecting and Insuring: Benchmarks: Grade 12, Statements 9 Protecting and Insuring: Benchmarks: Grade 12, Statements 10 Protecting and Insuring: Benchmarks: Grade 12, Statements 12
<b>ABS.02.01. Performance Indicator: Apply fundamental accounting principles, systems, tools and applicable laws and regulations to record, track and audit AFNR business transactions (e.g., accounts, debits, credits, assets, liabilities, equity, etc.).</b>		
<b>ABS.02.01.01.b.</b> Evaluate the implementation of accounting systems and procedures used for record keeping in AFNR businesses	Exam Categories: <ul style="list-style-type: none"> <li>• Financial statements</li> <li>• Budgeting</li> <li>• Cash flow</li> <li>• Income tax</li> <li>• Investment analysis</li> <li>• Risk management</li> <li>• Business planning</li> </ul> Team Activity - Product	CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Earning Income: Benchmarks: Grade 12, Statements 7 Earning Income: Benchmarks: Grade 12, Statements 8
<b>ABS.02.02. Performance Indicator: Assemble, interpret and analyze financial information and reports to monitor AFNR business performance and support decision-making (e.g., income statements, balance sheets, cash-flow analysis, inventory reports, break-even analysis, return on investment, taxes, etc.).</b>		
<b>ABS.02.02.01.b.</b> Prepare and interpret financial reports to describe the performance of AFNR businesses (e.g., efficiency, profitability, net worth, financial ratios, etc.).	Exam Categories: <ul style="list-style-type: none"> <li>• Financial statements</li> <li>• Budgeting</li> <li>• Cash flow</li> <li>• Marketing</li> <li>• Income tax</li> <li>• Investment analysis</li> <li>• Risk management</li> <li>• Business organization</li> <li>• Analysis of business</li> <li>• Family living</li> <li>• Economic principles</li> <li>• Business planning</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2

## Agribusiness Systems Career Pathway Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.02.02.01.c.</b> Recommend financial reports to assemble to support specific AFNR business decisions (e.g., evaluating efficiency, profitability, net worth, financial ratios, etc.).	Exam Categories: <ul style="list-style-type: none"> <li>Financial statements</li> <li>Budgeting</li> <li>Cash flow</li> <li>Marketing</li> <li>Income tax</li> <li>Investment analysis</li> <li>Risk management</li> <li>Business organization</li> <li>Analysis of business</li> <li>Family living</li> <li>Economic principles</li> <li>Business planning</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2
<b>ABS.02.02.02.a.</b> Identify and examine strategies for tracking, reporting and managing inventory in AFNR businesses (e.g., spreadsheets, databases, word processing, networked systems and the Internet, etc.).	Exam Categories: <ul style="list-style-type: none"> <li>Financial statements</li> <li>Budgeting</li> <li>Cash flow</li> <li>Marketing</li> <li>Income tax</li> <li>Investment analysis</li> <li>Risk management</li> <li>Business organization</li> <li>Analysis of business</li> <li>Family living</li> <li>Economic principles</li> <li>Business planning</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2
<b>ABS.02.02.03.c.</b> Assemble financial information to prepare tax filings for AFNR businesses.	Exam Categories: <ul style="list-style-type: none"> <li>Income tax</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2
<b>ABS.03.01. Performance Indicator: Develop, assess and manage cash budgets to achieve AFNR business goals.</b>		
<b>ABS.03.01.01.c.</b> Develop cash budgets for AFNR businesses.	Exam Categories: <ul style="list-style-type: none"> <li>Cash flow</li> <li>Budgeting</li> <li>Financial statements</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6

## Agribusiness Systems Career Pathway Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.03.01.02.c.</b> Predict the impact of management decisions on cash budgets in AFNR businesses.	Exam Categories: <ul style="list-style-type: none"> <li>• Financial statements</li> <li>• Budgeting</li> <li>• Cash flow</li> <li>• Marketing</li> <li>• Income tax</li> <li>• Investment analysis</li> <li>• Risk management</li> <li>• Business organization</li> <li>• Analysis of business</li> <li>• Family living</li> <li>• Business planning</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.03.02. Performance Indicator: Analyze credit needs and manage credit budgets to achieve AFNR business goals.</b>		
<b>ABS.03.02.01.c.</b> Analyze and assemble the information needed to obtain credit for AFNR businesses.	Exam Categories: <ul style="list-style-type: none"> <li>• Financial statements</li> <li>• Budgeting</li> <li>• Marketing</li> <li>• Investment analysis</li> <li>• Risk management</li> <li>• Business organization</li> <li>• Analysis of business</li> <li>• Family living</li> <li>• Business planning</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6 Using Credit: Benchmarks: Grade 12, Statements 1 Using Credit: Benchmarks: Grade 12, Statements 2 Using Credit: Benchmarks: Grade 12, Statements 3 Using Credit: Benchmarks: Grade 12, Statements 4 Using Credit: Benchmarks: Grade 12, Statements 5 Using Credit: Benchmarks: Grade 12, Statements 6 Using Credit: Benchmarks: Grade 12, Statements 12 Using Credit: Benchmarks: Grade 12, Statements 13 Financial Investing: Benchmarks: Grade 12, Statement 9
<b>ABS.03.02.02.c.</b> Analyze AFNR business needs and recommend appropriate uses of available credit budgets to meet goals.	Exam Categories: <ul style="list-style-type: none"> <li>• Financial statements</li> <li>• Budgeting</li> <li>• Marketing</li> <li>• Investment analysis</li> <li>• Risk management</li> <li>• Business organization</li> <li>• Analysis of business</li> <li>• Family living</li> <li>• Business planning</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6 Using Credit: Benchmarks: Grade 12, Statements 1 Using Credit: Benchmarks: Grade 12, Statements 2 Using Credit: Benchmarks: Grade 12, Statements 3 Using Credit: Benchmarks: Grade 12, Statements 4 Using Credit: Benchmarks: Grade 12, Statements 5 Using Credit: Benchmarks: Grade 12, Statements 6 Using Credit: Benchmarks: Grade 12, Statements 12 Using Credit: Benchmarks: Grade 12, Statements 13 Financial Investing: Benchmarks: Grade 12, Statement 9

## Agribusiness Systems Career Pathway Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.04.01. Performance Indicator: Analyze characteristics and planning requirements associated with developing business plans for different types of AFNR businesses.</b>		
<b>ABS.04.01.01.c.</b> Demonstrate the application of entrepreneurial skills to conceptualize an AFNR business (e.g., idea generation, opportunity analysis, risk assessment, etc.).	Exam Categories: <ul style="list-style-type: none"> <li>Budgeting</li> <li>Cash flow</li> <li>Marketing</li> <li>Income tax</li> <li>Investment analysis</li> <li>Risk management</li> <li>Business organization</li> <li>Analysis of Business</li> <li>Business planning</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9
<b>ABS.04.01.02.b.</b> Compare and contrast business plans for different types of ownership structures used in AFNR businesses.	Exam Categories: <ul style="list-style-type: none"> <li>Business organization</li> <li>Analysis of business</li> <li>Business planning</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9
<b>ABS.04.01.03.b.</b> Analyze the information needed and strategies to obtain the information to complete an AFNR business plan (e.g., SMART goals and objectives, needs assessment, cash flow projection, etc.).	Exam Categories: <ul style="list-style-type: none"> <li>Financial statements</li> <li>Budgeting</li> <li>Cash flow</li> <li>Marketing</li> <li>Income tax</li> <li>Investment analysis</li> <li>Risk management</li> <li>Business organization</li> <li>Analysis of business</li> <li>Family living</li> <li>Economic principles</li> <li>Business planning</li> </ul> Team Activity - Product	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9
<b>ABS.04.02. Performance Indicator: Develop production and operational plans for an AFNR business.</b>		
<b>ABS.04.02.01.c.</b> Make recommendations to improve operational plans for an AFNR business based on best practices.	Exam Categories: <ul style="list-style-type: none"> <li>Business planning</li> <li>Analysis of Business</li> <li>Cash flow</li> <li>Budgeting</li> <li>Marketing</li> <li>Risk management</li> <li>Investment analysis</li> <li>Income tax</li> <li>Financial statements</li> </ul> Team Activity - Product	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4

## Agribusiness Systems Career Pathway Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.04.02.02.c.</b> Create strategies to improve the production process of an agricultural product for an AFNR facility (e.g., SWOT- strengths, weaknesses, opportunities and threats, supply chain management, etc.).	Exam Categories: <ul style="list-style-type: none"> <li>• Analysis of business</li> <li>• Marketing</li> <li>• Investment analysis</li> <li>• Risk management</li> <li>• Business planning</li> </ul> Team Activity - Product	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.04.03. Performance Indicator: Identify and apply strategies to manage or mitigate risk.</b>		
<b>ABS.04.03.01.c.</b> Determine methods to match risk management strategies to risk situations in an AFNR business.	Exam Categories: <ul style="list-style-type: none"> <li>• Risk management</li> <li>• Marketing</li> <li>• Business planning</li> </ul> Team Activity - Product	Financial Investing: Benchmarks: Grade 12, Statement 11 Protecting and Insuring: Benchmarks: Grade 12, Statements 2 Protecting and Insuring: Benchmarks: Grade 12, Statements 3 Protecting and Insuring: Benchmarks: Grade 12, Statements 4
<b>ABS.04.03.02.b.</b> Analyze alternative approaches to reducing risk for AFNR businesses (e.g., insurance for product liability, property, production or income loss for personnel life and health, etc.).	Exam Categories: <ul style="list-style-type: none"> <li>• Risk management</li> <li>• Marketing</li> <li>• Business planning</li> <li>• Family living</li> </ul> Team Activity - Product	Financial Investing: Benchmarks: Grade 12, Statement 11 Protecting and Insuring: Benchmarks: Grade 12, Statements 2 Protecting and Insuring: Benchmarks: Grade 12, Statements 3 Protecting and Insuring: Benchmarks: Grade 12, Statements 4
<b>ABS.05.01. Performance Indicator: Analyze the role of markets, trade, competition and price in relation to an AFNR business sales and marketing plans.</b>		
<b>ABS.05.01.01.b.</b> Analyze the role of trade and price in the market structure as it relates to AFNR businesses.	Exam Categories: <ul style="list-style-type: none"> <li>• Marketing</li> <li>• Risk management</li> <li>• Investment analysis</li> <li>• Economic principles</li> <li>• Analysis of business</li> <li>• Business planning</li> </ul> Team Activity - Product	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13
<b>ABS.05.01.02.b.</b> Compare and contrast different forms of market competition and how they can be applied to different AFNR businesses.	Exam Categories: <ul style="list-style-type: none"> <li>• Marketing</li> <li>• Risk management</li> <li>• Economic principles</li> <li>• Analysis of business</li> <li>• Business planning</li> </ul> Team Activity - Product	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Agriculture, Food and Natural Resources Content Standards

## Agriculture, Food, and Natural Resources Cluster Skill Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CS.01.01. Performance Indicator: Examine issues and trends that impact AFNR systems on local, state, national and global levels.</b>		
CS.01.01.01.b. Analyze and document AFNR issues and their impact on local, state, national and global levels.	Exam Categories: • Risk management • Economic principles Team Activity - Product	
CS.01.01.02.c. Evaluate emerging trends and the opportunities they may create within the AFNR systems.	Exam Categories: • Investment analysis • Marketing • Business planning • Risk management • Business organization • Analysis of business Team Activity - Product	
<b>CS.01.02. Performance Indicator: Examine technologies and analyze their impact on AFNR systems.</b>		
CS.01.02.02.c. Evaluate the importance of technology use and how it impacts AFNR systems.	Exam Categories: • Budgeting • Cash flow • Marketing • Investment analysis • Risk management • Family living • Business planning Team Activity - Product	
<b>CS.01.03. Performance Indicator: Identify public policies and their impact on AFNR systems.</b>		
CS.7.02.01.b. Analyze and assess at least two public policies that impact each AFNR system.	Team Activity - Product	
<b>CS.02.01. Performance Indicator: Research geographic and economic data related to AFNR systems.</b>		
CS.02.01.01.a. Research different types of geographic data used in AFNR systems.	Exam Categories: • Business planning Team Activity - Product	



## Agriculture, Food, and Natural Resources Cluster Skill Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CS.02.01.02.b.</b> Analyze a set of economic data and analyze how it impacts an AFNR system.	Exam Categories: • Financial statements • Budgeting • Marketing • Investment analysis • Risk management • Analysis of business • Family living • Economic principles • Business planning Team Activity - Product	
<b>CS.03.01. Performance Indicator: Identify required regulations to maintain and improve safety, health and environmental management systems.</b>		
<b>CS.03.01.01.c.</b> Evaluate how AFNR organizations/businesses promote improved health, safety and environmental management.	Exam Categories: • Risk management • Business planning Team Activity - Product	
<b>CS.03.01.02.a.</b> Summarize the importance of safety, health and environmental management in the workplace.	Exam Categories: • Risk management • Business planning Team Activity - Product	
<b>CS.03.02. Performance Indicator: Develop a plan to maintain and improve health, safety and environmental compliance and performance.</b>		
<b>CS.03.02.01.b.</b> Analyze health and safety performance plans of an AFNR business.	Exam Categories: • Risk management • Business planning Team Activity - Product	AFNR Career Cluster, Statement 6
<b>CS.03.03. Performance Indicator: Apply health and safety practices to AFNR worksites.</b>		
<b>CS.03.03.01.b.</b> Analyze and summarize current health and safety practices of AFNR business.	Exam Categories: • Risk management • Business planning Team Activity - Product	





NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Agriculture, Food and Natural Resources Content Standards

## Common Career Technical Core Career Ready Practices Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.</b>		
CRP.01.01.02.c. Model personal responsibility in workplace and community situations.	Team Activity - Product	
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
CRP.02.01.01.c. Apply academic knowledge and skills to solve problems in the workplace and reflect upon the results achieved.	Team Activity - Product	
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
CRP.02.02.01.c. Apply technical concepts to solve problems in the workplace and reflect upon the results achieved.	Team Activity - Product.	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	Team Activity - Process	
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
CRP.05.01.01.a. Examine the steps in the decision-making process used in the workplace and community.	Team Activity - Product	
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Team Activity - Product Team Activity - Process Individual test – Inclusive of all Categories	
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.01.b. Assimilate and prioritize potential solutions to solve problems in the workplace and community.	Team Activity - Product	

## Common Career Technical Core Career Ready Practices Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
CRP.08.02.02.b. Apply decision-making processes to generate possible solutions to solve workplace and community problems.	Individual test – Inclusive of all Categories Team Activity – Product	
<b>CRP.09.03. Performance Indicator: Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community (e.g., positively influencing others, effectively communicating, etc.).</b>		
CRP.09.03.02.c. Model respectful and purposeful behaviors that contribute to positive morale and culture in the workplace and community (e.g., effectively communicating, recognizing accomplishments of others, etc.).	Team Activity – Process	
<b>CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).</b>		
CRP.12.02.01.b. Assess team dynamics and match strategies to increase team member engagement.	Team Activity – Process	
CRP.12.02.02.b. Select strategies to engage team members and apply in a variety of situations.	Individual test – Inclusive of all Categories Team Activity – Product Team Activity – Process	



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# FOOD SCIENCE AND TECHNOLOGY

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The food science and technology career development event is designed to promote learning activities in food science and technology related to the food industry and to assist students in developing practical knowledge of principles used in a team decision-making process.*

## Objectives

The Food Science and Technology Career Development Event provides the opportunity for the participant to:

- Gain an awareness of career and professional opportunities in the field of food science and technology.
- Experience group participation and leadership responsibilities in a competitive food science and technology program.
- Develop technical competence and personal initiative in a food science and technology occupation.

## Event Rules

- Team make-up—The team will consist of four members with all four members' scores being totaled for the team score.
- It is highly recommended that participants wear FFA Official Dress for this event.
- Teams and/or individuals will not be permitted to use electronic media during the event.
  - This includes but is not limited to cell phones, mp3 players, cameras, etc.
  - Any participant in possession of an electronic device, except a calculator, in the event area is subject to disqualification.
- Allergy Information: Food products used in this event may contain or come in contact with potential allergens. Advisors must submit a special needs request form for participants with any allergies with certification. The event committee will make all reasonable efforts to accommodate students with food allergies.

Each participant must provide:

- A clipboard that is clean and free of notes.
- Two sharpened No. 2 pencils.
- Electronic calculator—Calculators used in this event must be non-programmable and non-graphing. Calculators should have only basic functions such as addition, subtraction, multiplication, division, equals, percent, square root, +/- key. No other calculators are allowed to be used during the event including cell phones.

## TEAM ACTIVITIES

### TEAM PRODUCT DEVELOPMENT PROJECT (400 POINTS POSSIBLE PER TEAM)

Each team will receive a product development scenario describing the need for a new or redesigned product that appeals to a potential market segment. The team's task will be to design a new food product or reformulate an existing product based on information contained within the product development scenario.

Each team will be provided with packaging materials, ingredients and necessary ingredient information in order to develop, label and package a product. The team will have 60 minutes to respond to the product development scenario and reformulate or develop a product, calculate a nutritional label, develop the ingredient statement and information panel and develop the front or principle display panel to reflect the new product.

The team will be responsible for understanding and using the following concepts to develop a presentation addressing the following:

- Cost of goods sold
- Nutrition
- Target audience
- Quality control
- Marketing and sales
- Product
- Processing
- Packaging
- Food safety
- Formulation concepts
- Quality of presentation



After this time period, each team member will contribute to a ten minute oral presentation delivered to a panel of judges. No electronic media will be used in the presentation.

Following the presentation there will be a ten minute question and answer period with the judges in which each team member is expected to contribute. All materials will be collected after the presentation.

Total time involved for each team will be 80 minutes. Total number of points possible for this activity will be 400 points.

Product development scenarios will describe a category, platform and market. These may include but are not limited to the following categories, platforms and markets listed below.

### **Categories**

- Cereal
- Snacks
- Meals
- Side dishes
- Beverages
- Supplements
- Condiments
- Desserts

### **Platform**

- Frozen
- Refrigerated
- Shelf-stable
- Convenience
- Ready to eat
- Heat and serve

**Market (domestic and international)**

- Retail
- Wholesale
- Food service
- Convenience store

Information about the product will be provided in the superintendent letter in the team orientation information.

**Example of scenario product from past events:**

Category	Platform	Market	Actual Product
Side dish	Ready to prepare	Retail or big box	Whole grain, low sodium side dish
Beverage	Shelf-stable	Retail	Shelf-stable specialty coffee
Side dish	Refrigerated	Retail	Side salad for baby boomers
Snack	Shelf-stable	Retail	Non-nut snack bar
Breakfast	Ready to eat	Retail	Single serve cereal for kids

Evaluation criteria and points for team product development activity can be found on the team product development scorecard.

**FOOD SAFETY/SANITATION TEAM ACTIVITY (100 POINTS POSSIBLE PER TEAM)**

- Each team will be given a situation (e.g., photos, videos, written scenarios, live demonstrations or a combination). The team will work to together to evaluate the situation and complete a safety/sanitation report evaluation which will include observations, degree of concern, recommendations/corrective actions. Students will be evaluated on teamwork as well as their safety/sanitation report.

Rubric and scoring criteria can be found on the scorecard.

## INDIVIDUAL ACTIVITIES

### OBJECTIVE TEST (150 POINTS POSSIBLE PER INDIVIDUAL)

The objective questions administered during the food science and technology examination will be designed to determine each team member's understanding of the basic principles of food science and technology. The test will be listed from the textbooks and websites specified in the reference section.

Team members will work individually to answer each of the 50 questions. Each person will have 60 minutes to complete the examination. Each question will be worth three points, for a total of 150 points.

## PRACTICUMS

### PROBLEM SOLVING/MATH PRACTICUM (25 POINTS POSSIBLE PER INDIVIDUAL)

- Participants will answer a series of five mathematical calculations based on common food science themes. Questions may include nutrition calculations, ingredient quantity, cost benefit analysis, estimation of cost/margin of goods sold, conversions, processing conditions, etc.
- Example Question. The perfect glass of sweet tea is 20 percent sugar. Jim is making a one-gallon container of sweet tea. How many cups of sugar should he add?
  - a. 2.4 cups
  - b. 3.2 cups**
  - c. 3.4 cups
  - d. 4 cups

## **FOOD SAFETY AND QUALITY PRACTICUMS (50 POINTS)**

### **Customer Inquiry**

- Each participant will be given five scenarios representing general consumer inquiries. Participants must determine if the consumer inquiry reflects a quality or safety issue (two points per scenario) and determine if it is a biological, chemical or physical concern or hazard (three points per scenario). This is for a total of 25 points.

### **Product Specification Compliance**

- Students will be given sample sets (actual products and/or data sets) and will be responsible for determining compliance with the provided specification requirements. This may include, but is not limited to, determining if the product(s) is within the net weight standards, product sizing requirements, pH, color analysis, viscosity measurement, fill level tolerances, packaging specification compliance, etc. Participants will be asked five questions regarding potential compliance violations presented within the sample set. (25 points)

**SENSORY EVALUATION PRACTICUMS (40 POINTS)****Triangle Tests**

- Four different triangle tests will be conducted. Participants are expected to identify the different samples through flavor, aroma, visual cues and/or textural differences. Answers will be given on the sheet provided. No list will be provided for this segment of the practicum. Each test is worth five points.

**Aromas**

- Each participant will be asked to identify four different aromas from vials provided at each station and record the answer on the sheet provided. A list of potential aromas will be provided to each person. Each sample is worth 5 points. (20 points)

- |                      |                    |
|----------------------|--------------------|
| 10. Apple            | 26. Maple          |
| 11. Banana           | 27. Molasses       |
| 12. Basil            | 28. Nutmeg         |
| 13. Butter           | 29. Onion          |
| 14. Cherry           | 30. Orange         |
| 15. Chocolate        | 31. Oregan         |
| 16. Cinnamon         | 32. Peach          |
| 17. Clove            | 33. Peppermint     |
| 18. Coconut          | 34. Raspberry      |
| 19. Coffee           | 35. Sage           |
| 20. Garlic           | 36. Smoke (liquid) |
| 21. Ginger           | 37. Strawberry     |
| 22. Grape            | 38. Vanilla        |
| 23. Lemon            | 39. Watermelon     |
| 24. Licorice (anise) | 40. Wintergreen    |
| 25. Lime             |                    |

## Scoring

ACTIVITIES	Individual Points	Team Points
Team Product Development Project		400
Team Activity Preparation		20
Team Food Safety/Sanitation		80
Math/Problem Solving	25	100
Food Safety and Quality	50	200
Sensory Evaluation	40	160
Written Exam	150	600
<b>MAXIMUM POINTS</b>	<b>265</b>	<b>1,560</b>

## TIEBREAKERS

### TEAM:

1. Team Product Development
2. Team Food Safety/Sanitation
3. Individual Test (combined score)

### INDIVIDUAL:

1. Written Exam
2. Food Safety and Quality
3. Sensory Evaluation



## Awards

*Awards will be presented to individuals and teams based upon their rankings at an awards Ceremony.*

Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

## References

*This list of references is not intended to be all inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. Make sure to use discretion when selecting website references by only using reputable, proven sites. The following list contains references that may prove helpful during event preparation. The most current edition of resources will be used.

- Past CDE materials and other resources are available by logging in to [FFA.org](http://FFA.org)

### EXAM REFERENCES

- Principles of Food Science, 4th edition, 2015, Janet Ward and Larry Ward, The Goodheart-Willcox Company, INC.
- Principles of Food Sanitation, 5th Edition, 2006, Norman G. Marriott and Robert B. Gravani, Springer Science + Business Media, Inc.
- Institute of Food Technology website, <http://www.ift.org>
- USDA Food Safety and Inspection Service website, <http://www.fsis.usda.gov>
- US Food and Drug Administration, [www.FDA.org](http://www.FDA.org)

### GENERAL REFERENCES

- Penn State Kitchen Chemistry: Experiments, resources and materials for educators and students, <http://foodscience.psu.edu/public/kitchen-chemistry>
- Food Safety Education, [http://www.fsis.usda.gov/food\\_safety\\_education/for\\_kids\\_&\\_teens/index.asp](http://www.fsis.usda.gov/food_safety_education/for_kids_&_teens/index.asp)
- Partnership for Food Safety Education, <http://www.fightbac.org>
- FoodSafety.gov, <http://www.foodsafety.gov>





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# Team Product Development Project Scorecard

400 points

CHAPTER	STATE	TEAM NUMBER	
		Possible Score	Team Score
Package Display Components			
Use and development of nutrition label			
• Required information present	10		
• Correct calculations	10		
• Correct organization	10		
Use and development of the ingredient statement			
• Present	10		
• Correct order and all ingredients included	10		
• Location on package	10		
Use of principle display panel to convey information			
• All required components	15		
• Correct information	15		
• Location on package	10		
PACKAGE DESIGN SUBTOTAL		100	
Product Development Oral Presentation			
Cost of goods sold			
• Costing	20		
• Accuracy			
Nutrition			
• Communicate nutritional quality of product	20		
• Apply nutritional quality to health benefits			
Target audience			
• Identification of key consumer	20		
Quality control			
• Key quality attribute of consistent product	20		
• Examples: flavor, color, texture, net weight, size, etc.			
Marketing and sales			
• Communicated with future users	20		
• Promotions			
• Market location			

## Team Product Development Project Scorecard continued

<b>Product</b> <ul style="list-style-type: none"> <li>• Appearance</li> <li>• Texture</li> <li>• Shelf-life</li> <li>• Interaction of ingredients</li> <li>• Creativity</li> </ul>	20	
<b>Processing</b> <ul style="list-style-type: none"> <li>• Description of how to make product</li> <li>• Equipment</li> <li>• Flow diagram, unit operations</li> <li>• People</li> </ul>	20	
<b>Packaging</b> <ul style="list-style-type: none"> <li>• Materials used</li> <li>• Appropriate for use of product</li> <li>• Creativity</li> </ul>	20	
<b>Food Safety</b> <ul style="list-style-type: none"> <li>• Discussed potential hazards/concerns associated with products</li> </ul>	20	
<b>Formulation Concepts</b>		
• How well did product match concept/product development scenario	30	
• Category	5	
• Platform	5	
<b>Quality of Presentation</b>		
• Equitable participation of team members	5	
• Organization	5	
• Use of time allowed	5	
• Professionalism	5	
• Presence & enthusiasm	5	
• Mannerisms	5	
<b>Product Development Oral Presentation Subtotal</b>	<b>250</b>	
<b>Response to Judges' Questions</b>		
<b>Team Participation in Question Response</b> <ul style="list-style-type: none"> <li>• All team members contributed</li> </ul>	25	
<b>Quality of Response</b> Accuracy Ability to answer Originality Knowledge	25	
<b>Response to Judges' Questions Subtotal</b>	<b>50</b>	
<b>TOTAL POINTS</b>	<b>400</b>	



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# Team Activity Preparation Rubric

20 points

INDICATOR	Very strong evidence of skill 5-4 points	Moderate evidence of skill 3-2 points	Weak evidence of skill 1-0 points	Points Earned	Total Score
Effective listening	Clearly evident that all team members are listening.	Listening occurs but distraction is evident.	Not listening to each other and/or talking over each other.		
Oral communication	Clearly evident that all team members are discussing the topic.	Communication occurs but side conversations are occurring or two to three members dominating.	One member dominating conversation.		
Demonstrated cooperation	Clearly all team members completing tasks, sharing written and oral solutions. Clearly all team members respected the input of other team members.	Tasks primarily completed by two to three members, other members assist occasionally. Most team members respected the input of other team members.	Tasks primarily completed by one member, other members contributing only slightly. The team members did not respect the input of other team members.		
Participated in the team preparation	Clearly all team members are engaged, attentive, and making notes for the full term of event. Clearly all team members demonstrate efficient use of his/her time in comprising the plan.	Members are engaged and attentive with two to three making notes, participation fades over time. Most team members demonstrate efficient use of his/her time in comprising the plan.	One to two members form the primary team, other members participate occasionally early, fade over time. One to two team members demonstrate efficient use of his/her time in comprising the plan.		
TOTAL					



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# Food Safety Sanitation Report Form

20 points

PLANT	DATE
LOCATION	
INSPECTION TEAM MEMBERS STATE	TEAM NUMBER
PLANT CONTACT	
CONTACT INFORMATION	

CATEGORY AND OBSERVATION	Degree of Concern Critical, Major, Minor	Recommendation or Corrective Action
<ol style="list-style-type: none"><li>1. General maintenance of physical facilities.</li><li>2. Cleaning and sanitizing of equipment and utensils.</li><li>3. Storage and handling of clean equipment and utensils.</li><li>4. Pest control.</li><li>5. Proper use and storage of cleaning compounds, sanitizers, and pesticides.</li><li>6. Employee training.</li><li>7. Plant design.</li><li>8. Quality assurance assessment.</li></ol>		

Food Safety Sanitation Report Form20 points continued

CATEGORY (20 points)	Observation (20 points)	Degree of Concern (20 points)	Recommendation or Corrective Action (20 points)



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# Customer Inquiry Rubric

25 points

	Points Possible	Points Earned
<b>Scenario # 1:</b> This issue represented in this scenario is a: <input type="checkbox"/> Food Quality Issue <input type="checkbox"/> Food Safety Issue	2	
Is the concern or hazard primarily ( <i>Check only one</i> ): <input type="checkbox"/> Biological <input type="checkbox"/> Physical <input type="checkbox"/> Chemical	3	
<b>Scenario # 2:</b> This issue represented in this scenario is a: <input type="checkbox"/> Food Quality Issue <input type="checkbox"/> Food Safety Issue	2	
Is the concern or hazard primarily ( <i>Check only one</i> ): <input type="checkbox"/> Biological <input type="checkbox"/> Physical <input type="checkbox"/> Chemical	3	
<b>Scenario # 3:</b> This issue represented in this scenario is a: <input type="checkbox"/> Food Quality Issue <input type="checkbox"/> Food Safety Issue	2	
Is the concern or hazard primarily ( <i>Check only one</i> ): <input type="checkbox"/> Biological <input type="checkbox"/> Physical <input type="checkbox"/> Chemical	3	
<b>Scenario # 4:</b> This issue represented in this scenario is a: <input type="checkbox"/> Food Quality Issue <input type="checkbox"/> Food Safety Issue	2	
Is the concern or hazard primarily ( <i>Check only one</i> ): <input type="checkbox"/> Biological <input type="checkbox"/> Physical <input type="checkbox"/> Chemical	3	
<b>Scenario # 5:</b> This issue represented in this scenario is a: <input type="checkbox"/> Food Quality Issue <input type="checkbox"/> Food Safety Issue	2	
Is the concern or hazard primarily ( <i>Check only one</i> ): <input type="checkbox"/> Biological <input type="checkbox"/> Physical <input type="checkbox"/> Chemical	3	
<b>TOTAL</b>	<b>25</b>	



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## Agriculture, Food and Natural Resource Content Standards

**ABS.01.03. Performance Indicator: Devise and apply management skills to organize and run an AFNR business in an efficient, legal and ethical manner.**

**ABS.01.03.02.a.** Identify and explain appropriate local, state, federal, international and industry regulations that impact the management and operation of AFNR businesses.

Objective Test

CCSS.ELA-LITERACY.SL.9-10.6  
CCSS.ELA-LITERACY.SL.11-12.6  
CCSS.ELA-LITERACY.L.9-10.6  
CCSS.ELA-LITERACY.L.11-12.6  
CCSS.ELA-LITERACY.RST.9-10.4  
CCSS.ELA-LITERACY.RST.11-12.4

**ABS.01.03.02.c.** Devise management or operational strategies to address and adhere to local, state, federal, international and industry regulations.

Team Activity

CCSS.ELA-LITERACY.SL.9-10.6  
CCSS.ELA-LITERACY.SL.11-12.6  
CCSS.ELA-LITERACY.L.9-10.6  
CCSS.ELA-LITERACY.L.11-12.6  
CCSS.ELA-LITERACY.RST.9-10.4  
CCSS.ELA-LITERACY.RST.11-12.4

**ABS.02.02. Performance Indicator: Assemble, interpret and analyze financial information and reports to monitor AFNR business performance and support decision-making (e.g., income statements, balance sheets, cash-flow analysis, inventory reports, break-even analysis, return on investment, taxes, etc.).**

**ABS.02.02.02.b.** Use accounting information to prepare financial reports associated with inventory in AFNR businesses (e.g., cost of goods sold, margins on goods, etc.).

Team Activity  
Math/Problem Solving

CCSS.ELA-LITERACY.W.9-10.9  
CCSS.ELA-LITERACY.W.11-12.9  
CCSS.ELA-LITERACY.RH.9-10.7  
CCSS.ELA-LITERACY.RH.11-12.7  
CCSS.MATH.CONTENT.HSS.ID.C.7  
CCSS.MATH.CONTENT.HSS.IC.B.6  
CCSS.MATH.CONTENT.HSN.Q.A.1  
Savings: Benchmarks: Grade 12, Statements 3  
Savings: Benchmarks: Grade 12, Statements 4  
Savings: Benchmarks: Grade 12, Statements 6  
Savings: Benchmarks: Grade 12, Statements 7  
Financial Investing: Benchmarks: Grade 12, Statement 2

**ABS.04.01. Performance Indicator: Analyze characteristics and planning requirements associated with developing business plans for different types of AFNR businesses.**

**ABS.04.01.03.c.** Prepare business plans for an AFNR business.

Team Activity

CCSS.ELA-LITERACY.L.9-10.6  
CCSS.ELA-LITERACY.L.11-12.6  
CCSS.ELA-LITERACY.RST.9-10.4  
CCSS.ELA-LITERACY.RST.11-12.4  
CCSS.ELA-LITERACY.W.9-10.2  
CCSS.ELA-LITERACY.W.11-12.2  
CCSS.ELA-LITERACY.W.9-10.9  
CCSS.ELA-LITERACY.W.11-12.9

## Agriculture, Food and Natural Resource Content Standards continued

<b>ABS.04.02. Performance Indicator: Develop production and operational plans for an AFNR business.</b>		
<b>ABS.04.02.02.a.</b> Devise strategies to illustrate the production process of an AFNR business to produce a specific agricultural product.	Team Activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.04.02.02.b.</b> Identify and assess alternative production systems for a specific agricultural product.	Team Activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.04.02.02.c.</b> Create strategies to improve the production process of an agricultural product for an AFNR facility (e.g., SWOT- strengths, weaknesses, opportunities and threats, supply chain management, etc.).	Team Activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.05.02. Performance Indicator: Assess and apply sales principles and skills to accomplish AFNR business objectives.</b>		
<b>ABS.05.02.01.a.</b> Identify and explain components of the sales process for AFNR businesses (e.g., understanding needs, develop solutions, close sale, etc.).	Team Activity	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5
<b>ABS.05.02.01.b.</b> Apply the sales process to AFNR businesses and communicate ways of accomplishing the businesses' goals and objectives.	Team Activity	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5



## Agriculture, Food and Natural Resource Content Standards continued

<b>ABS.05.03. Performance Indicator: Assess marketing principles and develop marketing plans to accomplish AFNR business objectives.</b>		
<b>ABS.05.03.01.a.</b> Identify and explain marketing principles used in AFNR businesses (4 P's-product, place, price, promotion; attention, interest, desire, action, etc.).	Team Activity Objective Test	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4
<b>ABS.05.03.01.b.</b> Assess alternative marketing strategies as related to marketing principles for AFNR businesses (e.g. value-adding, branding, niche marketing, etc.).	Team Activity	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>ABS.05.03.02.b.</b> Compare and contrast the strategies of marketing for products and services used in AFNR businesses (e.g., direct marketing, commodities, etc.).	Team Activity	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7

## Agriculture, Food and Natural Resource Content Standards continued

<b>ABS.05.03.03.a.</b> Research and define the purpose, components and developmental processes of marketing plans for AFNR businesses.	Team Activity	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>BS.01.01. Performance Indicator: Investigate and explain the relationship between past, current and emerging applications of biotechnology in agriculture (e.g., major innovators, historical developments, potential applications of biotechnology, etc.).</b>		
<b>BS.01.01.01.a.</b> Research and summarize the evolution of biotechnology in agriculture.	Objective Test	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 CCSS.ELA-Literacy.RI.9-10.6 CCSS.ELA-Literacy.RI.11-12.6 CCSS.ELA-Literacy.WI.9-10.2 CCSS.ELA-Literacy.WI.11-12.2
<b>BS.01.02. Performance Indicator: Evaluate the scope and implications of regulatory agencies on applications of biotechnology in agriculture and protection of public interests (e.g., health, safety, environmental issues, etc.).</b>		
<b>BS.01.02.01.a.</b> Compare and contrast differences between regulatory systems worldwide.	Objective Test	CCSS.ELA-Literacy.RI.9-10.5 CCSS.ELA-Literacy.RI.11-12.5 CCSS.ELA-Literacy.RI.9-10.6 CCSS.ELA-Literacy.RI.11-12.6
<b>BS.02.02. Performance Indicator: Implement standard operating procedures for the proper maintenance, use and sterilization of equipment in a laboratory.</b>		
<b>BS.02.02.01.a.</b> Research and implement standard operating procedures for laboratory equipment.	Team Activity	
<b>BS.02.02.02.b.</b> Manipulate basic laboratory equipment and measurement devices (e.g., water bath, electrophoresis equipment, micropipettes, laminar flow hood, etc.).	Team Activity	
<b>BS.02.04. Performance Indicator: Safely manage and dispose of biological materials, chemicals and wastes according to standard operating procedures.</b>		
<b>BS.02.04.01.a.</b> Research types of personal protective equipment and summarize how to properly utilize the equipment.	Team Activity Objective Test	CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.RST.11-12.4

*Agriculture, Food and Natural Resource Content Standards continued*

BS.02.04.01.b. Assess the need for personal protective equipment and select the appropriate equipment to wear when working with biological and chemical materials.	Food Safety and Quality Practicums	CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.RST.11-12.4
<b>BS.02.05. Performance Indicator: Examine and perform scientific procedures using microbes, DNA, RNA and proteins in a laboratory.</b>		
BS.02.05.05.a. Synthesize the relationship between proteins, enzymes and antibodies.	Objective Test	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.11-12.3
<b>BS.03.02. Performance Indicator: Apply biotechnology principles, techniques and processes to enhance the production of food through the use of microorganisms and enzymes.</b>		
BS.03.02.02.a. Examine enzymes, the changes they cause and the physical and chemical parameters that affect enzymatic reactions (e.g., food, cellulosic bioenergy, etc.).	Objective Test	HS-LS3-1
BS.03.02.03.a. Identify and categorize foods produced through biotechnology (e.g., fermentation, etc.).	Objective Test	
<b>BS.03.03. Performance Indicator: Apply biotechnology principles, techniques and processes to protect the environment and maximize use of natural resources (e.g., biomass, bioprospecting, industrial biotechnology, etc.).</b>		
BS.03.03.02.a. Define and summarize industrial biotechnology and categorize the benefits and risks associated with its use in manufacturing (e.g., fabrics, plastics, etc.). Objective Test	Objective Test	
<b>BS.03.05. Performance Indicator: Apply biotechnology principles, techniques and processes to produce biofuels (e.g., fermentation, transesterification, methanogenesis, etc.).</b>		
BS.03.05.03.a. Research and explain the process of fermentation.	Objective Test	AFNR Career Cluster, Statement 5 CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.11-12.3
<b>FPP.01.01. Performance Indicator: Analyze and manage operational and safety procedures in food products and processing facilities.</b>		
FPP.01.01.01.a. Research purposes and objectives of safety programs in food products and processing facilities (e.g., Sanitation Standard Operating Procedures (SSOP); Good Manufacturing Practices (GMP); worker safety, etc.).	Objective Text Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3

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<b>FPP.01.01.01.b.</b> Analyze and document attributes and procedures of current safety programs in food products and processing facilities.	Food Safety and Quality Practicums	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3
<b>FPP.01.01.01.c.</b> Construct plans that ensure implementation of safety programs for food products and processing facilities.	Team Activity Food Safety and Quality Practicums	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3
<b>FPP.01.01.02.a.</b> Research and categorize types of equipment used in food products and processing systems.	Objective Test	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3
<b>FPP.01.01.02.b.</b> Assess equipment and facility maintenance used in food products and processing systems (e.g., specifications for machines, sanitation procedures, repair protocol, etc.).	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3
<b>FPP.01.01.02.c.</b> Devise strategies to maintain equipment and facilities for food products and processing systems.	Team Activity Food Safety and Quality Practicums	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3

## Agriculture, Food and Natural Resource Content Standards continued

<b>FPP.01.02. Performance Indicator: Apply food safety and sanitation procedures in the handling and processing of food products to ensure food quality.</b>		
<b>FPP.01.02.01.a.</b> Examine contamination hazards associated with food products and processing (e.g., physical, chemical and biological).	Objective Test Team Activity Food Safety and Quality Practicums	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.01.b.</b> Outline procedures to eliminate possible contamination hazards associated with food products and processing.	Objective Test Team Activity Food Safety and Quality Practicums	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.01.c.</b> Identify sources of contamination in food products and/or processing facilities and develop ways to eliminate contamination.	Objective Test Team Activity Food Safety and Quality Practicums	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.02.a.</b> Research and summarize procedures of safe handling protocols (e.g., Hazard Analysis and Critical Control Points Plan (HACCP); Critical Control Point procedures (CCP); Good Agricultural Practices Plan (GAP), etc.).	Objective Test	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.02.b.</b> Construct plans that ensure implementation of safe handling procedures on food products.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.02.c.</b> Examine, interpret and report outcomes from safe handling procedures and results from quality assurance tests.	Food Safety and Quality Practicums	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.03.a.</b> Research purposes and objectives of quality assurance tests on food products (e.g., produce safety regulation, safe food transport, food contaminants, etc.).	Objective Test	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.03.c.</b> Interpret and evaluate results of quality assurance tests on food products and examine steps to implement corrective procedures.	Food Safety and Quality Practicums	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.04.a.</b> Describe the effects food-borne pathogens have on food products and humans. Objective Test	Objective Test	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.04.c.</b> Conduct and interpret microbiological tests for food-borne pathogens.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.03. Performance Indicator: Apply food safety procedures when storing food products to ensure food quality.</b>		
<b>FPP.01.03.01.a.</b> Identify and summarize purposes of food storage procedures (e.g., first in/first out, temperature regulation, monitoring, etc.).	Objective Test	

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<b>FPP.01.03.01.b.</b> Analyze characteristics of food products and determine appropriate storage procedures.	Food Safety and Quality Practicums	
<b>FPP.01.03.01.c.</b> Prepare plans that ensure implementation of proper food storage procedures.	Food Safety and Quality Practicums Team Activity	
<b>FPP.01.03.02.a.</b> Assess procedures of electronic and paper-based documentation methods in food products and processing systems.	Food Safety and Quality Practicums Team Activity	
<b>FPP.01.03.02.b.</b> Demonstrate and explain methods of documentation procedures within food products and processing systems.	Team Activity	
<b>FPP.01.03.02.c.</b> Evaluate the effectiveness of a current documentation procedure used within a food products and processing facility and recommend improvements. Prod Spec	Team Activity	
<b>FPP.02.01. Performance Indicator: Apply principles of nutrition and biology to develop food products that provide a safe, wholesome and nutritious food supply for local and global food systems.</b>		
<b>FPP.02.01.01.a.</b> Research and summarize properties of common food constituents (e.g., proteins, carbohydrates, fats, vitamins, minerals).	Objective Test	
<b>FPP.02.01.01.b.</b> Compare and contrast the relative value of food constituents relative to food product qualities (e.g., taste, appearance, etc.).	Sensory Evaluation Practicums Objective Test Team Activity	
<b>FPP.02.01.01.c.</b> Analyze the properties of food products to identify food constituents and evaluate nutritional value.	Objective Test Team Activity	
<b>FPP.02.01.02.b.</b> Compare and contrast the nutritional needs of different human diets.	Objective Test	
<b>FPP.02.02. Performance Indicator: Apply principles of microbiology and chemistry to develop food products to provide a safe, wholesome and nutritious food supply for local and global food systems.</b>		
<b>FPP.02.02.01.a.</b> Examine the basic chemical makeup of different types of food.	Objective Test	
<b>FPP.02.02.01.b.</b> Explain how the chemical and physical properties of foods influence nutritional value and eating quality.	Objective Test Sensory Evaluation Practicums	
<b>FPP.02.02.01.c.</b> Design and conduct experiments to determine the chemical and physical properties of food products.	Sensory Evaluation Practicums	
<b>FPP.02.02.02.a.</b> List common food additives and identify their properties (e.g., preservatives, antioxidants, buffers, stabilizers, colors, flavors, etc.).	Objective Test	

*Agriculture, Food and Natural Resource Content Standards continued*

<b>FPP.02.02.02.b.</b> Describe the purpose of common food additives and how they influence the chemistry of food.	Objective Test	
<b>FPP.02.02.03.a.</b> Research the application of biochemistry in the development of new food products (e.g., value added food products, genetically engineered food products, etc.).	Objective Test	
<b>FPP.02.02.03.a.</b> Analyze how food products and processing facilities use biochemistry concepts to develop new food products.	Objective Test	
<b>FPP.02.03. Performance Indicator: Apply principles of human behavior to develop food products to provide a safe, wholesome and nutritious food supply for local and global food systems.</b>		
<b>FPP.02.03.01.a.</b> Examine the importance of food labeling to the consumer.	Objective Test Team Activity	
<b>FPP.02.03.01.b.</b> Examine, interpret and explain the meaning of required components on a food label.	Objective Test Team Activity	
<b>FPP.02.03.01.c.</b> Determine a strategy to prepare and label foods according to the established standards of regulatory agencies.	Objective Test Team Activity	
<b>FPP.02.03.02.a.</b> Research factors in planning and developing a new food product (e.g., regulation, creativity, economics, etc.).	Objective Test Team Activity	
<b>FPP.02.03.02.b.</b> Determine consumer preference and market potential for a new food product.	Team Activity	
<b>FPP.02.03.02.c.</b> Design new food products that meet a variety of goals (e.g., consumer preferences, market, nutritional needs, regulatory requirements, etc.).	Team Activity	
<b>FPP.03.01. Performance Indicator: Implement selection, evaluation and inspection techniques to ensure safe and quality food products.</b>		
<b>FPP.03.01.01.a.</b> Summarize characteristics of quality and yield grades of food products.	Objective Test	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.01.b.</b> Analyze factors that affect quality and yield grades of food products.	Objective Test Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7



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<b>FPP.03.01.02.a.</b> Summarize procedures to select raw food products based on yield grades and quality grades.	Objective Test	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.02.b.</b> Assemble procedures to perform quality-control inspections of raw food products for processing.	Objective Test Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.02.c.</b> Develop care and handling procedures to maintain original food quality and yield.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.03.a.</b> Identify and describe protocols for inspection and harvesting techniques for animal food products (e.g., pre-mortem and post-mortem inspections, Food Safety Inspection Service guidelines (FSIS), etc.).	Objective Test	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.03.b.</b> Examine and evaluate inspection and harvesting of animals using regulatory agency approved or industry-approved techniques.	Objective Test	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.04.a.</b> Identify and describe foods derived from different classifications of food products (e.g., meat, egg, poultry, fish, dairy, fruits, vegetables, grains, legumes, oilseeds, etc.).	Objective Test	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.04.b.</b> Examine and summarize desirable qualities of food products derived from different classifications of food products.	Objective Test Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.04.c.</b> Evaluate and grade food products from different classifications of food products.	Sensory Evaluation Practicums Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.02. Performance Indicator: Design and apply techniques of food processing, preservation, packaging and presentation for distribution and consumption of food products.</b>		
<b>FPP.03.02.01.a.</b> Identify and explain English and metric measurements used in the food products and processing industry.	Objective Test Math/Problem Solving	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3



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<b>FPP.03.02.01.b.</b> Compare weights and measurements of products and perform conversions between units of measure.	Team Activity Math/Problem Solving	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.01.c.</b> Design plans to formulate and package food products using a variety of weights and measures.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.02.a.</b> Differentiate between methods and materials used for processing food for different markets (e.g., fresh food products, ready to eat food products, etc.).	Objective Test Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.02.b.</b> Outline appropriate methods and prepare foods for sale and distribution for different markets.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.02.c.</b> Evaluate food quality factors on foods prepared for different markets (e.g., shelf life, shrinkage, appearance, weight, etc.).	Sensory Evaluation Practicums Food Safety and Quality Practicums Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.03.a.</b> Identify methods of food preservation and give examples of foods preserved by each method.	Objective Test	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.03.b.</b> Analyze and document food preservation processes and methods on a variety of food products.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.03.c.</b> Devise strategies to preserve different foods using various methods and techniques. Prod Spec,	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.04.a.</b> Summarize types of materials and methods used in food packaging and presentation.	Objective Test	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.04.b.</b> Analyze the degree of desirable food qualities of foods stored in various packaging	Team Activity Food Safety and Quality Practicums	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.04.c.</b> Construct and implement methods of selecting packaging materials to store a variety of food products.	Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.03. Performance Indicator: Create food distribution plans and procedures to ensure safe delivery of food products.</b>		
<b>FPP.03.03.01.a.</b> Assess the environmental impact of distributing food locally and globally.	Objective Test	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 HS-ETS1-2

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<p><b>FPP.03.03.02.a.</b> Examine the various paths food products take to get from food processing centers to consumers.</p>	<p>Objective Test</p>	<p>AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 HS-ETS1-2</p>
<p><b>FPP.03.03.02.b.</b> Interpret safety procedures used in food distribution to ensure a safe product is being delivered to consumers.</p>	<p>Team Activity</p>	<p>AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 HS-ETS1-2</p>
<p><b>FPP.03.03.02.c.</b> Make recommendations to improve safety procedures used in food distribution scenarios to ensure a safe product is being delivered to consumers.</p>	<p>Food Safety and Quality Practicums</p>	<p>AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 HS-ETS1-2</p>

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<b>FPP.03.03.03.a.</b> Research and summarize different types of market demands for food products (e.g., local food, organic, non-GMO, etc.).	Objective Test	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 HS-ETS1-2
<b>FPP.03.03.03.b.</b> Assess how market demand for food products influences the distribution of food products.	Team Activity	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 HS-ETS1-2
<b>FPP.03.03.03.c.</b> Propose distribution plans for food products that meet specific market demands.	Team Activity	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 HS-ETS1-2
<b>FPP.04.01. Performance Indicator: Examine the scope of the food industry by evaluating local and global policies, trends and customs for food production.</b>		
<b>FPP.04.01.01.a.</b> Research and summarize examples of policy and legislation that affect food products and processing systems in the United States and around the world (e.g., labeling, GMOs, biosecurity, etc.).	Objective Test	HS-ETS1-3 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 2

## Agriculture, Food and Natural Resource Content Standards continued

<b>FPP.04.01.02.a.</b> Examine the impact of consumer trends on food products and processing practices (e.g., health and nutrition, organic, information about food products, local food movements, etc.).	Objective Test	HS-ETS1-3 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 2
<b>FPP.04.01.02.b.</b> Construct and implement methods to obtain data on food consumer trends in a specific market.	Team Activity	HS-ETS1-3 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 2
<b>FPP.04.01.02.c.</b> Devise a strategy to create food products that meet a specific consumer trend in a specific market.	Team Activity	HS-ETS1-3 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 2
<b>FPP.04.01.03.a.</b> Compare and contrast cultural differences regarding food products and processing practices.	Objective Test	HS-ETS1-3 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 2
<b>FPP.04.01.03.c.</b> Propose culturally sensitive food processing and distribution practices.	Team Activity	HS-ETS1-3 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 2
<b>FPP.04.02. Performance Indicator: Evaluate the significance and implications of changes and trends in the food products and processing industry in the local and global food systems.</b>		
<b>FPP.04.02.01.a.</b> Describe and explain the components of the food products and processing industry (e.g., processing, distribution, byproducts, etc.).	Objective Test	Buying Goods and Services, Benchmarks: Grade 12, Statement 1
<b>FPP.04.02.01.b.</b> Analyze and document significant changes and trends in the food products and processing industry.	Objective Test	Buying Goods and Services, Benchmarks: Grade 12, Statement 1
<b>FPP.04.02.01.c.</b> Predict and defend upcoming changes and trends in the food products and processing industry.	Team Activity	Buying Goods and Services, Benchmarks: Grade 12, Statement 1
<b>FPP.04.02.02.a.</b> Identify and explain environmental and safety concerns about the food supply.	Objective Test	Buying Goods and Services, Benchmarks: Grade 12, Statement 1
<b>FPP.04.02.02.c.</b> Examine and respond to consumer concerns about the environment and safety of the food supply using accurate information regarding food products and processing systems and practices.	Food Safety and Quality Practicums	Buying Goods and Services, Benchmarks: Grade 12, Statement 1
<b>FPP.04.02.03.a.</b> Research current and emerging technologies related to food products and processing (e.g., high pressure processing of foods, automation, biotechnology, etc.).	Objective Test	Buying Goods and Services, Benchmarks: Grade 12, Statement 1

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<b>FPP.04.03. Performance Indicator: Identify and explain the purpose of industry organizations, groups and regulatory agencies that influence the local and global food systems.</b>		
<b>FPP.04.03.01.a.</b> Examine and summarize the purposes of organizations that influence or regulate the food products and processing industry.	Objective Test	Transportation, Distribution and Logistics Career Cluster – Transportation Systems/Infrastructure Planning, Management and Regulation Pathway, Statement 4 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.04.03.02.a.</b> Examine the importance and usage of regulatory oversight of food safety and security in food products and processing (e.g., internationally, nationally, state and local).	Objective Test	Transportation, Distribution and Logistics Career Cluster – Transportation Systems/Infrastructure Planning, Management and Regulation Pathway, Statement 4 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>CS.01.01. Performance Indicator: Examine issues and trends that impact AFNR systems on local, state, national and global levels.</b>		
<b>CS.01.01.02.c.</b> Evaluate emerging trends and the opportunities they may create within the AFNR systems.	Team Activity	
<b>CS.01.03. Performance Indicator: Identify public policies and their impact on AFNR systems.</b>		
<b>CS.1.03.02.a.</b> Identify influential historical and current public policies that impact AFNR systems.	Objective Test	
<b>CS.02.01. Performance Indicator: Research geographic and economic data related to AFNR systems.</b>		
<b>CS.02.01.02.b.</b> Analyze a set of economic data and analyze how it impacts an AFNR system.	Math/Problem Solving	
<b>CS.02.01.02.c.</b> Devise a strategy to solve a problem in an AFNR system using a set of economic data.	Team Activity	
<b>CS.02.02. Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy.</b>		
<b>CS.02.02.01.a.</b> Identify and summarize the components within AFNR systems (e.g., Animal Systems: health, nutrition, genetics, etc.; Natural Resources Systems: soil, water, etc.).	Objective Test	
<b>CS.02.02.02.a.</b> Define and summarize societies on local, state, national and global levels and describe how they relate to AFNR systems.	Objective Test	
<b>CS.02.02.03.a.</b> Examine and summarize the components of the agricultural economy (e.g., environmental, crops, livestock, etc.).	Objective Test	
<b>CS.03.01. Performance Indicator: Identify required regulations to maintain and improve safety, health and environmental management systems.</b>		
<b>CS.03.01.01.a.</b> Research regulatory, safety and health standards (e.g., SDS, bioterrorism, etc.)	Objective Test	

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CS.03.01.01.b. Assess health, safety and environmental procedures to comply with regulatory and safety standards. Team Activity, FQTP	Food Safety and Quality Practicums Objective Test	
CS.03.01.02.a. Summarize the importance of safety, health and environmental management in the workplace.	Objective Test	
CS.03.01.02.c. Construct and implement methods to evaluate compliance with required safety, health and environmental management regulations.	Food Safety and Quality Practicums Objective Test	
<b>CS.03.03. Performance Indicator: Apply health and safety practices to AFNR worksites.</b>		
CS.03.03.01.c. Create a health and safety policy plan for AFNR business.	Team Activity	
<b>CS.03.04. Performance Indicator: Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.</b>		
CS.03.04.02.a. Identify standard tools, equipment and safety procedures related to AFNR tasks.	Objective Test	
CS.03.04.03.b. Assess and demonstrate appropriate operation, storage and maintenance techniques for AFNR tools and equipment.	Food Safety and Quality Practicums	
<b>CS.05.01. Performance Indicator: Evaluate the steps and requirements to pursue a career opportunity in each of the AFNR career pathways (e.g., goals, degrees, certifications, resumes, cover letter, portfolios, interviews, etc.).</b>		
CS.05.01.01.a. Identify and summarize the steps to pursue a career in an AFNR pathway (e.g., self-assessment, set goals, etc.).	Objective Test	
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
CRP.02.01.01.c. Apply academic knowledge and skills to solve problems in the workplace and reflect upon the results achieved.	Food Safety and Quality Practicums Team Activity Math/Problem Solving	
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
CRP.02.02.01.c. Apply technical concepts to solve problems in the workplace and reflect upon the results achieved.	Food Safety and Quality Practicums Team Activity Math/Problem Solving Objective Test	
<b>CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.</b>		
CRP.04.02.02.b. Apply techniques for ensuring clarity, logic and coherence to edit written communications (e.g., emails, reports, presentations, technical documents, etc.).	Team Activity	

*Agriculture, Food and Natural Resource Content Standards continued*

CRP.04.02.02.c. Compose clear and coherent written documents (e.g., agendas, audio-visuals, drafts, forms, etc.) for formal and informal settings.	Team Activity	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Food Safety and Quality Practicums	
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
CRP.05.01.03.c. Synthesize information and resources and apply to workplace and community situations to make positive decisions.	Food Safety and Quality Practicums Team Activity	
<b>CRP.05.02. Performance Indicator: Make, defend and evaluate decisions at work and in the community using information about the potential environmental, social and economic impacts.</b>		
CRP.05.02.01.c. Evaluate and defend decisions applied in the workplace and community situations.	Team Activity	
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
CRP.06.01.01.c. Evaluate workplace and community situations and devise strategies to apply original ideas.	Team Activity	
<b>CRP.06.03. Performance Indicator: Create and execute a plan of action to act upon new ideas and introduce innovations to workplace and community organizations.</b>		
CRP.06.03.01.c. Design a plan of action to introduce a new idea or innovation into the workplace and community.	Team Activity	
CRP.06.03.02.c. Evaluate and execute strategies for using stakeholder input and feedback to improve a plan of action for introducing a new idea or innovation into the workplace or community.	Team Activity	
<b>CRP.07.01. Performance Indicator: Select and implement reliable research processes and methods to generate data for decision-making in the workplace and community.</b>		
CRP.07.01.01.a. Identify and summarize reliable research processes and methods used to generate data for decision-making.	Team Activity	
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Sensory Evaluation Practicums Food Safety and Quality Practicums Team Activity Math/Problem Solving	



## Agriculture, Food and Natural Resource Content Standards continued

<b>CRP.09.03. Performance Indicator: Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community (e.g., positively influencing others, effectively communicating, etc.).</b>		
CRP.09.03.02.c. Model respectful and purposeful behaviors that contribute to positive morale and culture in the workplace and community (e.g., effectively communicating, recognizing accomplishments of others, etc.).	Team Activity	
<b>CRP.10.02. Performance Indicator: Examine career advancement requirements (e.g., education, certification, training, etc.) and create goals for continuous growth in a chosen career.</b>		
CRP.10.02.01.a. Categorize career advancement requirements for potential careers (e.g., degrees, certification, training, etc.).	Objective Test	
<b>CRP.11.01. Performance Indicator: Research, select and use new technologies, tools and applications to maximize productivity in the workplace and community.</b>		
CRP.11.01.01.c. Construct effective communications to explain the features, benefits and risks of new technologies, tools and applications in the workplace and community.	Team Activity	
CRP.11.01.02.b. Select, apply and use new technologies, tools and applications in workplace and community situations to maximize productivity.	Team Activity	
<b>CRP.11.02. Performance Indicator: Evaluate personal and organizational risks of technology use and take actions to prevent or minimize risks in the workplace and community.</b>		
CRP.11.02.02.a. Synthesize tools and processes to prevent or minimize risks of technology use in community and work settings (e.g., risk management tools, benefit risks, etc.).	Food Safety and Quality Practicums Team Activity	
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
CRP.12.01.02.b. Apply consensus building techniques to accomplish results in team-oriented situations.	Food Safety and Quality Practicums Team Activity	
<b>CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).</b>		
CRP.12.02.01.b. Assess team dynamics and match strategies to increase team member engagement.	Food Safety and Quality Practicums Team Activity	





# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# FORESTRY

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS



## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The National FFA Forestry Career Development Event is designed to stimulate student interest and to promote the forestry industry as a career choice. It also provides recognition for those who have demonstrated skills and competencies as a result of forestry instruction in the agriculture education classroom.*

## Objectives

This event will provide the participant the ability to:

- understand and use forestry terms.
- promote an understanding of the economic impact of the forest environment and the forest industry to the American economy.
- recognize sustainability (multiple use) opportunities in the forests.
- recognize environmental and social factors affecting the management of forests.
- identify major species of trees of economic importance to the United States and internationally.
- identify and properly use hand tools, equipment in forestry management.
- recognize and understand approved silvicultural practices in the United States.
- identify forest disorders.
- take a forest inventory.
- utilize marketing management strategies.
- recognize safety practices in forest management.

## Event Rules

- The team will consist of four individuals and all four scores will count toward the team score.
- The team score is comprised of the combined scores of each individual and the team activity in which all team members will participate.
- Participants must come to the event prepared to work in adverse weather conditions. The event will be conducted regardless of weather. Participants should have rain gear, warm clothes and closed toed shoes. Each participant must provide the following safety equipment, and it must be worn while in the woods or the participant will be disqualified:
  - Hard hat (unless otherwise noted in the National FFA Forestry CDE orientation packet)
  - Safety glasses
- Students are required to bring their own pencils.
- All other equipment including clipboards will be furnished for the event. Participants must use the tools and equipment provided.
- Participants must follow instructions from event staff for handling materials during the event. Any infraction of this rule will be sufficient to eliminate the team from the event.
- Observers will not be permitted in the event area while the event is in progress.
- No team, team member or team coach shall visit the event facilities to observe plant materials and facilities after September 1. Any team, team member or coach reported and proven to do so will cause the elimination of the team from the National FFA Forestry CDE.
- Participants will be assigned to group leaders who will escort them to various event-staging sites. Each participant is to stay with his/her assigned group leader throughout the event or until told to change leaders by the event superintendent.
- All participants will be given an identification number by which they will be designated throughout the event.

- All written materials will be furnished for the event. No written materials such as tests, problems and worksheets shall be removed from the event site.
- Any participant in possession of an electronic device in the event area is subject to disqualification.

## EVENT FORMAT

### INDIVIDUAL ACTIVITIES

#### GENERAL KNOWLEDGE EXAM (100 POINTS)

- Fifty multiple-choice questions will be selected from areas of the forestry industry reflected in the event objectives. This phase of the event will test the participant's knowledge and understanding of basic principles of forestry.
- Each participant will be allowed 45 minutes to complete this phase of the event.

#### TREE IDENTIFICATION (100 POINTS)

- Twenty live specimens, pressed samples, fresh leaf samples and/or standing trees, from the tree identification specimen list will be displayed for participants to identify by common names. A number will designate each specimen.
- Each participant will be allowed 30 minutes to complete this phase.

#### TREE MEASUREMENT - TIMBER CRUISING FOR BOARD VOLUME (100 POINTS)

- Each participant will measure ten pre-numbered trees on a plot for board foot volume. The participant must record the DBH (Diameter Breast Height) to the nearest one-inch class and the merchantable height of each tree height rounded down to the nearest ½ log.
- Volume tables will be provided at the event.
- The following minimum diameters and log length will be:

Minimum Saw Timber	
DBH	10 inches
Top Diameter	10 inches DIB
Height	16 feet

- Merchantable height stops are estimated to the upper point on a tree where it becomes 10 inches in diameter or where a major fork in a tree stem occurs or where a limb has a diameter equal to  $\frac{1}{2}$  of the diameter of the tree at that point.
- Each participant will be allowed 30 minutes to complete this phase.
- Thirty points will be given for the correct DBH and thirty points for the correct height. Forty points will be given for the correct volume per acre. Five points will be deducted for each five percent deviation (plus or minus) from the correct measured volume.

#### **INDIVIDUAL PRACTICUMS (100 POINTS) EACH FOR TOTAL OF 200 POINTS PER INDIVIDUAL**

Participants will compete individually in two practicums from the following list:

- Forest Management Evaluation
- Equipment Identification
- Map Interpretation
- Compass
- Chainsaw Part Identification, Troubleshooting and Safety
- Tree/Fores Disorder
- Forest Products
- Forest Business Management Problem

The event superintendent will designate two practicums to be completed by the participant.

Each participant will have 30 minutes to complete each practicum.



## **FOREST MANAGEMENT EVALUATION - TIMBER STAND IMPROVEMENTS (TSI) AND/OR THINNING PRACTICUM**

The trees selected and designated for use in this part of the event may be all of one species or a mixture of species.

An area will be selected and identified by ribbons, paint, rope, etc. It will contain 20 marked trees within a timber stand. All trees in the selected area will be considered as a forest management site, and the participants will score each marked tree using one of the following options:

- Harvest - utilize the tree
- Leave - the tree should remain in stand for a good reason
- Deaden - Undesirable tree, not merchantable or beneficial to wildlife, should be deadened or cut down and left in woods

The participants will be given a situation concerning the forest management objectives of the stand selected. This information will be given to participants at the site before they start. Information that will be needed to help participants in their decisions will include:

- Markets available
- Wildlife considerations
- Present condition of stand
- Management plan

## **EQUIPMENT IDENTIFICATION PRACTICUM**

Twenty-five pieces of equipment from the equipment identification list will be displayed for participants to identify by technical names. Each piece of equipment will be designated by number.

The equipment will be presented in one or more of the following forms:

- Actual samples
- Pictures or slides
- Written description

## MAP INTERPRETATION PRACTICUM

Participants will answer questions using a furnished United States Geological Survey topographic map. The participant should know legal description, recognize topographic map symbols, and understand the meaning of map symbols, size and location of 40 acres or more in a parcel.

### Examples:

- What is the legal description of the boxed area?
- What is the item located at this point?
- What is the acreage of the area enclosed?
- In what section is the city of Marshall located?
- What is the elevation at this point?

Legal descriptions will be written or described according to the public land survey system.

- **Example:** SE  $\frac{1}{4}$  of NW  $\frac{1}{4}$  of Section 3, T3N, R1E

## COMPASS PRACTICUM

The participant will use a hand compass and pacing to the nearest full foot to simulate the determination of the property lines on a tract of timber. The participant will start at any point and record the compass reading and distance to the next point. Azimuth readings shall be recorded. Participants will record data for 10 points.

Partial credit will be given with a deduction of one point for each two degrees or two feet the participant is off the correct answer.

## CHAINSAW PART IDENTIFICATION, TROUBLESHOOTING AND SAFETY PRACTICUM

This practicum will consist of one or more of the parts below.

Parts may utilize photos, video, demonstration, actual parts, written situations and/or problems. This is not an inclusive list.

- **Chainsaw parts identification:** Each participant will identify parts of a chainsaw. (Does not include internal engine components)
- **Troubleshooting:** The participant will identify chainsaw problems or troubles.
- **Safety:** The participant will identify safety hazards, unsafe practices and/or proper safety equipment.

## TREE/FOREST DISORDERS PRACTICUM

Symptoms of at least 10, but not more than 20 disorders from the Tree Disorders Identification list will be displayed for participants to identify by common names. The symptoms will be presented in one or more of the following forms:

- Actual sample
- Pictures/slides
- Written description
- Written case history

A number will designate each set of symptoms representing a disorder.

## FOREST PRODUCTS PRACTICUM

Ten to 20 wood products/samples will be displayed for participants to evaluate and identify its tree species source from the tree identification specimen list. The wood products/samples will be presented in one or more of the following forms:

- Actual sample
- Pictures/slides
- Written description

## FOREST BUSINESS MANAGEMENT PROBLEM PRACTICUM

This section is designed to determine the participant's ability to apply economic principles and concepts of management to the decision making process by actual problem analysis and to defend the decisions made. This will involve a model forest operation with possible calculation on profit/loss, cost of operation, taxes, depreciation, marketing product, stumpage cost, record keeping, etc.

A maximum of ten problems or questions will be used.

## FOREST INDUSTRY SCENARIO TEAM ACTIVITY (450 POINTS)

Each team will be provided with a forest industry scenario. The scenario will utilize components from the individual forestry CDE practicums. Teams must work together using forestry skills and tools to complete the team activity. Ninety minutes will be allowed to plan and complete the activity. All supplies and materials needed to complete the task will be provided.

## FORESTRY ISSUES PRESENTATION TEAM ACTIVITY (100 POINTS)

Teams will communicate their knowledge and opinion about national or regional forestry issues through a presentation with a judge. A list of general issue topics for participants to study is provided below. The specific topic will be provided at the event.

### General Topics:

- What practices or processes have affected timber sales and or markets in your region?
- What are some important forest pests? Why is it important to control them?
- What are the positive and negative aspects of genetically modified trees?
- What are some issues that urban foresters face?

- What forestry best management practices (BMPs) are used in your state and why?
- How does watershed restoration impact communities? What role can forest management play in watershed restoration?
- Explain forest fragmentation and the strategies used to prevent it.
- Explain what Sustainable Forest Initiative (SFI) and Forest Stewardship Council (FSC) are and what they have in common.
- How are endangered species protected by law? Why should we be concerned about saving them?
- What is woody biomass? What are the positives and negatives of producing woody biomass?

**Example scenario:**

You are speaking to a group of private forest landowners concerning the Conservation Reserve Program (CRP). Many CRP contracts are due to expire in the next five years and will no longer be available in the future. How will this affect the price of timber and future reforestation?

**Time:** Each team will have ten minutes to prepare and be allowed ten minutes to complete the Presentation.

Scoring criteria are presented on the issues preparation and presentation rubric, which will be recorded by a judge.

## Scoring

ACTIVITIES	Individual Points	Team Points
General Knowledge Exam	100	400
Tree Identification	100	400
Tree Measurements-Timber Cruising	100	400
Individual Practicums (2)	200	800
Forest Industry Scenario Team Activity		450
Forestry Issue Presentation Team Activity		100
	<b>500</b>	<b>2,550</b>

## TIEBREAKERS

### TEAM

Tiebreakers for teams will be determined by adding together the individual ranking of team members. The team with the lowest score will earn the tiebreak.

### INDIVIDUALS

1. Knowledge exam
2. Timber cruising
3. Tree identification
4. Total rotational practicum score.



## Awards

Awards will be presented to individuals and/or teams based upon their rankings at the awards ceremony. Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

The high individual in each of the following areas will be given special recognition certificates:

- General knowledge exam
- Practicums
- Team activity

## References

*This list of references is not intended to be all inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. Make sure to use discretion when selecting website references by only using reputable, proven sites. The following list contains references that may prove helpful during event preparation. The most current edition of resources will be used.

Past CDE materials and other resources are available by logging in to [FFA.org](http://FFA.org)

### GENERAL KNOWLEDGE EXAM

- Introduction to Forestry Science, Burton, Delmar Publications
- Science of Forestry Management, Kris Irwin, University of Georgia, AAVIM

### TREE IDENTIFICATION

- Dendrology at Virginia Tech, <http://dendro.cnre.vt.edu/dendrology/main.htm>
- “FFA Georgia State and National Tree Lists”, available from [www.amazon.com](http://www.amazon.com)
- W. H. Harlow, E. S. Harrar, and F. M. White. Textbook of Dendrology, current edition. New York, NY: McGraw-Hill Book Company.
- Silvics of North America, Handbook #654, volume one and two, U.S. Forest Service, P. O. Box 2417, 12th and Independence Avenue SW, Washington, DC 20013.



## TREE MEASUREMENT

- [http://www.fs.usda.gov/Internet/FSE DOCUMENTS/steelprdb5202838.pdf](http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/steelprdb5202838.pdf)

## FOREST MANAGEMENT

- Introduction to Forestry Science, Burton, Delmar Publications
- Science of Forestry Management, Kris Irwin, University of Georgia, AAVIM

## EQUIPMENT IDENTIFICATION

- Current Catalog of Forestry Suppliers, Inc., 205 West Rankin Street, Jackson, MS 39204-039
- [www.husqvarna.com/us/accessories/axes-pruning-saws/](http://www.husqvarna.com/us/accessories/axes-pruning-saws/)
- [www.husqvarna.com/us/forest/accessories/chainsaw-accessories/#forests\\_tools](http://www.husqvarna.com/us/forest/accessories/chainsaw-accessories/#forests_tools)
- [www.deere.com/en\\_US/industry/forestry/forestry.page?](http://www.deere.com/en_US/industry/forestry/forestry.page?)
- [www.treestuff.com](http://www.treestuff.com)

## MAP INTERPRETATION

- The U.S. Department of Interior Geological Survey Topographic Map Information and Symbols Key, Map Distribution, U. S. Geological Survey, Box 25286, Federal Center, Denver CO

## COMPASS

- [http://forest.mtu.edu/classes/fw2051/docs/compass\\_pace.pdf](http://forest.mtu.edu/classes/fw2051/docs/compass_pace.pdf)

## CHAINSAW PARTS AND IDENTIFICATION

- Husqvarna publication, How to Work With a Chainsaw, National FFA website

## FOREST PRODUCTS

- [www.fpl.fs.fed.us/products/publications/several\\_pubs.php?grouping\\_id=100&header\\_id=p](http://www.fpl.fs.fed.us/products/publications/several_pubs.php?grouping_id=100&header_id=p)

## FOREST BUSINESS MANAGEMENT

- Introduction to Forestry Science, Burton, Delmar Publications
- Science of Forestry Management, Kris Irwin, University of Georgia, AAVIM

## Tree Identification Specimen List

1. Alder, Red (*Alnus rubra*)
2. Ash (*Fraxinus* sp.)
3. Aspen, Bigtooth (*Populus grandidentata*)
4. Aspen, Quaking (*Populus tremuloides*)
5. Baldcypress (*Taxodium distichum*)
6. Beech, American (*Fagus americana*)
7. Birch, Black (*Betula lenta*)
8. Birch, White (*Betula papyrifera*)
9. Cherry, Black (*Prunus serotina*)
10. Cottonwood, Eastern (*Populus deltoides*)
11. Elm (*Ulmus* sp.)
12. Fir, Balsam (*Abies balsamea*)
13. Fir, Douglas (*Pseudotsuga menziesii*)
14. Hemlock, Eastern (*Tsuga canadensis*)
15. Hemlock, Western (*Tsuga heterophylla*)
16. Hickory (*Carya* sp.)
17. Maple, Red (*Acer rubrum*)
18. Maple, Sugar (*Acer saccharum*)
19. Oak, Black (*Quercus velutina*)
20. Oak, Chestnut (*Quercus Montana*)
21. Oak, Northern Red (*Quercus rubra*)
22. Oak, Scarlet (*Quercus coccinea*)
23. Oak, Southern Red (*Quercus falcata*)
24. Oak, White (*Quercus alba*)
25. Pecan (*Carya illinoensis*)
26. Pine, Eastern White (*Pinus strobus*)
27. Pine, Loblolly (*Pinus taeda*)
28. Pine, Lodgepole (*Pinus contorta*)
29. Pine, Longleaf (*Pinus palustris*)
30. Pine, Pitch (*Pinus rigida*)
31. Pine, Ponderosa (*Pinus ponderosa*)
32. Pine, Red (*Pinus resinosa*)
33. Pine, Shortleaf (*Pinus echinata*)
34. Poplar, Yellow (*Liriodendron tulipifera*)
35. Red Cedar, Western (*Thuja plicata*)
36. Redcedar, Eastern (*Juniperus virginiana*)
37. Spruce, Red (*Picea rubens*)
38. Spruce, Sitka (*Picea sitchensis*)
39. Spruce, White (*Picea glauca*)
40. Sweetgum (*Liquidambar styraciflua*)
41. Sycamore (*Platanus* sp.)
42. Walnut, Black (*Juglans nigra*)

## Equipment Identification List

- |                                |                              |
|--------------------------------|------------------------------|
| 1. Altimeter                   | 35. Increment Borer          |
| 2. Angle guage                 | 36. Jacob Staff              |
| 3. Ascender                    | 37. Log Rule                 |
| 4. Automatic Level             | 38. Logger's Tape            |
| 5. Back-pack Fire Pump         | 39. Maul                     |
| 6. Bark Gauge                  | 40. Peavy                    |
| 7. Bulldozer                   | 41. pH Meter                 |
| 8. Canthook                    | 42. Planimeter               |
| 9. Carabiner                   | 43. Plant Press              |
| 10. Chainsaw                   | 44. Plastic Flagging         |
| 11. Chainsaw Chaps             | 45. Pole saw                 |
| 12. Clinometer                 | 46. Pruning Saw              |
| 13. Combination tool           | 47. Pulaski Axe              |
| 14. Data Recorder              | 48. Relaskop                 |
| 15. Densiometer                | 49. Safety Glasses           |
| 16. Diameter Tape              | 50. Safety Hard Hat          |
| 17. Dot Grid                   | 51. Scale Stick              |
| 18. Drip Torch                 | 52. Secchi Disc              |
| 19. Ear Protection             | 53. Soil Sampler             |
| 20. Endloader                  | 54. Soil Test Kit            |
| 21. Feller Buncher             | 55. Staff Compass            |
| 22. Felling Wedge              | 56. Stereoscope              |
| 23. Fiberglass Measuring Tape  | 57. Tally Book               |
| 24. Fire Rake                  | 58. Tally Meter              |
| 25. Fire shelter               | 59. Timber Tongs             |
| 26. Fire Weather Kit           | 60. Tree Caliper             |
| 27. Fire-Swatter               | 61. Tree Harvester           |
| 28. First aid kit              | 62. Tree Marking Gun         |
| 29. Flow/current Meter         | 63. Tree Planting Hoe or Bar |
| 30. GPS Receiver               | 64. Tree Skidder             |
| 31. Hand Compass               | 65. Water Sampler            |
| 32. Hand Lens/Field Microscope | 66. Water Test Kit           |
| 33. Hip Chain                  | 67. Wedge Prism              |
| 34. Hypo-Hatchet               |                              |

## Tree Disorders Identification List

1. Aphid
2. Asian Longhorn Beetle
3. Butt or Heart Rot
4. Canker
5. Chemical damage
6. Cicada
7. Climatic injury: snow, wind, frost, drought, hail
8. Damping off
9. Douglas fir tussock moth
10. Emerald ash borer
11. Fir Engraver Beetle
12. Fire damage
13. Gypsy moth
14. Hemlock woolly adelgid
15. Ips Engraver Beetle
16. Landscape equipment damage
17. Lightning damage
18. Mechanical damage
19. Mistletoe
20. Mountain Pine Beetle
21. Nematode
22. Rust
23. Sawfly
24. Scale
25. Spruce budworm
26. Sunscald
27. Tent caterpillar
28. Wetwood or slime flux
29. Wildlife/Livestock damage



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Doyle Log Rule

Form Class 80

VOLUME (BOARD FEET) BY NUMBER OF 16 FOOT LOGS									
DBH Inches	1	1 1/2	2	2 1/2	3	3 1/2	4	4 1/2	5
10	16	20	23	24	26				
11	24	30	35	38	42				
12	31	39	47	52	57	60	62		
13	42	53	64	72	80	84	88		
14	52	67	82	93	104	109	114		
15	64	84	104	118	132	141	150		
16	77	101	125	143	161	174	186		
17	92	122	152	175	198	214	230		
18	108	144	179	206	234	254	273		
19	126	168	210	244	278	301	324		
20	144	193	242	282	321	348	374	396	417
21	164	221	278	324	370	403	436	462	489
22	185	250	315	368	420	458	497	529	561
23	208	282	356	417	478	521	564	604	643
24	231	314	397	466	536	583	630	678	725
25	256	350	443	522	600	655	710	764	818
26	282	386	489	576	663	727	791	852	912
27	310	425	540	638	735	806	877	946	1015
28	339	466	592	700	807	885	963	1040	1118
29	370	509	648	766	884	970	1056	1144	1232
30	400	552	703	832	961	1055	1149	1248	1346



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## Bd Ft Volume Estimation Worksheet

Tree Number	DBH	Number of Logs	Volume
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10			
TOTAL VOLUME			

Remember to record the DBH, Number of Logs and Total Volume on your Scantron sheet.



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DEVELOPMENT EVENTS

## Team Issues Preparation Rubric

50 points

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Points Earned	Weight	Total Points
Effective listening	Clearly evident that all team members are listening.	Listening occurs but distraction is evident.	Not listening to each other and/or talking over each other.		X 2	
Oral communication	Clearly evident that all team members are discussing the topic.	Communication occurs but side conversations are occurring or two to three members dominating.	One member dominating conversation.		X2	
Demonstrated cooperation	Clearly evident all team members completing tasks, sharing written and oral solutions.	Tasks primarily completed by two to three members, other members assist occasionally.	Tasks primarily completed by one member, other members contributing only slightly.		X2	
	Clearly evident all team members respected the input of other team members.	Most team members respected the input of other team members.	The team members did not respect the input of other team members.		X2	
Participated in the team preparation	Clearly evident all team members are engaged, attentive, and making notes for the full term of event.	Members are engaged and attentive with two to three making notes, participation fades over time.	One to two members form the primary team, other members participate occasionally early, fade over time.		X2	
TOTAL						



[illegible]



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Forestry Industry Scenario Team Activity Rubric

450 points

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Strong evidence of skill is not present 1–0 points	Points Earned	Weight	Total Score
Opening statement	Begins with an impact statement or question that articulates the focus of the topic area.	Begins with an impact statement or question that is vague concerning the topic area.	Begins with a statement or question that is completely irrelevant to the topic area.		X 4	
Identification of problem areas	Four or more problems from the scenario are accurately identified and discussed.	Two to three problems from the scenario are accurately identified and discussed.	One or no problems from the scenario are accurately identified and discussed.		X 8	
Supporting information	Does an outstanding job discussing industry trends with related statistics.	Does an adequate job discussing industry trends with related statistics.	Vaguely discusses industry trends with related statistics.		X 12	
Factors of impact	All factors that are impacted by problems listed in the scenario are addressed. (i.e., economic impact, production factors, etc.,).	Some factors that are impacted by problems listed in the scenario are addressed. (i.e., economic impact, production factors, etc.,).	Little or no factors that are impacted by problems listed in the scenario are addressed. (i.e., economic impact, production factors, etc.,).		X 24	
Identifying solutions	All solutions connect with and support industry best practices.	Some solutions connect with and support industry best practices.	Solutions do not connect with and do not support industry best practices.		X 24	
Implementation of solutions	All solutions are correctly prioritized for implementation; provides complete justification for the implementation process.	Few solutions are correctly prioritized for implementation; provides little justification for the implementation process.	Solutions are incorrectly prioritized for implementation; provides no justification for the implementation process.		X 14	
Conclusion	Provides a summary statement that provides a clear and concise overview of the topic area.	Provides a summary statement that provides a vague overview of the topic area.	Provides a summary statement that has little relevance to the topic area.		X 4	
TOTAL POINTS						



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Agriculture, Food and Natural Resources Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.01.01. Performance Indicator: Apply micro- and macroeconomic principles to plan and manage inputs and outputs in an AFNR business.</b>		
<b>ABS.01.01.01.c.</b> Create strategies to maximize the efficiency of AFNR business inputs and outputs using microeconomic principles.	Forest Business Management Problem Practicum	CCSS.ELA-Literacy.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 Financial Investing: Benchmarks: Grade 12, Statement 9
<b>ABS.01.02. Performance Indicator: Read, interpret, evaluate and write statements of purpose to guide business goals, objectives and resource allocation.</b>		
<b>ABS.01.02.02.c.</b> Evaluate AFNR business goals and objectives, then make revisions based on data and observations.	Forest Business Management Problem Practicum	CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RI.9-10.4 CCSS.ELA-LITERACY.RI.11-12.4
<b>ABS.01.03. Performance Indicator: Devise and apply management skills to organize and run an AFNR business in an efficient, legal and ethical manner.</b>		
<b>ABS.01.03.01.c.</b> Devise strategies to improve the operation of AFNR businesses using management skills.	Forest Business Management Problem Practicum	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.01.03.02.c.</b> Devise management or operational strategies to address and adhere to local, state, federal, international and industry regulations.	Forestry Issues Presentation Team Activity	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.04.02. Performance Indicator: Develop production and operational plans for an AFNR business.</b>		
<b>ABS.04.02.01.c.</b> Make recommendations to improve operational plans for an AFNR business based on best practices.	Forestry Issues Presentation Team Activity Forest Business Management Problem Practicum	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.05.01. Performance Indicator: Analyze the role of markets, trade, competition and price in relation to an AFNR business sales and marketing plans.</b>		
<b>ABS.05.01.01.c.</b> Evaluate and predict future trends for a specific AFNR product as related to markets, trade and price (e.g., corn, oil, wheat, etc.).	Forestry Issues Presentation Team Activity	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13
<b>CS.01.01. Performance Indicator: Examine issues and trends that impact AFNR systems on local, state, national and global levels.</b>		
<b>CS.01.01.01.c.</b> Evaluate and explain AFNR issues and their impacts to audiences with limited AFNR knowledge.	Forestry Issues Presentation Team Activity	
<b>CS.01.01.02.c.</b> Evaluate emerging trends and the opportunities they may create within the AFNR systems.	Forestry Issues Presentation Team Activity	
<b>CS.01.03. Performance Indicator: Identify public policies and their impact on AFNR systems.</b>		
<b>CS.01.03.01.c.</b> Evaluate a public policy within AFNR systems and defend or challenge it.	Forestry Issues Presentation Team Activity	
<b>CS.02.01. Performance Indicator: Research geographic and economic data related to AFNR systems.</b>		
<b>CS.02.01.02.c.</b> Devise a strategy to solve a problem in an AFNR system using a set of economic data.	Forestry Issues Presentation Team Activity	
<b>CS.02.02. Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy.</b>		
<b>CS.02.02.01.c.</b> Devise a strategy for explaining components of AFNR systems to audiences with limited knowledge.	Forestry Issues Presentation Team Activity	
<b>CS.02.02.02.c.</b> Evaluate how society traditions, customs or policies have resulted from practices with AFNR systems.	Forestry Issues Presentation Team Activity	
<b>CS.02.02.03.c.</b> Evaluate how positive or negative changes in the local, state, national or global economy impacts AFNR systems.	Forestry Issues Presentation Team Activity	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CS.03.04. Performance Indicator: Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.</b>		
<b>CS.03.04.01.a.</b> Identify and differentiate the appropriate protective equipment for the safe use and operation of specific tools and CS.03.04.02.a. Identify standard tools, equipment and safety procedures related to AFNR tasks.	Chainsaw Part Identification, Troubleshooting and Safety Practicum	
<b>CS.03.04.02.b.</b> Complete the set up and adjustment for tools and equipment related to AFNR tasks.	Chainsaw Part Identification, Troubleshooting and Safety Practicum	
<b>C3.06.04.02.c.</b> Evaluate and select appropriate tools and equipment to complete AFNR tasks.	Chainsaw Part Identification, Troubleshooting and Safety Practicum	
<b>CS.03.04.03.a.</b> Read and interpret operating instructions related to operation, storage and maintenance of tools and equipment related AFNR tasks.	Chainsaw Part Identification, Troubleshooting and Safety Practicum	
<b>CS.03.04.03.b.</b> Assess and demonstrate appropriate operation, storage and maintenance techniques for AFNR tools and equipment.	Chainsaw Part Identification, Troubleshooting and Safety Practicum	
<b>CS.04.01. Performance Indicator: Identify and implement practices to steward natural resources in different AFNR systems.</b>		
<b>CS.04.01.01.b.</b> Analyze available practices to steward natural resources in AFNR systems (e.g., wildlife and land conservation, soil and water practices, ecosystem management, etc.). TSI	Forest Business Management Problem Practicum	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
<b>CS.04.01.02.b.</b> Analyze and assess sustainability practices that can be applied in AFNR systems (e.g., energy efficiency, recycle/reuse/repurpose, green resources, etc.).	Forestry Issues Presentation Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
<b>CS.04.02. Performance Indicator: Assess the natural resource related trends, technologies and policies that impact AFNR systems.</b>		
<b>CS.04.02.01.b.</b> Analyze natural resources trends and technologies and document how they impact AFNR systems (e.g., climate change, green technologies, water resources, etc.).	Forestry Issues Presentation Team Activity	AFNR Career Cluster, Statement 7
<b>CS.05.01. Performance Indicator: Evaluate the steps and requirements to pursue a career opportunity in each of the AFNR career pathways (e.g., goals, degrees, certifications, resumes, cover letter, portfolios, interviews, etc.).</b>		
<b>CS.05.01.01.a.</b> Identify and summarize the steps to pursue a career in an AFNR pathway (e.g., self-assessment, set goals, etc.).	Exam	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
CS.05.01.02.a. Examine the educational, training and experiential requirements to pursue a career in an AFNR pathway (e.g., degrees, certifications, training, internships, etc.).	Entire event	
CS.05.01.03.a. Research and summarize specific tools (e.g., resumes, portfolios, cover letters, etc.) and processes (e.g., interviews, applications, etc.) needed to pursue a career in an AFNR pathway.	Entire event	
<b>CS.06.01. Performance Indicator: Explain foundational cycles and systems of AFNR.</b>		
CS.06.01.01.b. Analyze how foundational cycles affect production, processing and management of food, fiber and fuel.	Exam	
<b>ESS.01.01. Performance Indicator: Analyze and interpret laboratory and field samples in environmental service systems.</b>		
ESS.01.01.01.c. Collect and prepare sample measurements using appropriate data collection techniques.	Tree Measurement— Timber Cruising for Board Volume Compass Practicum	CCSS.ELA-LITERACY.SL.11-12.5 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3 CCSS.MATH.CONTENT.HSS.ID.A.2 CCSS.MATH.CONTENT.HSS.ID.B.5 HS-ESS2-2
ESS.01.01.02.c. Utilize data analysis to identify trends in a data sample and assess the confidence that can be drawn from those conclusions.	Forest Business Management Problem Practicum	CCSS.ELA-LITERACY.SL.11-12.5 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3 CCSS.MATH.CONTENT.HSS.ID.A.2 CCSS.MATH.CONTENT.HSS.ID.B.5 HS-ESS2-2
<b>ESS.01.02. Performance Indicator: Properly utilize scientific instruments in environmental monitoring situations (e.g., laboratory equipment, environmental monitoring instruments, etc.).</b>		
ESS.01.02.01.a. Identify basic laboratory equipment and explain their uses.	Equipment Identification Practicum	
ESS.01.02.02.a. Identify basic environmental monitoring instruments and explain their uses.	Equipment Identification Practicum	
<b>ESS.05.01. Performance Indicator: Use technological and mathematical tools to map land, facilities and infrastructure for environmental service systems.</b>		
ESS.05.01.01.c. Demonstrate surveying and cartographic skills to make site measurements in order to address concerns and needs within an environmental service systems situation.	Map Interpretation Practicum Compass Practicum	HS-ETS1-4

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>NRS.01.01. Performance Indicator: Apply methods of classification to examine natural resource availability and ecosystem function in a particular region.</b>		
<b>NRS.01.01.01.c.</b> Devise strategies for the preservation of natural resources based on their classification.	Forest Business Management Problem Practicum	AFNR Career Cluster, Statement 1 AFNR Career Cluster, Statement 2 AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9
<b>NRS.01.02. Performance Indicator: Classify different types of natural resources in order to enable protection, conservation, enhancement and management in a particular geographical region.</b>		
<b>NRS.01.02.01.b.</b> Apply identification techniques to determine the species of a tree or woody plant.	Tree Identification Tree/Forest Disorders Practicum	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
<b>NRS.01.02.01.c.</b> Evaluate the species of trees present to assess the health of an ecosystem (e.g., presence of native versus invasive species, biodiversity, etc.).	Forestry Issues Presentation Team Activity	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>NRS.01.02.02.b.</b> Apply identification techniques to determine the species of an herbaceous plant.	Tree/Forest Disorders Practicum	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
<b>NRS.01.02.03.b.</b> Apply identification techniques to determine the species of wildlife or insect.	Tree/Forest Disorders Practicum	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
<b>NRS.01.02.06.c.</b> Conduct an assessment of the resource inventories or population in a given area.	Forest Business Management Problem Practicum Tree Measurement— Timber Cruising for Board Volume	AFNR Career Cluster - Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2



## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>NRS.01.05. Performance Indicator: Apply ecological concepts and principles to terrestrial natural resource systems.</b>		
<b>NRS.01.05.01.b.</b> Analyze and summarize examples of stages of succession.	Exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS3-4 HS-ESS3-2
<b>NRS.01.05.03.c.</b> Devise a forest management plan that improves the habitat while sustainably maximizing the amount of timber that can be harvested.	Forest Business Management Problem Practicum	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS3-4 HS-ESS3-2
<b>NRS.01.06. Performance Indicator: Apply ecological concepts and principles to living organisms in natural resource systems.</b>		
<b>NRS.01.06.02.b.</b> Analyze factors that influence the establishment and spread of invasive species and determine the appropriate steps to prevent or minimize the impact of invasive species.	Forestry Issues Presentation Team Activity	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 HS-LS4-4 HS-LS4-6 HS-ESS3-4

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>NRS.02.04. Performance Indicator: Examine and explain how economics affects the use of natural resources.</b>		
<b>NRS.02.04.01.a.</b> Compare and contrast how the economic value of a natural resource affects its availability.	Forestry Issues Presentation Team Activity	AFNR Career Cluster, Statement 4 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 4 AFNR Career Cluster – Plant Systems Pathway, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.ELA-LITERACY.SL.11-12.4 HS-ESS3-2
<b>NRS.02.04.02.b.</b> Assess the importance of the use of natural resources on local, state and national economies.	Forestry Issues Presentation Team Activity	AFNR Career Cluster, Statement 4 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 4 AFNR Career Cluster – Plant Systems Pathway, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.ELA-LITERACY.SL.11-12.4 HS-ESS3-2
<b>NRS.02.04.03.a.</b> Compare and contrast the economic impact of green technology and alternative energy.	Forestry Issues Presentation Team Activity	AFNR Career Cluster, Statement 4 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 4 AFNR Career Cluster – Plant Systems Pathway, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.ELA-LITERACY.SL.11-12.4 HS-ESS3-2

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>NRS.02.04.03.b.</b> Analyze and document how the adoption of green technology and/or alternative energy affected a local, state or national economy.	Forestry Issues Presentation Team Activity	AFNR Career Cluster, Statement 4 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 4 AFNR Career Cluster – Plant Systems Pathway, Statement 1 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.ELA-LITERACY.SL.11-12.4 HS-ESS3-2
<b>NRS.02.05. Performance Indicator: Communicate information to the public regarding topics related to the management, protection, enhancement, and improvement of natural resources.</b>		
<b>NRS.02.05.02.a.</b> Research how social media and the Internet have changed how people perceive and utilize natural resources (e.g., greater awareness of conservation issues, calls to action, etc.).	Forestry Issues Presentation Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
<b>NRS.02.05.03.a.</b> Examine how communication can be used to influence behavior, call people to action and instill a sense of civic behavior related to the conservation, management, enhancement and improvement of natural resources.	Forestry Issues Presentation Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
<b>NRS.03.01. Performance Indicator: Sustainably produce, harvest, process and use natural resource products (e.g., forest products, wildlife, minerals, fossil fuels, shale oil, alternative energy, recreation, aquatic species, etc.).</b>		
<b>NRS.03.01.01.c.</b> Develop a forest harvesting plan that ensures economic, environmental and social sustainability.	Forest Business Management Problem Practicum	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Plant Systems Pathway, Statement 4 CCSS.ELA-LITERACY.RST.11-12.8 HS-ESS3-2 HS-ESS3-3
<b>NRS.03.01.07.a.</b> Research how recreational uses of natural resources can be changed to improve sustainability.	Forestry Issues Presentation Team Activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Plant Systems Pathway, Statement 4 CCSS.ELA-LITERACY.RST.11-12.8 HS-ESS3-2 HS-ESS3-3

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>NRS.03.02. Performance Indicator: Demonstrate cartographic skills, tools and technologies to aid in developing, implementing and evaluating natural resource management plans.</b>		
<b>NRS.03.02.01.a.</b> Summarize how to use maps to identify directions and land features, calculate actual distance and determine the elevations of points.	Map Interpretation Practicum	
<b>NRS.04.01. Performance Indicator: Demonstrate natural resource protection, maintenance, enhancement and improvement techniques.</b>		
<b>NRS.04.01.02.c.</b> Create a timber stand improvement plan for a forest.	Forest Business Management Problem Practicum	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 3 AFNR Career Cluster – Environmental Service Systems Pathway, Statement 4 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 2 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 5 AFNR Career Cluster – Plant Systems Pathway, Statement 2 AFNR Career Cluster – Plant Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.SL.11-12.4 HS-ESS3-2 HS-ESS3-3 HS-ESS3-4
<b>NRS.04.02. Performance Indicator: Diagnose plant and wildlife diseases and follow protocols to prevent their spread.</b>		
<b>NRS.04.02.01.a.</b> Classify causes of diseases in plants and the correct authorities to whom some diseases should be reported.	Tree/Forest Disorders Practicum	CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-7

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>NRS.04.03. Performance Indicator: Prevent or manage introduction of ecologically harmful species in a particular region.</b>		
NRS.04.03.01.a. Categorize harmful and beneficial insects, as well as signs of insect damage to natural resources.	Tree/Forest Disorders Practicum	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-LS2-7 HS-LS4-6
<b>NRS.04.04. Performance Indicator: Manage fires in natural resource systems.</b>		
NRS.04.04.01.b. Assess techniques used to fight wildfires, manage prescribed fires and ensure human safety.	Exam	
<b>PS.02.02. Performance Indicator: Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.</b>		
PS.02.02.03.a. Identify and summarize the components and the functions of plant stems. Knowledge	Exam	HS-LS1-4
PS.02.02.04.a. Research and summarize leaf morphology and the functions of leaves.	Exam	HS-LS1-4
<b>PS.03.03. Performance Indicator: Develop and implement a plan for integrated pest management for plant production.</b>		
PS.03.03.01.b. Identify and analyze major local weeds, insect pests and infectious and noninfectious plant diseases.	Tree/Forest Disorders Practicum	
<b>PST.01.01. Performance Indicator: Apply physical science and engineering principles to assess and select energy sources for AFNR power, structural and technical systems.</b>		
PST.01.01.01.a. Research and identify renewable and nonrenewable energy sources used in AFNR.	Forestry Issues Presentation Team Activity	AFNR Career Cluster, Statement 4 AFNR Career Cluster, Statement 5 HS-ESS3-3 HS-PS3-3
<b>PST.01.02. Performance Indicator: Apply physical science and engineering principles to design, implement and improve safe and efficient mechanical systems in AFNR situations.</b>		
PST.01.02.03.c. Conduct a safety inspection of tools, machines and equipment used in different AFNR related mechanical systems.	Chainsaw Part Identification,	HS-PS3-1 HS-PS3-3



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

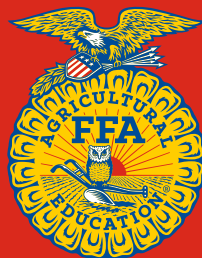
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# FLORICULTURE

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The National FFA Floriculture Career Development Event is designed to create an interest in career preparation for all current and future aspects of the floriculture industry through leadership development and hands on technical skill development using industry standards which are delivered through the agriculture education curriculum.*

Floriculture is a discipline of horticulture concerned with the cultivation of flowering and ornamental plants for gardens and the floral industry.

The floriculture industry encompasses the following:

- Greenhouse and field production and management.
- Garden center and floral shop management.
- Floral design and management.



## Objectives

- Identify plant materials, supplies, and equipment utilized in the floriculture industry.
- Demonstrate an understanding of the biological and scientific principles and develop the skills underlying propagation, variety development, growth requirements, growing techniques, harvesting, marketing and maintenance of established floriculture plants.
- Identify and recommend solutions for plant disorders.
- Demonstrate the use of principles of design and develop related skills.
- Identify, select, operate and maintain appropriate supplies and equipment for floriculture production, design and marketing.
- Demonstrate the use of safety procedures and practices in floriculture operations.
- Operate, manage and maintain facilities for floriculture operations.
- Demonstrate interpersonal skills necessary for successful employment in the floriculture industry.
- Demonstrate proper sales and customer service skills.
- Demonstrate general business practices appropriate to the floriculture industry.
- Effectively work together as a team.

## Event Rules

*Each team will be comprised of four members.*

- All four scores will be used to determine total team score.
- It is highly recommended that participants wear FFA Official Dress for this event.
- Under no circumstances will any participant be allowed to touch or handle plant material during the event except when instructed by the event staff.
- Any communication between participants during the event will be sufficient cause to eliminate the team from the event. The exception to this is the team activity.
- Any participant caught cheating during the event will be expelled from the event.
- All participants are expected to be prompt at their stations throughout the event. No provision will be made for tardiness, which will in most cases cause the late participant to lose event points.
- The event superintendent will assign the participants to group leaders who will escort them to various event staging sites. Participants must know their participant number and stay in their assigned group at all times or until told to change leaders by the event superintendent.
- Any assistance given to a participant from any source during the event, other than a floriculture official, will be sufficient cause to eliminate the team from the event.
- All participants will be given an identification number by which they will be designated throughout the event.
- Various computer applications may be utilized throughout the floriculture event.
- Any participant in possession of an electronic and/or communication device in the event area is subject to disqualification.

## Event Format

Materials students need to provide:

- Clean clipboard, free of notes
- Two sharpened No. 2 pencils
- Prepared résumé
- Floral cutters/clippers
- Ribbon shears
- Wire cutters
- Floral knife
- Calculator- Should be battery operated, non-programmable and non-scientific (basic five function only). No other calculators are allowed to be used during the event.
- Participants may also bring an apron, and/or a tool belt and towels.

### TEAM ACTIVITY (800 POINTS)

Each team will perform an assignment routinely performed in some phase of the floriculture industry that requires teamwork. Prior to the event, the National FFA Floriculture Career Development Event committee will select a theme and series of floriculture industry assignments that span the breadth of the industry from production to design. These tasks will be described in situational terms for presentation to each team. Forty-five minutes will be allowed for completing the activity. There will be an additional fifteen minutes for preparation and clean up. All materials needed to complete the assignment will be provided.

The type of assignments that may be used in this phase of the event are but are not limited to:

- Prepare floral products for an event.
- Prepare and pack floral products for shipping and updating inventory.
- Create a floral product display.
- Create a greenhouse production and task schedule to meet the needs of a given customer

Scoring criteria for the team preparation and presentation are on the team activity scorecard which will be recorded by a judge.

## INDIVIDUAL ACTIVITIES

### IDENTIFICATION OF PLANT MATERIALS AND EQUIPMENT (200 POINTS)

Fifty specimens from the floriculture plant and equipment identification list will be displayed for participants to identify by technical and common names. A number will designate each specimen. Four points will be awarded for each specimen that is correctly identified. Each participant will be allowed 25 minutes to complete this phase of the event.

### GENERAL KNOWLEDGE EXAMINATION (200 POINTS)

Participants will answer 50 multiple choice questions that cover all areas of the floriculture industry as reflected in the event objectives. This phase of the event will test participants' knowledge and understanding of basic biological and scientific principles of producing and marketing flowers, plants and foliage. Each participant will be allowed 50 minutes to complete the exam. Each answer has a value of four points.

### PROBLEM-SOLVING/DECISION-MAKING (200 POINTS)

Each participant will solve ten problems related to the various aspects of the floriculture industry identified in the event objectives. Each problem will describe the situation or create the problem and list four possible solutions to the problem. The participant must decide on the best possible solution to the problem. All materials and information necessary to solve the problem will be available to the participant as he/she solves the problem. Each participant will be allowed 50 minutes to complete this phase of the event. Each correct solution has a value of 20 points.

## ANNUAL PRACTICUMS (300 POINTS)

Each participant will complete three annual practicums:

1. Floral arrangement
2. Job interview
3. Growing procedures

## FLORAL ARRANGEMENT (100 POINTS)

Make a \$55 floral arrangement (The \$55 cost will include both labor and tax and be within fifty cents either way of the \$55). The event superintendent will announce the type of arrangement during the team orientation meeting. Using the materials provided, participants will be allowed 20 minutes to complete their arrangements and itemized bills. The event assistant at the beginning of the practicum will provide participants the retail price of the flowers and foliage that they will use in their arrangements. The markup will be built into the retail price. When the participant has determined the total arrangement cost, he or she has included the markup. Retail cost of flowers and foliage given to the participant will be determined after polling florists to determine their current retail prices on the flowers and foliage used in the event. Scoring criteria are presented on the floral arrangement practicum scorecard which will be recorded by a judge.

### Explanation of Floral Arrangement Terms

- **Design:** Category Interpretation: Design follows objective/ scenario given
- **Balance:** Physical and visual
- **Creativity:** Artistic inventiveness
- **Depth:** Placement of materials at different levels throughout the arrangement
- **Focal Emphasis:** Design has one area of design that attracts the eye to it
- **Line:** Movement
- **Mechanics:** Professional techniques and application
- **Scale:** Proportion
- **Unity:** Cohesiveness of design

## **JOB INTERVIEW (100 POINTS)**

Each participant will appear before an employer (judge) for the purpose of interviewing for a position available in the employer's business. The event superintendent will announce specific information about the job for which the participant is applying at the team orientation meeting. Participants will be given two job descriptions at the team orientation meeting along with application forms to complete. Participants will be allowed to choose the job they wish to interview for and prepare their applications prior to participating in the practicum. Participants will be expected to prepare, prior to the event, a résumé of their experiences and background to present to the judge at the time of the interview. Ten minutes will be allowed for this practicum. Participants will be allowed five minutes to complete the interview and five minutes for judges to score the interview. Scoring criteria are presented on the job interview practicum scorecard which will be recorded by a judge.

## **GROWING PROCEDURES (100 POINTS)**

One or more of the three below will be demonstrated on an annual basis. Twenty minutes will be allowed for this section including questions from the judges.

### **Potting of Young Plants (Plugs or Liners)**

- Participants will be asked to plant young plants in the pots provided. Each participant will be given a group of young plants from which to select their transplants from; an appropriate pot or pots; potting medium at the correct moisture level, ID stake and a marking pencil.
- Scoring criteria are presented on the plant potting practicum scorecard which will be recorded by a judge.

### **Asexual Propagation of Plants**

- Each participant will be provided the parent plant materials and all other materials needed to propagate plants asexually. Using the available materials, participants will take cuttings from the plant before them and stick them in rooting media labeled

correctly. Participants should sanitize all equipment and use appropriately in a safe manner.

- Scoring criteria are presented on the asexual plant propagation scorecard which will be recorded by a judge.

### **Pinching Plants**

- A plant will be placed before each participant. The participant will be given instructions as to what they are to do to the plant by the event assistant in charge of the practicum. Participants will be judged on the procedures they follow in pinching the plant.
- Scoring criteria are presented on the pinching plant scorecard which will be recorded by a judge.

## **ROTATIONAL PRACTICUMS (75 POINTS)**

In addition to the three annual practicums, three practicums will be selected from the list below for each noted year. The three to be used will be identified by the event superintendent in the annual team orientation packet that is available during the summer prior to convention on the CDE webpage.

## **SELLING PRACTICUM (75 POINTS) (ONE WILL BE CHOSEN)**

### **Selling One-On-One**

- Each participant will assume the role of a sales person in a floriculture business (grower, florist shop, garden center, etc.) A customer (judge) with a specific need will approach the participant. The participant will help the customer meet his/her need by using sales skills. All supplies, information and the business setting in which the participant works will be provided. Ten minutes will be allowed for this practicum. Of the ten minutes, participants will be allowed five minutes for dialogue with the customer and completion of the sales form. Judges will be allowed five minutes to score the participant. Scoring criteria are presented on the selling one-on-one practicum scorecard which will be recorded by a judge.

**MEDIA SELLING (75 POINTS)**

Each participant will be asked to create or evaluate advertising from the following:

- Newspaper/catalog ad
- Radio script
- Newsletter
- Brochure/flyer
- Email
- Social media
  - Facebook
  - Twitter
  - Video – YouTube
  - Web homepage

All information and materials needed to develop the advertisement will be provided. Twenty minutes will be allowed for this practicum. Of the 20 minutes, 12 minutes will be allotted for preparation, five minutes for oral/written presentation and three for judges to score.

Scoring criteria are presented on the media selling practicum which will be recorded by a judge.

**MAKE A MIXED PLANTER COMBINATION (75 POINTS)**

Each participant will make a \$35 mixed planter combination. All plant materials, growing media and containers will be provided. Twenty minutes will be allowed for each participant to make their mixed planter combination and complete the itemized listing of costs. At the beginning of the practicum, the participant will be provided with the retail price of plants and other materials to be used in their mixed planter combination. The markup is built into the retail price.

Scoring criteria are presented on the making a mixed planter combination practicum scorecard which will be recorded by a judge.



**MAKE AND PACKAGE A CORSAGE (75 POINTS)**

Each participant will make and package a \$25 corsage. The type of corsage and information about the corsage will be announced by the event assistant in charge at the beginning of the practicum. All plant and non-plant materials needed to construct and package the corsage will be provided. Each participant will be allowed 20 minutes to complete the construction of the corsage and complete an itemized listing of costs for the corsage constructed.

Scoring criteria are presented on the making and packing a corsage scorecard which will be recorded by a judge.

**IDENTIFYING AND CONTROLLING PLANT DISORDERS (75 POINTS)**

Pest and disorder items may be presented as an intact specimen, photograph or preserved specimen (herbarium sheet, insect mount, etc.). Each specimen will be designated by a station number. The participant must identify the item and its classification (nutritional/ environmental, insect/ pest, or disease). The participant then must determine the damage location as well as chemical and culture controls for the disorder. Each participant will identify 15 specimens total for this event.

No specimens or items may be touched or handled in any way. Fifteen minutes will be allowed for this event. Refer to the Disorder Practicum Scorecard for additional details.

The plant disorders will come from the following list of disorders.

**Nutritional and Environmental Disorders**

- Cold temperature (freeze)
- Cold water damage
- Ethylene damage
- Insufficient water damage
- Iron deficiency
- Nitrogen deficiency
- Phosphorus deficiency

**Diseases**

- Botrytis – Gray mold
- Damping-off
- Downy mildew
- Leaf spot (Black)
- Powdery mildew
- Root rot
- Rust
- Stem rot
- Tospovirus (INSV and TSWV)

**Insects and Pests**

- Aphids
- Fungus gnats
- Leaf miner
- Leafhopper
- Mealybugs
- Scale
- Shore flies
- Snails/ Slugs
- Spider mites
- Thrips
- Whiteflies

**HANDLING A HAZARDOUS SITUATION (75 POINTS)**

Each participant will be presented with a hazardous situation that could develop in a floriculture business. The participant will be asked to explain how to resolve the problem. The participant will be evaluated on their understanding of the problem and procedures and practices followed in resolving the problem. Ten minutes will be allowed for this practicum.

Scoring criteria are presented on the hazardous situation scorecard which will be recorded by a judge.

## Scoring

PHASE	Individual Points	Team Points
Identification of Plant Material and Equipment	200	800
General Knowledge	200	800
Problem Solving	200	800
Annual Practicums	300	1,200
Rotational Practicums	225	900
Team Activity	0	800
<b>TOTAL</b>	<b>1,125</b>	<b>5,300</b>

## TIEBREAKERS

### INDIVIDUAL

If ties occur the following events will be used in order to determine award recipients:

1. Written Exam
2. Plant and Equipment Identification
3. Floral Arrangement Practicum
4. Growing Procedures

### TEAM

If ties occur the following events will be used in order to determine award recipients:

1. Team Activity
2. Written Exam
3. Plant and Equipment Identification



## Awards

*Awards will be presented to individuals and/or teams based upon their rankings at an awards ceremony.*

Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

## References

*This list of references is not intended to be all-inclusive.*

- Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.
- National FFA Core Catalog—Past CDE Q&A's (<http://shop.FFA.org/cde-qas-c1413.aspx>)
- Principal of Floral Design, Pat Diehl Scace, James M. DelPrince – Goodheart Wilcox Publisher [www.g-w.com](http://www.g-w.com)
- The AIFD Guide to Floral Design: Terms, Techniques, and Traditions – The American Institute of Floral Design
- Introduction to Horticulture Science and Technology. – 5th edition 2015 Schroeder, Seagle Felton, Ruter, Inter- state Publishers, Inc.
- Introductory Horticulture – Carroll Shry, Edward Reiley – Eight Edition
- Greenhouse Operation and Management – Paul V. Nelson – Seventh Edition (Specific Reference for the disorders rotational practicum)
- Ball Publishing: Ball Redbook, Volume 1&2, 18th Edition



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Floriculture Plant Identification List

101	Aechmea fasciata cv.	Silver Vase Bromeliad
102	Ageratum houstonianum	Ageratum
103	Alstroemeria hybrid cv.	Peruvian Lily
104	Anemone coronaria	Anemone
105	Anethum graveolens cv.	Dill
106	Angelonia hybrid cv.	Angelonia
107	Anthurium x andraeanum cv.	Flamingo Plant
108	Antirrhinum majus cv.	Snapdragon
109	Aphelandra squarrosa cv.	Zebra Plant
110	Araucaria heterophylla	Norfolk Island Pine
111	Asparagus densiflorus	Sprenger Fern
112	Aster Pringlei	Monte Cassino Aster
113	Astilbe hybrid cv.	Astilbe
114	Begonia x semperflorens – cultorum	Wax Begonia
115	Begonia x tuberhybrida cv.	Tuberous Begonia
116	Caladium x hortulanum cv.	Caladium
117	Calibrachoa hybrid cv.	Million Bells
118	Callistephus chinensis cv.	China Aster
119	Campanula hybrid cv.	Campanula
120	Canna x generalis cv.	Garden Canna
121	Capsicum annum	Ornamental Pepper Plant
122	Catharanthus roseus	Periwinkle
123	Celosia argentea cv.	Cockscomb
124	Chamaedorea elegans	Parlor Palm
125	Chamelaucium uncinatum	Waxflower
126	Cholorophytum comosum cv.	Spider Plant
127	Chrysanthemum x morifolium	Florist's Chrysanthemum
128	Clematis hybrid cv.	Clematis
129	Codiaeum variegatum pictum	Croton
130	Crassula argentea	Jade Plant
131	Cycas Revoluta cv.	Sago Palm
132	Cyclamen x persicum cv.	Florist's Cyclamen
133	Cymbidium cv.	Cymbidium Orchid
134	Cymbopogon cv.	Lemongrass (herb)
135	Dahlia hybrid cv.	Dahlia
136	Delphinium consolida cv.	Larkspur

137	Dendrobium cv.	Dendrobium Orchid
138	Dianthus caryophyllus cv.	Carnation
139	Dracaena cincta	Red Edge Dracaena
140	Echinocactus cv.	Barrel Cactus
141	Epipremnum aureum cv.	Golden Pothos
142	Erica carnea cv.	Spring Heather
143	Eucalyptus polyanthemos	Silver Dollar Eucalyptus
144	Euphorbia pulcherrima cv.	Poinsettia
145	Eustoma grandiflorum	Lisianthus
146	Exacum affine	Persian Violet
147	Ficus benjamina cv	Benjamin Fig
148	Ficus elastica cv	Rubber Plant
149	Fragaria x ananassa cv.	Strawberry Plant
150	Freesia x hybrida	Freesia
151	Gardenia jasminoides	Gardenia
152	Gerbera jamesonii	Gerbera Daisy
153	Gladiolus x hortulanus cv.	Garden Gladiolus
154	Gomphrena hybrid cv.	Globe Amaranth
155	Gypsophila elegans cv.	Baby's Breath
156	Hedera helix cv.	English Ivy
157	Helianthus annuus	Sunflower
158	Hemerocallis cv.	Daylily
159	Hippeastrum hybrid cv.	Amaryllis
160	Hosta cv.	Hosta
161	Hoya carnosa	Wax Plant
162	Hyacinthus orientalis cv.	Hyacinth
163	Hydrangea macrophylla	Big Leaf Hydrangea
164	Impatiens hybrid cv.	Impatiens
165	Impomoea batatas cv.	Ornamental Sweet Potato
166	Iris x xiphium cv.	Dutch Iris
167	Senecio cineraria	Dusty Miller
168	Justica brandegeana	Shrimp Plant
169	Kalanchoe x blossfeldiana cv.	Kalanchoe
170	Leucanthemum x superbum	Shasta Daisy
171	Leucospermum hybrid cv.	Pin Cushion Protea
172	Liatris spicata	Liatris

## Floriculture Plant Identification List continued

173	Lilium hybrid cv.	Asiatic or Oriental Lily
174	Limonium sinuatum	Statice
175	Lobularia maritima	Alyssum
176	Maranta leuconeura 'Kerchoviana'	Prayer Plant
177	Matthiola incana cv.	Stock
178	Monstera deliciosa	Split Leaf Philodendron
179	Narcissus hybrid cv.	Daffodil or Narcissus
180	Nephrolepis exaltata cv.	Boston Fern
181	Ocimum basilicum cv.	Basil
182	Opuntia cv.	Cactus
183	Paeonia cv.	Peony
184	Paphiopedilum x hybrid cv.	Ladyslipper Orchid
185	Pelargonium x hortorum cv.	Zonal Geranium
186	Pelargonium peltatum cv.	Ivy Geranium
187	Pentas hybrid cv.	Pentas
188	Petroselinum crispum cv.	Parsley
189	Petunia x hybrida cv.	Petunia
190	Phalaenopsis cv.	Moth Orchid
191	Philodendron scandens oxycardium	Heartleaf Philodendron
192	Pilea cadierei	Aluminum Plant
193	Portulaca oleracea cv.	Portulaca
194	Primula malacoides cv.	Primrose
195	Ranunculus hybrid cv.	Ranunculus
196	Rhododendron simsii cv.	Florist Azalea

197	Rosa hybrid cv	Hybrid Tea Rose
198	Rumohra adiantiformis	Leatherleaf Fern
199	Saintpaulia ionantha cv.	African Violet
200	Salvia splendens cv.	Salvia
201	Sansevieria trifasciata cv.	Snake Plant
202	Schefflera arboricola	Octopus Plant
203	Schlumbergera bridgesii	Christmas Cactus
204	Sempervivum hybrid cv.	Hens and Chicks
205	Senecio x hybridus cv.	Cineraria
206	Sinningia speciosa Fyfiana Group cv.	Florist Gloxinia
207	Solidago hybrid cv	Solidago
208	Solenostemon scutellarioides	Coleus
209	Spathiphyllum clevelandii	Peace Lily
210	Stephanotis floribunda	Stephanotis
211	Strelitzia reginae	Bird of Paradise
212	Syngonium podophyllum	Nepthytis
213	Tagetes species cv.	Marigold
214	Tulipa cv.	Tulip
215	Verbena hybrid cv.	Verbena
216	Vinca hybrid cv.	Vinca
217	Viola x wittrockiana cv.	Pansy
218	Zantedeschia hybrid cv.	Calla Lily
219	Zebrina pendulum cv.	Wandering Jew
220	Zinnia cv.	Zinnia



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Floriculture equipment and supply identification list

301	Anvil-and-blade pruner
302	18 Gauge floral wire
303	28 Gauge floral wire
304	#3 Ribbon (satin, sheer, wired)
305	#9 Ribbon (satin, sheer, wired)
306	#40 Ribbon (satin, sheer, wired)
307	#100 Ribbon (satin, sheer, wired)
308	Floral adhesive
309	Coconut coir
310	Bulb planter
311	Bouquet sleeve
312	Cell pack containers
313	Cardette
314	Ceramic container
315	Compressed air sprayer
316	Chenille stem
317	Drip emitter, irrigation
318	Dust mask
319	Duster
320	Corsage box
321	Corsage pin
322	Corsage snips
323	Dry foam
324	Enclosure card
325	Fern greening pins
326	Floral foam
327	Gas mask
328	Floral knife
329	Floral preservative
330	Granular fertilizer
331	Floral stem tape
332	Glass vase
333	Glue gun
334	Hanging basket

335	Hearing protection
336	Glue pan
337	Glue sticks
338	Hook-and-blade pruners (bypass pruners)
339	Hose punch
340	Hose repair coupling
341	Hose-end repair fitting
342	Hose-end sprayer
343	Hose-end washer
344	Impulse sprinkler
345	Irrigation timer
346	Irrigation tape
347	Sphagetti tubing (1/4" diameter or less)
348	Nosegay holder
349	Ribbon shears
350	Sheet moss
351	Mist nozzle (mist bed)
352	Spanish moss
353	Nursery container
354	Oscillating sprinkler
355	Peat moss
356	Peat pots
357	Ph testing meter
358	Fogger
359	Styrofoam
360	Surestik cling
361	Polyethylene film
362	Polyethylene pipe
363	Tulle
364	Water picks
365	Water tubes
366	Waterproof container tape
367	Propagation mat

368	Wire cutter
369	PVC (polyvinylchloride) pipe
370	Wooden pick
371	Resin-coated fertilizer
372	Respirator
373	Wrist corsage holder
374	PVC pipe cutter
375	Greenhouse thermostat
376	Safety goggles
377	Sand
378	Scoop shovel
379	Shade fabric
380	Sharpening stone
381	Siphon proportioner
382	Chemical resistant gloves
383	Soil moisture meter
384	Goggles
385	Solenoid valve
386	Pest strips
387	Propagation trays
388	Sphagnum moss
389	Spray suit
390	Square point (flat) shovel
391	Rock wool growing cells
392	Fertilizer injectors
393	Elle pot
394	rice hulls
395	Pot covers
396	Rose and stem flower stripper
397	Backflow preventer
398	Vermiculite
399	Water breaker
400	Water soluble fertilizer





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# Floral Arrangement Practicum Rubric

100 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

POSSIBLE SCORE	Excellent	Good	Needs Improvement	Member Score
<b>Arrangement</b>	<b>85</b>			
Category Interpretation	7-15 points	6-10 points	0-5 points	
Balance	7-10 points	4-6 points	0-3 points	
Creativity	7-10 points	4-6 points	0-3 points	
Depth	7-10 points	4-6 points	0-3 points	
Focal Emphasis.	7-10 points	4-6 points	0-3 points	
Line	7-10 points	4-6 points	0-3 points	
Mechanics	7-10 points	4-6 points	0-3 points	
Scale	4-5 points	2-3 points	0-1 points	
Unity	4-5 points	2-3 points	0-1 points	
<b>Itemized List of Costs</b>	<b>15</b>			
Price Range	4-5 points	2-3 points	0-1 points	
Identification and Accuracy	7-10 points	4-6 points	0-3 points	
<b>TOTAL POSSIBLE:</b>				<b>100</b>

## EXPLANATION OF FLORAL ARRANGEMENT TERMS

**Category Interpretation:** Design follows objective scenario given

**Balance:** Physical and Visual

**Creativity:** Artistic inventiveness

**Depth:** Placement of materials at different levels throughout the arrangement

**Focal Emphasis:** Design has one area of design that attracts the eye to it

**Line:** Movement

**Mechanics:** Professional techniques and application

**Scale:** Proportion

**Unity:** Cohesiveness of design

JUDGE'S NAME

JUDGE'S SIGNATURE

DATE



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## Floral Arrangement Itemized List of Costs

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

Quantity	FLOWER/FOLIAGE	Unit Cost	Total
TOTAL FLOWER/FOLIAGE MATERIAL COST			

Quantity	MATERIAL USED	Unit Cost	Total
TOTAL HARD GOODS COST			

TOTAL ARRANGEMENT COST\*

\* Participants will be provided the retail price of flowers and foliage that they will use in their arrangement by the event official at the beginning of the practicum. The markup is built into the retail price of the flowers and the foliage used in the arrangement.



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# Job Interview Practicum Rubric

100 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

		Excellent	Good	Needs Improvement	Member Score
<b>Introduction</b>					
<ul style="list-style-type: none"> <li>Initial presentation</li> <li>Eye contact</li> <li>Handshake</li> </ul>	<ul style="list-style-type: none"> <li>Gives name</li> <li>States why here</li> </ul>	8-10 points	4-7 points	0-3 points	
<b>Knowledge of job</b>					
<ul style="list-style-type: none"> <li>Resume</li> <li>Typed</li> <li>Completeness</li> <li>Content/Accurate</li> </ul>		11-15 points	6-10 points	0-5 points	
<ul style="list-style-type: none"> <li>Application</li> <li>Legibility</li> <li>Completed</li> </ul>		8-10 points	4-7 points	0-3 points	
<b>Knowledge of the floriculture industry/job</b>					
<ul style="list-style-type: none"> <li>Tell me about yourself</li> <li>What skills do you have for this job?</li> <li>What are your experiences relating to this job?</li> </ul>	<ul style="list-style-type: none"> <li>Why should I hire you over someone else?</li> <li>How would you handle a customer complaint</li> </ul>	13-20 points	7-12 points	0-6 points	
<b>Response to questions</b>					
<ul style="list-style-type: none"> <li>What are your weaknesses?</li> <li>Where do you see yourself in the next 5 years?</li> </ul>	<ul style="list-style-type: none"> <li>BONUS: Would you hire this person?</li> </ul>	11-15 points	6-10 points	0-5 points	
<b>Personality</b>					
<ul style="list-style-type: none"> <li>Confidence</li> <li>Enthusiasm</li> </ul>	<ul style="list-style-type: none"> <li>Appearance</li> </ul>	11-15 points	6-10 points	0-5 points	
<b>Poise</b>					
<ul style="list-style-type: none"> <li>Posture</li> <li>Closure ("Thank you.")</li> </ul>	<ul style="list-style-type: none"> <li>Asks for the job or a decision date</li> </ul>	11-15 points	6-10 points	0-5 points	
<b>TOTAL SCORE: 100</b>					

JUDGE'S NAME \_\_\_\_\_

JUDGE'S SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_



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# One-on-One Practicum Rubric

75 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

	Excellent	Good	Needs Improvement	Member Score
Took Initiative	9-11 points	5-8 points	0-4 points	
Communicated Effectively	9-11 points	5-8 points	0-4 points	
Exhibited ambition and efficiency	9-11 points	5-8 points	0-4 points	
Diplomatic and courteous	9-11 points	5-8 points	0-4 points	
Knew merchandise, prices and policies	9-11 points	5-8 points	0-4 points	
Accuracy of information collected	9-11 points	5-8 points	0-4 points	
Closed sale properly	7-9 points	4-6 points	0-3 points	
TOTAL SCORE: 75				

JUDGE'S NAME \_\_\_\_\_ JUDGE'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_



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# Potting of Young Plants Practicum Rubric

50 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

	Excellent	Good	Needs Improvement	Member Score
<b>Potting Process</b>				
Selection of plugs or liners	5-6 points	3-4 points	0-2 points	
Proper planting depth	6-8 points	3-6 points	0-2 points	
Labeling of plant/pot	5-6 points	3-4 points	0-2 points	
Correct growing medium level in pot	5-6 points	3-4 points	0-2 points	
Plug or liner arrangement and angle	5-6 points	3-4 points	0-2 points	
Firmness of growing medium	5-6 points	3-4 points	0-2 points	
General appearance (free from handling damage)	5-6 points	3-4 points	0-2 points	
Response to questions	5-6 points	3-4 points	0-2 points	
<b>Total Possible:</b>				<b>50</b>

JUDGE'S NAME \_\_\_\_\_

JUDGE'S SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_



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# Floriculture Making a Mixed Combination Planter Rubric

75 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

	Excellent	Good	Needs Improvement	Member Score
Selection of products	6-8 points	3-5 points	0-2 points	
Preparation of plant materials	6-7 points	3-5 points	0-2 points	
Labeling of combo	7-10 points	4-6 points	0-3 points	
Balance	9-12 points	5-8 points	0-4 points	
Design	11-15 points	6-10 points	0-5 points	
Attractiveness	10-13 points	5-9 points	0-4 points	
Pricing	7-10 points	4-6 points	0-3 points	
TOTAL SCORE: 75				

JUDGE'S NAME \_\_\_\_\_ JUDGE'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_



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## Mixed Combination Planter Itemized List of Costs

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

Quantity	PLANT MATERIAL	Unit Cost	Total
TOTAL FLOWER/FOLIAGE MATERIAL COST			

Quantity	MATERIAL USED	Unit Cost	Total
TOTAL HARD GOODS COST			

Total Plant Material Cost	
Total Hard Goods Cost	
Container Cost	
Sub Total	
TOTAL MIXED PLANTER COST	

DATE \_\_\_\_\_



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# Floriculture Making and Packing a Corsage Rubric

75 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

	Excellent	Good	Needs Improvement	Member Score
Wiring,taping, and/or gluing	11-15 points	6-10 points	0-5 points	
Use of ribbon	7-10 points	4-6 points	0-3 points	
Design	11-15 points	6-10 points	0-3 points	
Wear-ability	7-10 points	4-6 points	0-3 points	
Packaging	4-5 points	2-3 points	0-1 points	
Pricing (accuracy of pricing identification)	7-10 points	5-8 points	0-4 points	
Pricing	7-10 points	4-6 points	0-3 points	
<b>TOTAL SCORE: 75</b>				

JUDGE'S NAME \_\_\_\_\_ JUDGE'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_





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## Corsage Itemized List of Costs

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

Quantity	FLOWER/FOLIAGE USED	Unit Cost	Total
TOTAL FLOWER/FOLIAGE MATERIAL COST			

Quantity	MATERIAL USED	Unit Cost	Total
TOTAL HARD GOODS COST			

Total Plant Material Cost

Total Hard Goods Cost

**TOTAL CORSAGE COST**

DATE \_\_\_\_\_



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# Asexual Plant Propagation Rubric

50 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

	Excellent	Good	Needs Improvement	Member Score
Proper sanitation and equipment use	4-5 points	2-3 points	0-1 points	
Selection of cuttings	4-5 points	2-3 points	0-1 points	
Making cuttings	5-6 points	3-4 points	0-2 points	
Preparation of cuttings for sticking in growing media	5-6 points	3-4 points	0-2 points	
Use of rooting hormone	4-5 points	2-3 points	0-1 points	
Selection of growing media	5-6 points	3-4 points	0-2 points	
Sticking of cuttings in growing media	5-6 points	3-4 points	0-2 points	
Cuttings labeled correctly	4-5 points	2-3 points	0-1 points	
Response to questions	5-6 points	3-4 points	0-2 points	
TOTAL SCORE: 50				

JUDGE'S NAME \_\_\_\_\_ JUDGE'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_



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# Disorder Practicum Scorecard

NAME \_\_\_\_\_

MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_

STATE \_\_\_\_\_

TEAM NUMBER \_\_\_\_\_

		Member Answer	Possible Points	Member Score
1.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
2.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
3.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
4.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
5.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
6.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
7.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
8.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	

		Member Answer	Possible Points	Member Score
9.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
10.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
11.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
12.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
13.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
14.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
15.	Classification #:		1	
	Identification #:		2	
	Chemical Control #:		1	
	Cultural/ Biological Control #:		1	
TOTAL POINTS			75	

## CLASSIFICATION:

- 100 Diseases
- 101 Insects/ Pests / Mites
- 102 Nutritional/ Environmental

## IDENTIFICATION:

- 200 Aphids
- 201 Black Leaf Spot
- 202 Botrytis – Grey Mold
- 203 Damping-off
- 204 Downy Mildew
- 205 Ethylene Damage
- 206 Fungus Gnats
- 207 Insufficient Watering
- 208 Iron Deficiency
- 209 Leaf Miner
- 210 Leafhopper
- 211 Mealybugs
- 212 Nitrogen Deficiency
- 213 Phosphorus Deficiency
- 214 Powdery Mildew
- 215 Root Rot
- 216 Rust
- 217 Scale
- 218 Shore Flies
- 219 Snails/ Slugs
- 220 Spider Mites
- 221 Stem Rot
- 222 Thrips
- 223 Toxoplasma (INSV and TSWV)
- 224 Whiteflugs

## CHEMICAL CONTROL:

- 400 Fungicide
- 401 Insecticide
- 402 Miticide
- 403 Molluscicide
- 404 No Treatment Listed

## CULTURAL CONTROL:

- 500 Apply Complete Fertilizer
- 501 Correct/ Adjust Temperature
- 502 Correct/ Adjust Watering
- 503 Ladybird Beetles
- 504 Nematodes
- 505 Parasitic Wasp
- 506 Predatory Mites
- 507 Reduce Relative Humidity
- 508 No Treatment Listed



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## Pinching Plants Rubric

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

	Excellent	Good	Needs Improvement	Member Score
Selection of plant part to pinch	8-10	4-7	0-3	
Use of proper procedures in making pinches	8-10	4-7	0-3	
Made proper pinches	8-10	4-7	0-3	
Overall effect of making pinches	8-10	4-7	0-3	
Answered questions correctly	8-10	4-7	0-3	
TOTAL SCORE: 50				

JUDGE'S NAME \_\_\_\_\_ JUDGE'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_



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## Hazardous Situation Rubric

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

	Excellent	Good	Needs Improvement		Member Score
Utilize proper personal safety precautions	4-5	2-3	0-1	X 4	
Utilize proper safety procedures in clearing up the situation	4-5	2-3	0-1	X 5	
Proper disposal of problem materials	4-5	2-3	0-1	X 4	
Utilize proper follow-up procedures	8-10	4-7	0-3		
TOTAL SCORE: 75					

JUDGE'S NAME \_\_\_\_\_ JUDGE'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_



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## Media Selling Practicum Rubric

NAME

MEMBER NUMBER

CHAPTER

STATE

TEAM NUMBER

	Excellent	Good	Needs Improvement	Member Score
Identified and appeal to target group	9-12 points	5-8 points	0-4 points	
Informed the consumer	7-9 points	4-6 points	0-3 points	
Creativity	7-9 points	4-6 points	0-3 points	
Easy to read or view	7-9 points	4-6 points	0-3 points	
Presented one idea	7-9 points	4-6 points	0-3 points	
Contained essential information	7-9 points	4-6 points	0-3 points	
Grammar, spelling, accuracy	7-9 points	4-6 points	0-3 points	
Proper use of space and format	7-9 points	4-6 points	0-3 points	
<b>TOTAL SCORE: 75</b>				

JUDGE'S NAME

JUDGE'S SIGNATURE

DATE



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## Team Activity Rubric

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

INDICATOR	Very strong evidence skill is present 5-4 points	Moderate evidence that skill is not present 3-2 points	Strong evidence skill is not present 1-0 points	Points Earned	Weight	Total Score
Established team leadership role	One member seemed to assume leadership and others cooperated.	One member seemed to assume leadership..	No leadership role(s) were established.		X 10	
Member participation in planning activity	All members participated in discussion before work began.	Limited member discussion occurred before work began.	No member discussion occurred before work began.		X 25	
Developed a work- able plan	Duties were assigned and all had equal parts.	Duties were assigned and all had near equal parts.	Duties were not assigned and participation varied.		X 25	
Membership responsibilities were outlined and assigned	Responsibilities were assigned with interaction between members.	Responsibilities were as- signed with little interaction.	Responsibilities were not verbally assigned.		X 10	
Material was organized prior to commencing activity	Material was organized and distributed.	Most material was organized.	Material was left as presented until needed.		X 10	
Member participation in carrying out activity functions	All members participated with leadership pro- vided.	All members participated.	One or more members had almost no participation.		X 20	
Followed proper procedures in carrying out activity	All activities resulted in completed product.	Most activities resulted in completed product.	Some activities resulted in completed product.		X 25	
Quality of activity product	Products exceed mini- mum industry standard.	Products meet minimum industry standards.	Products below industry standard.		X 35	

**TOTAL POINTS: 800**

JUDGE'S NAME \_\_\_\_\_

JUDGE'S SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_



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## Agriculture, Food and Natural Resources Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.01.01. Performance Indicator: Apply micro- and macroeconomic principles to plan and manage inputs and outputs in an AFNR business.</b>		
<b>ABS.01.01.01.b.</b> Apply microeconomic principles to calculate values associated with different inputs and outputs in AFNR businesses (e.g., price, point of equilibrium, opportunity costs, marginal costs, etc.).	Exam, Problem Solving/ Decision Making, Selling One-on-one, Floral Design, Mixed Combo Planter and Corsage	CCSS.ELA-Literacy.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 Financial Investing: Benchmarks: Grade 12, Statement 9
<b>ABS.04.03.02.a.</b> Research and summarize examples that illustrate the importance of risk and uncertainty within AFNR businesses.	Selling One-on-One	Financial Investing: Benchmarks: Grade 12, Statement 11 Protecting and Insuring: Benchmarks: Grade 12, Statements 2 Protecting and Insuring: Benchmarks: Grade 12, Statements 3 Protecting and Insuring: Benchmarks: Grade 12, Statements 4
<b>ABS.05.02.02.b.</b> Assess different responses/customer reactions that could be presented during different types of sales calls used in AFNR businesses (e.g., competitor prices, competing products, post-sale service, complaints about product, etc.).	Selling One-on-One	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5
<b>ABS.05.03. Performance Indicator: Assess marketing principles and develop marketing plans to accomplish AFNR business objectives.</b>		
<b>ABS.05.03.02.a.</b> Examine and categorize strategies used in marketing programs for AFNR businesses (e.g., Internet, direct to customer, social media, etc.).	Selling	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7





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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>BS.02.02. Performance Indicator: Implement standard operating procedures for the proper maintenance, use and sterilization of equipment in a laboratory.</b>		
BS.02.02.03.c. Perform sterilization techniques for equipment in a laboratory using standard operating procedures.	Growing Procedures (asexual propagation)	HS-ETS1-2
<b>BS.02.04. Performance Indicator: Safely manage and dispose of biological materials, chemicals and wastes according to standard operating procedures.</b>		
BS.02.04.01.b. Assess the need for personal protective equipment and select the appropriate equipment to wear when working with biological and chemical materials.	Equipment list/Handling Hazards Situations	CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.RST.11-12.4
<b>BS.02.04.02.a. Classify and describe hazards associated with biological and chemical materials.</b>	<b>Handling Hazards Situations</b>	<b>CCSS.ELA-Literacy.RST.9-10.4</b> <b>CCSS.ELA-Literacy.RST.11-12.4</b>
BS.02.04.03.a. Summarize what happens to waste after it leaves the laboratory and examine opportunities to reduce waste and unnecessary costs.	Handling Hazards Situations	CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.RST.11-12.4
<b>CS.01.01. Performance Indicator: Examine issues and trends that impact AFNR systems on local, state, national and global levels.</b>		
CS.01.01.01.b. Analyze and document AFNR issues and their impact on local, state, national and global levels.	Problem Solving	
CS.01.01.02.b. Analyze current trends in AFNR systems and predict their impact on local, state, national and global levels.	Problem Solving	
<b>CS.01.02. Performance Indicator: Examine technologies and analyze their impact on AFNR systems.</b>		
CS.01.02.01.b. Apply appropriate use of technologies in AFNR workplace scenarios.	Written Exam, Growing procedures	
CS.01.02.02.b. Analyze how technology is used in AFNR systems to maximize productivity. Written Exam, Growing procedures		
<b>CS.02.01. Performance Indicator: Research geographic and economic data related to AFNR systems.</b>		
CS.02.01.02.c. Devise a strategy to solve a problem in an AFNR system using a set of economic data.	Problem Solving, Team Activity-media selling	



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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CS.02.02. Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy.</b>		
CS.02.02.01.c. Devise a strategy for explaining components of AFNR systems to audiences with limited knowledge.	Team Activity, Written Exam	
CS.02.02.02.c. Evaluate how society traditions, customs or policies have resulted from practices with AFNR systems.	Written Exam	
CS.02.02.03.b. Assess the economic impact of an AFNR system on a local, state, national and global level.	Written Exam, Selling one on one	
<b>CS.03.01. Performance Indicator: Identify required regulations to maintain and improve safety, health and environmental management systems.</b>		
CS.03.01.01.c. Evaluate how AFNR organizations/businesses promote improved health, safety and environmental management.	Hazard materials, Plant Disorders, Written Exam	
CS.03.01.02.c. Construct and implement methods to evaluate compliance with required safety, health and environmental management regulations.	Problem Solving, Plant Disorders, Hazardous Materials, Written Exam	
<b>CS.03.02. Performance Indicator: Develop a plan to maintain and improve health, safety and environmental compliance and performance.</b>		
CS.03.02.01.c. Create a plan to improve safety, health and environmental management regulations in an AFNR business.	Hazardous Materials Situation	AFNR Career Cluster, Statement 6
CS.03.02.02.c. Devise a strategy to educate employees on environmental compliance and performance in an AFNR business.	Hazardous Materials Situation	AFNR Career Cluster, Statement 6
<b>CS.03.03. Performance Indicator: Apply health and safety practices to AFNR worksites.</b>		
CS.03.03.01.b. Analyze and summarize current health and safety practices of AFNR business.	Hazardous Materials Situation	
CS.03.03.02.c. Create a plan to communicate appropriate responses for health and safety situations within an AFNR business.	Hazardous Materials Situation	
CS.03.03.03.b. Assess first aid knowledge and procedures relevant to AFNR worksites.	Written Exam, Hazardous Materials Situation	



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<b>CS.03.03.04.c.</b> Create a plan to mitigate the level of contamination or injury identified as a risk in the workplace.	Hazardous Materials Situation	
<b>CS.03.04. Performance Indicator: Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.</b>		
<b>C3.03.04.01.c.</b> Design plans to ensure the use of appropriate protective equipment when using various AFNR tools and equipment.	Written Exam, Hazardous Materials Situation, Plant and Tool ID	
<b>C3.03.04.02.c.</b> Evaluate and select appropriate tools and equipment to complete AFNR tasks.	Written Exam, Hazardous Materials Situation, Plant and Tool ID	
<b>CS.03.04.03.b.</b> Assess and demonstrate appropriate operation, storage and maintenance techniques for AFNR tools and equipment.	Hazardous Material Situation	
<b>CS.04.01. Performance Indicator: Identify and implement practices to steward natural resources in different AFNR systems.</b>		
<b>CS.04.01.01.b.</b> Analyze available practices to steward natural resources in AFNR systems (e.g., wildlife and land conservation, soil and water practices, ecosystem management, etc.).	Plant and Tool ID, Growing Procedures	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
<b>CS.04.01.02.b.</b> Analyze and assess sustainability practices that can be applied in AFNR systems (e.g., energy efficiency, recycle/reuse/repurpose, green resources, etc.).	Plant and Tool ID, Growing Procedures, Written Exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
<b>CS.04.02. Performance Indicator: Assess the natural resource related trends, technologies and policies that impact AFNR systems.</b>		
<b>CS.04.02.01.b.</b> Analyze natural resources trends and technologies and document how they impact AFNR systems (e.g., climate change, green technologies, water resources, etc.).	Written Exam	AFNR Career Cluster, Statement 7
<b>CS.05.01. Performance Indicator: Evaluate the steps and requirements to pursue a career opportunity in each of the AFNR career pathways (e.g., goals, degrees, certifications, resumes, cover letter, portfolios, interviews, etc.).</b>		
<b>CS.05.01.01.c.</b> Evaluate progress toward AFNR career goals and identify opportunities for improvement and necessary adjustments to one's plan of action	Job Interview	



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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
CS.05.01.02.c. Implement one's personal plan of action for obtaining the required education, training and experiences and evaluate progress to identify opportunities for improvement and necessary adjustments.	Job Interview	
CS.05.01.03.c. Evaluate, update and improve a set of personal tools to reflect current skills, experiences, education, goals, etc. and complete the processes needed to pursue and obtain a career in an AFNR pathway.	Media Selling, Corsage, floral arrangement, asexual propagation, team activity, Selling one on one	
<b>CS.05.02. Performance Indicator: Examine careers in each of the AFNR pathways.</b>		
CS.05.02.01.c. Interpret and evaluate the results of a personal career assessment and connect them to potential careers in AFNR pathways.	Job Interview	
CS.05.02.02.c. Conduct interviews with career professionals within AFNR pathways and summarize the results.	Job interview	
<b>CS.06.01. Performance Indicator: Explain foundational cycles and systems of AFNR.</b>		
CS.06.01.01.c. Teach others about the impact of foundational cycles within AFNR systems.	Team Activity/Written Exam	
<b>CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.</b>		
CRP.01.01.01.c. Evaluate past workplace and community situations and determine how personal responsibility positively or negatively impacted outcomes.	Team Activity	
CRP.01.01.02.c. Model personal responsibility in workplace and community situations.	Team Activity, Sales, Job Interview	
<b>CRP.01.02 Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.</b>		
CRP.01.02.01.c. Make and defend personal decisions after analyzing their near- and long-term impacts on self and others.	Problem Solving, Job Interview	
CRP.01.02.02.c. Make and defend professional decisions after evaluating their near- and long-term impacts on employers and community.	Job Interview	



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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
CRP.02.01.01.c. Apply academic knowledge and skills to solve problems in the workplace and reflect upon the results achieved. Problem Solving, Team Activity, Hazardous Situation, Plant Disorder,	Media Selling	
CRP.02.01.02.c. Apply academic knowledge and skills to solve problems in the community and reflect upon results achieved.	Media Selling	
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
CRP.02.02.01.b. Assess workplace problems and distinguish the most appropriate technical concepts to apply.	Problem Solving, Plant Disorders	
<b>CRP.03.01. Performance Indicator: Design and implement a personal wellness plan.</b>		
CRP.03.01.02.b. Analyze the relationship between personal wellness and workplace performance.	Job Interview, Floral Design	
<b>CRP.03.02. Performance Indicator: Design and implement a personal financial management plan.</b>		
CRP.03.02.01.a. Research and examine components in a personal financial management plan (e.g., income, expense, budgeting, savings, credit, etc.).	Corsage, Floral Arrangement, Asexual Propagation	
CRP.03.02.02.a. Examine and categorize personal financial practices (e.g., earning, spending, use of management tools, credit, etc.).	Corsage, Floral Arrangement, Asexual Propagation	
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.01.c. Evaluate other's verbal and non-verbal communications (e.g., speeches, presentations, oral reports, etc.) and propose recommendations for improvement in clarity, logic, purpose and professionalism.	Job Interview, Team Activity, One on One Selling, Growing Procedure	



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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
CRP.04.01.02.c. Evaluate personal strengths and areas for growth with regard to speaking formally and informally with clarity, logic, purpose and professionalism, and identify ways to improve.	Job Interview, Team Activity, One on One Selling, Growing Procedure	
<b>CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.</b>		
CRP.04.02.01.c. Evaluate the effectiveness of different forms of written communication for achieving their intended purpose.	Job Interview/Media Selling	
CRP.04.02.02.c. Compose clear and coherent written documents (e.g., agendas, audio-visuals, drafts, forms, etc.) for formal and informal settings.	Job Interview/Media Selling	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.c. Evaluate personal effectiveness and devise a plan to improve active listening skills.	One on one selling	
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	One on one selling, Job Interview	
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
CRP.05.01.01.c. Evaluate workplace and community decision-making processes and devise strategies for improvement.	Team Activity	
CRP.05.01.02.c. Evaluate workplace and community situations and recommend the information and resources needed to support good decisions.	Team Activity	
CRP.05.01.03.c. Synthesize information and resources and apply to workplace and community situations to make positive decisions.	Team Activity	
<b>CRP.05.02. Performance Indicator: Make, defend and evaluate decisions at work and in the community using information about the potential environmental, social and economic impacts.</b>		
CRP.05.02.01.c. Evaluate and defend decisions applied in the workplace and community situations.	Team Activity	



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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
CRP.05.02.02.c. Evaluate workplace and community situations and propose decisions to be made based upon the positive impact made on environment, social and economic areas.	Team Activity	
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
CRP.06.01.01.b. Synthesize information, knowledge and experiences to generate ideas for workplace and community situations.	Team Activity	
<b>CRP.06.02. Performance Indicator: Assess a variety of workplace and community situations to identify ways to add value and improve the efficiency of processes and procedures.</b>		
CRP.06.02.02.b. Predict and communicate potential gains in efficiency and value-added from implementing an improved process or procedure.	Team Activity	
<b>CRP.06.03. Performance Indicator: Create and execute a plan of action to act upon new ideas and introduce innovations to workplace and community organizations.</b>		
CRP.06.03.02.b. Elicit and assimilate input and feedback from individuals and organizations about new ideas or innovations for the workplace or community.	Team Activity	
<b>CRP.07.01. Performance Indicator: Select and implement reliable research processes and methods to generate data for decision-making in the workplace and community.</b>		
CRP.07.01.01.c. Evaluate business' and organizations' use of research methods and processes and propose recommendations for improvement.	Plant Disorders	
CRP.07.01.02.b. Assess the positives and negatives of using different research strategies and methods to generate data for workplace and community decisions.	Plant Disorders	
<b>CRP.07.02. Performance Indicator: Evaluate the validity of sources and data used when considering the adoption of new technologies, practices and ideas in the workplace and community.</b>		
CRP.07.02.02.b. Assimilate data to assist in making a decision about the adoption of a new technology, practice or idea by workplaces and community organizations.	Plant Disorders	



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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.c. Evaluate how applying critical thinking skills can impact workplace and community situations.	Problem Solving/Team Activity	
CRP.08.01.02.b. Assess solutions to workplace and community problems for evidence of reason, logic and consideration of multiple perspectives.	Job Interview, Plant Disorders	
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.01.c. Devise strategies to evaluate the effectiveness of solutions for resolving workplace and community problems.	Problem Solving, Team Activity	
CRP.08.02.02.c. Evaluate and select solutions with greatest potential for success to solve workplace and community problems.	Problem Solving, Team Activity	
<b>CRP.08.03. Performance Indicator: Establish plans to solve workplace and community problems and execute them with resiliency.</b>		
CRP.08.03.01.c. Evaluate the effectiveness of different problem-solving models for reaching a solution to workplace and community issues.	Hazardous Situation, Problem Solving	
CRP.08.03.02.c. Implement and evaluate plans to solve workplace and community problems.	Hazardous Situation, Problem Solving	
<b>CRP.09.01. Performance Indicator: Model characteristics of ethical and effective leaders in the workplace and community (e.g. integrity, self-awareness, self-regulation, etc.).</b>		
CRP.09.01.01.c. Evaluate ethical and effective leadership characteristics demonstrated by others.	Job Interview, Team Activity	
CRP.09.02.01.c. Evaluate opportunities to apply personal management skills into daily tasks and responsibilities.	Team Activity	
CRP.09.02.02.c. Model personal management skills and identify opportunities for continuous improvement.	Team Activity	





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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.09.03. Performance Indicator: Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community (e.g., positively influencing others, effectively communicating, etc.).</b>		
CRP.09.03.01.b. Analyze the relationship between demonstrating respectful and purposeful behaviors (e.g., collaborative, clear expectations, etc.) and increased influence in the workplace and community.	Team Activity	
CRP.09.03.02.b. Devise strategies for continuation and improvement of respectful and purposeful behaviors that contribute to positive morale and culture in workplace and community (e.g., recognize others' skills, promote collaboration, etc.).	Team Activity	
<b>CRP.10.01. Performance Indicator: Identify career opportunities within a career cluster that match personal interests, talents, goals and preferences.</b>		
CRP.10.01.01.c. Plan a career path based on personal interests, goals, talents and preferences.	Job Interview	
CRP.10.01.02.c. Match potential career opportunities in career clusters with personal interests, talents, goals and preferences.	Job Interview	
<b>CRP.10.02. Performance Indicator: Examine career advancement requirements (e.g., education, certification, training, etc.) and create goals for continuous growth in a chosen career.</b>		
CRP.10.02.01.c. Devise and implement plans to complete the requirements for career advancement.	Job Interview	
CRP.10.02.02.b. Create goals for personal improvement and continuous growth in a career area.	Job Interview	
<b>CRP.10.03. Performance Indicator: Assimilate input and/or advice from experts (e.g., counselors, mentors, etc.) to plan career and personal goals in a chosen career area.</b>		
CRP.10.03.01.b. Assess career and personal goals and determine additional information career area experts could provide.	Job Interview	



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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.10.04. Performance Indicator: Identify, prepare, update and improve the tools and skills necessary to pursue a chosen career path.</b>		
CRP.10.04.01.c. Select and use appropriate tools to pursue career advancement opportunities and assimilate feedback from the process to identify improvements for the future.	Entire Event	
CRP.10.04.02.c. Apply skills to complete common processes involved in pursuing a career and assimilate input and feedback from experts (e.g., mentors, teachers, business persons, etc.) to improve.	Entire Event	
<b>CRP.11.01. Performance Indicator: Research, select and use new technologies, tools and applications to maximize productivity in the workplace and community.</b>		
CRP.11.01.01.b. Analyze advantages and disadvantages of new technologies, tools and applications to maximize productivity in the workplace and community.	Plant Disorders, Written Exam	
CRP.11.01.02.b. Select, apply and use new technologies, tools and applications in workplace and community situations to maximize productivity.	Plant Disorders, Written Exam	
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
CRP.12.01.01.c. Evaluate the effectiveness of team-oriented projects at work and in the community and make recommendations for future improvements.	Team Activity	
CRP.12.01.02.c. Devise and implement methods to obtain feedback from team members on their experiences after completing workplace and community projects.	Team Activity	
CRP.12.01.03.c. Evaluate personal level of cultural and global competence and implement plans for growth and improvement in workplace and community situations.	Team Activity	



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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).</b>		
CRP.12.02.01.c. Create novel strategies to engage team members based on the situation.	Team Activity	
CRP.12.02.02.c. Evaluate the effectiveness of strategies to engage team members in a variety of workplace and community situations.	Team Activity	
<b>ESS.01.01. Performance Indicator: Analyze and interpret laboratory and field samples in environmental service systems.</b>		
ESS.01.01.01.c. Collect and prepare sample measurements using appropriate data collection techniques.	Growing Process and Asexual Propagation	CCSS.ELA-LITERACY.SL.11-12.5 CCSS.ELA-LITERACY.RST.11-12.9 CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3 CCSS.MATH.CONTENT.HSS.ID.A.2 CCSS.MATH.CONTENT.HSS.ID.B.5 HS-ESS2-2
<b>ESS.01.02. Performance Indicator: Properly utilize scientific instruments in environmental monitoring situations (e.g., laboratory equipment, environmental monitoring instruments, etc.).</b>		
ESS.01.02.02.a. Identify basic environmental monitoring instruments and explain their uses.	Equipment ID	
<b>ESS.04.01. Performance Indicator: Use pollution control measures to maintain a safe facility and environment.</b>		
ESS.04.01.03.c. Construct a plan for handling hazardous waste in given situations.	Handling Hazardous Situations	HS-ETS1-2
<b>NRS.01.02. Performance Indicator: Classify different types of natural resources in order to enable protection, conservation, enhancement and management in a particular geographical region.</b>		
NRS.01.02.02.b. Apply identification techniques to determine the species of an herbaceous plant.	Plant Identification	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2

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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>NRS.01.02.03.b.</b> Apply identification techniques to determine the species of wildlife or insect.	Identifying and controlling Plant Disorders	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
<b>NRS.01.02.05.a.</b> Research and examine the characteristics used to identify non-living resources (e.g., soil types, climate, geography, etc.).	Equipment Identification	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
<b>NRS.04.02. Performance Indicator: Diagnose plant and wildlife diseases and follow protocols to prevent their spread.</b>		
<b>NRS.04.02.01.b.</b> Analyze a plant disease based on its symptoms, identify if the disease needs to be reported to authorities and determine which authorities it should be reported to.	Identifying and Controlling Plant and Disorders	CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-7

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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>PS.01.01. Performance Indicator: Determine the influence of environmental factors on plant growth.</b>		
PS.01.01.01.c. Analyze plant responses to varied light color, intensity and duration and recommend modifications to light for desired plant growth.	Plant Disorder	
PS.01.01.02.c. Design, implement and evaluate a plan to maintain optimal air and temperature conditions for plant growth.	Exam – Growing Practicum – Disorder	
PS.01.01.03.c. Analyze plant responses to water conditions and recommend modifications to water for desired plant growth.	Exam – Growing Practicum – Disorder	
<b>PS.01.02. Performance Indicator: Prepare and manage growing media for use in plant systems.</b>		
PS.01.02.01.c. Formulate and prepare growing media for specific plants or crops.	Exam, Growing, Mixed Combo	
PS.01.02.02.c. Determine the hydraulic conductivity for soil and how the results influence irrigation practices.	Exam and Growing	
<b>PS.01.03. Performance Indicator: Develop and implement a fertilization plan for specific plants or crops.</b>		
PS.01.03.01.c. Monitor plants for signs of nutrient deficiencies and prepare a scouting report to correct elements negatively affecting plant growth in a field or greenhouse.	Exam, Disorder and Growing	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.02.c. Adjust the pH of growing media for specific plants or crops.	Exam and Disorder	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.03.c. Prescribe fertilizer applications based on the results of a laboratory analysis of soil and plant tissue samples.	Exam, Disorder and Problem Solving	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.05.b. Assess production methods for their short- and long-term effects on soil.	Exam and Disorder	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.06.c. Devise a plan to meet plant nutrient needs based on environmental factors present.	Disorders and Exam	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>PS.02.01. Performance Indicator: Classify plants according to taxonomic systems.</b>		
PS.02.01.02.c. Identify and describe important plants to agricultural and ornamental plant systems by scientific names.	ID and Exam	

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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>PS.02.02. Performance Indicator: Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.</b>		
PS.02.02.01.b. Compare and contrast mitosis and meiosis.	Exam	HS-LS1-4
PS.02.02.03.c. Evaluate the function of the xylem, phloem and cambium tissues and the impact on plant systems.	Exam	HS-LS1-4
PS.02.02.04.c. Devise a plan for plant management practices that takes into account leaf structure and functions.	Team activity and Crop Schedule	HS-LS1-4
PS.02.02.05.c. Evaluate flower structures and analyze the impact of plant structure on plant breeding, production and use.	Exam	HS-LS1-4
PS.02.02.06.b. Analyze and categorize the major types of seeds and fruit.	Exam	HS-LS1-4
<b>PS.02.03. Performance Indicator: Apply knowledge of plant physiology and energy conversion to plant systems.</b>		
PS.02.03.01.c. Evaluate the impact of photosynthesis and the factors that affect it on plant management, culture and production problems.	Disorders, Team activity/ Crop Schedule, Problem Solving and Exam	HS-LS1-5
PS.02.03.02.c. Evaluate the impact of plant respiration on plant growth, crop management and post-harvest handling decisions.	Floral Arrangement, Team activity Exam and Problem Solving	HS-LS1-5
<b>PS.03.01. Performance Indicator: Demonstrate plant propagation techniques in plant system activities.</b>		
PS.03.01.01.b. Examine and describe the process of plant pollination and/or fertilization.	Exam	
PS.03.01.03.c. Evaluate asexual propagation practices based on productivity and efficiency.	Growing Procedure	
<b>PS.03.02. Performance Indicator: Develop and implement a management plan for plant production.</b>		
PS.03.02.01.b. Inspect propagation material for evidence of pests or disease.	Disorders, Growing Procedure	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
PS.03.02.02.b. Prepare soil and growing media for planting with the addition of amendments.	Growing Procedure, Team activity	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9

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Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>PS.03.02.05.c.</b> Prepare plant production schedules utilizing plant growth knowledge to get plants to their optimal growth stage at a given time.	Team activity	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
<b>Ps.03.02.06.b.</b> Compare and contrast the types of technologies used for controlled atmosphere production.	Exam, Equipment ID	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
<b>PS.03.02.07.b.</b> Compare and contrast the types of systems used in hydroponic and aquaponic plant production.	Exam, Equipment ID	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
<b>PS.03.03. Performance Indicator: Develop and implement a plan for integrated pest management for plant production.</b>		
<b>PS.03.03.01.c.</b> Devise solutions for plant pests, diseases and disorders.	Exam and Disorders	
<b>PS.03.03.02.b.</b> Predict pest and disease problems based on environmental conditions and life cycles.	Exam, Disorders and Problem Solving	
<b>PS.03.03.04.b.</b> Examine and apply procedures for the safe handling, use and storage of pesticides including personal protective equipment and reentry interval.	Handling Hazardous Situations	
<b>PS.03.05. Performance Indicator: Harvest, handle and store crops according to current industry standards.</b>		
<b>PS.03.05.01.b.</b> Assess the stage of growth to determine crop maturity or marketability and demonstrate proper harvesting techniques.	Mixed Combo	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
<b>PS.03.05.03.b.</b> Research and analyze practices used to maintain a safe product through harvest, processing, storage and shipment (e.g., Food Safety Modernization Act, Good Agricultural Practices, etc.).	Team activity and Handling Hazardous Situations	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
<b>PS.03.05.04.b.</b> Analyze the proper conditions required to maintain the quality of plants and plant products held in storage and during shipping.	Team activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
<b>PS.03.05.05.b.</b> Demonstrate techniques for grading, handling and packaging plants and plant products for distribution.	Team activity	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>PS.04.01. Performance Indicator: Evaluating, identifying and preparing plants to enhance an environment.</b>		
PS.04.01.01.c. Implement a design that uses the proper plants based on the situation and environment.	Mixed Combo, Floral Arrangement, Team activity, Growing Procedure, Corsage	
PS.04.01.02.c. Evaluate a design and provide feedback and suggestions for improvement (e.g., a floral arrangement, a landscape or a landscape plan, etc.).	Mixed Combo, Floral Arrangement, Team activity and Corsage	
<b>PS.04.02. Performance Indicator: Create designs using plants.</b>		
PS.04.02.01.c. Analyze designs to identify use of design principles and elements.	Mixed Combo, Floral Arrangement, TA, Growing Procedure, Corsage	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 AFNR Career Cluster – Plant Systems Pathway, Statement 2 STEM Career Cluster, Statement 4
PS.04.02.02.c. Evaluate the proper use of design tools in creating designs.	Mixed Combo, Floral Arrangement, TA, Growing Procedure, Corsage	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 AFNR Career Cluster – Plant Systems Pathway, Statement 2 STEM Career Cluster, Statement 4





# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# HORSE EVALUATION

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The purpose of the National FFA Horse Evaluation Career Development Event is to:*

- promote the study of and interest in equine science, selection, care and well-being, management and production through the agricultural education curriculum.
- encourage experiential learning through use of practical skills, critical thinking and applied knowledge.
- provide recognition for those who have demonstrated skills and competencies as a result of instruction in equine science.

## Objectives

Through participation in the national event, participants will be able to:

- Instill leadership and motivate learning in the classroom through development of student skills in cooperative learning, observation, analysis, critical thinking and communication.
- Develop and exercise competitive spirit in a team atmosphere.
- Create a foundation for career choices by building an awareness of opportunities within the equine industry.
- Advance knowledge in equine science, selection, care and well-being, management and production of horses.
- Provide the opportunity to evaluate, make decisions and orally justify decisions on conformation traits and performance of horses.





## Event Rules

- Each team will be comprised of four members. All scores will be used to determine the total team score.
- It is highly recommended that participants wear FFA Official Dress for this event. Black slacks and black boots are acceptable (for ladies and gentlemen) during the selection and reason portions of the contest.
- All attire of riders and handlers and all tack is to be considered legal in the selection classes.
- All halter horses will be judged as sound, and all performance classes will be judged as they go, in regard to soundness.
- AQHA novice rules will be used in Hunter Under Saddle, Ranch Pleasure and Western Pleasure classes in reference to head set and head carriage.
- Any participant in possession of an electronic device in the event area is subject to disqualification.

## Event Format

Materials each participant needs to provide:

- Two sharpened No. 2 pencils for placing classes
- No pre-printed materials will be allowed during the event

National FFA will provide:

- Clipboard and blank paper
- Blank AQHA approved score sheet for use during the selection classes – See Reference Section, AQHA Score sheets
- Scantron sheet(s) needed for the event

## INDIVIDUAL ACTIVITIES

### IDENTIFICATION CLASS (50 POINTS)

Participants will identify breeds and/or colors and markings of horses, tack and equipment as well as leg deviations (i.e., toed out, toed in, sickle hocked etc.,) items. Each problem will be worth two points each, 25 items total.

### SELECTION CLASSES (400 POINTS)

There will be a total of eight classes evaluated, consisting of halter and performance classes.. There will be four classes of reasons, two reasons classes in each area. Classes will be approximately 12–15 minutes in length. All classes will be 50 points.

Halter classes will be evaluated. Halter classes may be represented by the following breeds and types: Quarter Horse, Conformation Hunter, Appaloosa, Arabian, Paint, American Saddlebred and Morgan. All halter classes will be evaluated as sound.

Performance classes will be evaluated. Performance classes may include: Western Horsemanship, Hunt Seat Equitation, Western

Pleasure, Ranch Pleasure, Western Riding, Reining, English Pleasure (Saddle Seat), Hunter Under Saddle (Hunt Seat), Trail and Hunter Hack. Performance classes will be evaluated as presented (unsoundness to be penalized accordingly). Patterns and scoresheets will be provided to the teams prior to the start of the event for all classes requiring patterns.

### **ORAL REASONS (200 POINTS)**

There will be two performance oral reasons classes selected from Western Pleasure, Ranch Pleasure, Western Riding, Western Horsemanship, Hunt Seat Equitation Reining, English Pleasure (Saddle Seat) and Hunter Under Saddle (Hunt Seat). (50 points each)

There will be two Halter oral reasons classes selected from the halter classes listed above (50 points each)

**Note:** Major points will be deducted if participants use notes during oral reasons presentations.

### **TEAM ACTIVITY (250 POINTS TOTAL)**

#### **Part 1 – Practical Application Activities (200 points; 50 points per activity)**

Participants will be answering questions and gathering information from practical application activities. Teams will complete four activities. Participants will have up to ten minutes for each activity. Examples of practical activities include (but not limited to) feed/hay selection, injections, lameness, and selecting equipment to properly shoe a horse.

#### **Part 2 – Team Scenario and Presentation (50 points)**

This part of the team activity requires all members to work cooperatively to complete the problem solving portion. Teams will orally present solutions to problems found in the given scenario. Teams will have ten minutes to organize and prepare information and ten minutes to present solutions to judges. Judges

may ask clarifying questions to the teams.

For a sample scenario, see the reference section of this handbook.

Examples topics include but not limited to:

- Nutrition
- Management
- Anatomy
- Marketing/current trends
- Health and Animal welfare (care and well-being)
- Reproduction



## Scoring

The event is organized into the following parts, classes and point values:

INDIVIDUAL ACTIVITY	Points per individual
Identification Class	50
Halter/Performance Classes – eight total classes	400
Halter Oral Reasons – two	100
Performance Oral Reasons – two	100
TOTAL INDIVIDUAL CLASSES SCORE	650
TEAM ACTIVITY	Points per team
Team Practical Application Activities – four	200
Team Scenario/Presentation	50
TOTAL TEAM ACTIVITY SCORE	250
TOTAL SCORE*	2,850

## TIEBREAKERS

Ties will be broken in the following order:

### INDIVIDUAL:

1. Oral reasons total
2. Performance classes total
3. Halter classes total

### TEAM

1. Team oral reasons total
2. Team performance classes total
3. Team halter classes total



## Awards

*Awards will be presented to individuals and/or teams based upon their rankings at the awards ceremony.*

Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

Specialty awards certificates will be presented for the top five individuals in the following areas:

- Halter placing classes
- Performance placing classes
- Total Oral Reasons score

## References

*This list of references is not intended to be all-inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

National FFA – CDE Questions and Answers [FFA.org](http://FFA.org)

AQHA Resources, score sheets – <http://aqha.com>

- Score Sheet for
  - Pattern Classes (Horsemanship, Showmanship & Hunt Seat Equitation)
  - Trail
- Under the section titled “Ranch Riding”
  - All score sheets
- Under the section titled “Reining”
  - All score sheets
- Under the section titled “Western Riding”

AQHA Resources Patterns – <https://www.aqha.com/journal/resources/exhibitors/patterns>

- Patterns for
  - Ranch riding
  - Reining
  - Western riding

American Quarter Horse Association, Amarillo Texas – Video References  
<http://www.aqhastore.com/Gear-DVDs/>

Heird, James C. and The American Quarter Horse Association, Competitive Horse Judging. First Edition. The American Quarter Horse Association, 1990. – [www.aqha.com/en/~media/99CC10097D56497EBDE93F18F672A0CD.ashx](http://www.aqha.com/en/~/media/99CC10097D56497EBDE93F18F672A0CD.ashx)

CEV Videos on horse judging – <http://www.cevmultimedia.com>

Evans, J. Warren, Borton, Anthony, Hintz, Harold F., and Van Vleck, L. Dale, The HORSE, current edition. W. H. Freeman and Company, 41 Madison Avenue, New York, NY 10010 ISBN 0-7167-1811-1

The American Youth Horse Council. [http://ayhc.com/Resources\\_\\_\\_\\_News.html](http://ayhc.com/Resources____News.html)

Equine Science Curriculum – a special project from the National Council for Agricultural Education <https://www.ffa.org/thecouncil/resources>

Tack Identification: Horses and Tack, Howard Ensminger  
<http://teskeys.com/tack.html>

Oklahoma State University horse breed website <http://www.ansi.okstate.edu/breeds/horses/>

University of Kentucky Agripedia website <http://www2.ca.uky.edu/agripedia/Agmania/HORSE/INDEX.asp>

Official Judging Guide from each of the various breed associations and audiovisuals

## Sample Team Activity Scenario

### TEAM ACTIVITY – PART 2 TEAM SCENARIO AND PRESENTATION – 50 POINTS

Teams will have ten minutes to organize and prepare information and ten minutes to present solutions to judges. This part of the team activity requires all members of the team to work cooperatively to complete the problem-solving portion. Teams will orally present solutions to problems found in the given scenario. Judges may ask clarifying questions to the teams.

#### Health/Facility – Management

You are the manager of one of the premier showing and breeding barns in the United States. At your facility you are in charge of the training/boarding barn and then also breeding and managing about twenty broodmares. Your mares are healthy and are about to start foaling and it is show season for all your show horses. A group of clients who board and show out of your barn have just returned from a week long show held in Minnesota. You notice about ten days after your clients return from the show that two of the show horses have developed signs of fever, excessive salivation, blister-like lesions on their dental pad, tongue, and coronary band. You are worried as to what disease might be spreading through the barn, and start to answer the following questions:

- What do you think is the problem? Why?
- How would you treat this after you make the diagnosis?
- What other short-term and long-term preventative practices would you make to insure the problem does not arise again?
- What else would you ask?



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Team Scenario and Presentation Scorecard

50 Points Possible

CHAPTER \_\_\_\_\_

STATE \_\_\_\_\_

TEAM NUMBER \_\_\_\_\_

	5-4 points Excellent	3-2 points Moderate	1-0 points Poor	Weight	Total Points
<b>Organization and content</b> <ul style="list-style-type: none"> <li>• Introduction of team members</li> <li>• Overview of scenario</li> <li>• Presentation of key components</li> <li>• Solution is relevant to scenario</li> <li>• Presentation contains accurate information</li> <li>• Conclusion summarizing the presentation</li> </ul>				X6	
<b>Presentation</b> <ul style="list-style-type: none"> <li>• Team spoke articulately without hesitation</li> <li>• Team was extremely well poised</li> <li>• Team made eye contact with the judge</li> <li>• Team exhibited confident body language</li> </ul>				x2	
<b>Evidence of teamwork</b> <ul style="list-style-type: none"> <li>• Each member sufficiently contributed to the presentation</li> <li>• Professional attitude/confidence was demonstrated</li> </ul>				x2	
<b>TOTAL POINTS</b> 50					

JUDGE'S NAME \_\_\_\_\_

JUDGE'S SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_

## Resources — AQHA Performance Classes

### SHW416 RANCH RIDING

The purpose of the Ranch Riding horse should reflect the versatility, attitude and movement of a working horse. The horse's performance should simulate a horse riding outside the confines of an arena and that of a working ranch horse. This class should show the horse's ability to work at a forward, working speed while under control by the rider. Light contact should be rewarded and horse shall not be shown on a full drape of reins. The overall manners and responsiveness of the horse while performing the maneuver requirements and the horse's quality of movement are the primary considerations.

**SHW416.1** For horses three years of age and older, offered as a junior, senior or all-age open division class, and as an all age class for Level 1 (Novice) and higher, as an all age class for amateur, (including Select) and youth.

**SHW416.2** No horse may cross enter, a western pleasure and ranch riding class at the same show regardless of division (youth, amateur, select or open).

### SHW417 CLASS REQUIREMENTS:

**SHW417.1** Each horse will work individually, performing both required and optional maneuvers, and scored on the basis of 0 to 100, with 70 denoting an average performance.

**SHW417.2** The required maneuvers will include the walk, trot, and lope both directions: and the extended trot and extended lope at least one direction; as well as stops, and back.

**SHW417.3** Three optional maneuvers may include a side pass, turns of 360 degrees or more, change of lead (simple or flying), walk, trot, or lope over a pole(s); or some reasonable combination of maneuvers that would be reasonable for a ranch horse to perform.

**SHW417.4** The maneuvers may be arranged in various combinations with final approval by the judge.

**SHW417.5** The overall cadence and performance of the gaits should be as those described in GAITS, with an emphasis on forward movement, free-flowing, and ground covering for all gaits. Transitions should be performed where designated, with smoothness and responsiveness.

**SHW417.6** No time limit.

**SHW417.7** One of the suggested patterns may be used, however a judge may utilize a different pattern as long as all required maneuvers and the three (or more) optional maneuvers are included. Should a judge use one of his/her own patterns, it is recommended to not have the stop following an extended lope.

**SHW417.8** The use of natural logs is encouraged.

**SHW417.9** Posting at the extended trot is acceptable.

**SHW417.10** Touching or holding the saddle horn is acceptable.

#### **SHW418 RANCH RIDING APPAREL AND EQUIPMENT**

**SHW418.1** No hoof polish.

**SHW418.2** No braided or banded manes or tail extensions.

**SHW418.3** Trimming inside ears is discouraged.

**SHW418.4** Trimming bridle path is allowed, also trimming of fetlocks or excessive (long) facial hair.

**SHW418.5** Equipment with silver should not count over a good working outfit. Silver on bridles and saddles is discouraged.

**SHW418.6** It is suggested competitors use a breast collar and a rear cinch.



## SHW419 RANCH RIDING PENALTIES

A contestant shall be penalized each time the following occur:

### SHW419.1 One point penalties

- Too slow/per gait
- Over-bridled
- Out of frame
- Break of gait at walk or jog for 2 strides or less

### SHW419.2 Three point penalties

- Break of gait at walk or jog for more than 2 strides
- Break of gait at lope
- Wrong lead or out of lead
- Draped reins
- Out of lead or cross-cantering more than two strides when changing leads
- Trotting more than three strides when making a simple lead change
- Severe disturbance of any obstacle

### SHW419.3 Five point penalties

- Blatant disobedience (kick, bite, buck, rear, etc.) for each refusal

### SHW419.4 Placed below horses performing all maneuvers

- Eliminates maneuver
- Incomplete maneuver

### SHW419.5 Zero score

- Illegal equipment including hoof black, braided or banded manes, or tail extensions
- Willfull abuse
- Major disobedience or schooling

**SHW419.6 6** No specific penalties will be incurred for nicks/hits on logs but deduction may be made in maneuver score.

**SHW419.7 6** No specific penalties will be incurred for over/under spins but deduction may be made in maneuver score.

### SHW480 REINING

Reining is a judged event designed to show the athletic ability of a ranch type horse in the confines of a show arena. In reining competition, contestants are required to run one of several approved patterns. Each pattern includes small slow circles, large fast circles, flying lead changes, rollbacks over the hocks, a series of 360 degree spins done in place, and the exciting sliding stops that are the hallmark of the reining horse. To rein a horse is not only to guide him, but also to control his every movement. The best reined horse should be willingly guided or controlled with little or no apparent resistance and dictated to completely. Any movement on his own must be considered a lack of control. Any one of the 13 AQHA-approved reining patterns may be used and is to be selected by the judge of the class and used by all contestants in the class. Each contestant will perform the required pattern individually and separately. All horses will be judged immediately upon entering the arena. Any fault incurred prior to the commencement of a pattern will be scored accordingly. All deviations from the exact written pattern must be considered a lack of or temporary loss of control, and therefore faulted according to severity of deviation. Credit will be given for smoothness, finesse, attitude, quickness and authority in performing the various maneuvers while using controlled speed.

### SHW481 SCORING

Scoring will be on the basis of 0-Infinity, with 70 denoting an average performance. Points will be added or subtracted from the maneuvers on the following bases, ranging from plus 1 1/2 to minus 1 1/2: -1 1/2 extremely poor, -1 very poor, -1/2 poor, 0 average, +1/2 good, +1 very good, +1 1/2 excellent. Maneuver scores are to be determined independently of penalty points.

**SHW482 THE FOLLOWING WILL RESULT IN NO SCORE**

- Abuse of an animal in the show arena and/or evidence that an act of abuse has occurred prior to or during the exhibition of a horse in competition.
- Use of illegal equipment, including wire on bits, bosals or curb chains.
- Use of illegal bits, bosals or curb chains; when using a snaffle bit, optional curb strap is acceptable; however, curb chains are not acceptable.
- Use of tack collars, tie downs or nose bands
- Use of whips or bats.
- Use of any attachment which alters the movement of or circulation to the tail.
- Failure to provide horse and equipment to the appropriate judge for inspection.
- Disrespect or misconduct by the exhibitor.
- Closed reins are not allowed except as standard romal reins.
- Excess rein may be straightened at any place a horse is allowed to be completely stopped during a pattern; rider's free hand may be used to hold romal in the normal fashion.

**SHW482.1**

The following will result in a score of zero:

- Use of more than index or first finger between reins.
- Use of two hands (exception in junior, snaffle bit, or hackamore classes designated for two hands) or changing hands.
- Use of romal other than as outlined in WESTERN EQUIPMENT.
- Failure to complete pattern as written.
- Performing the maneuvers other than in specified order.
- The inclusion of maneuvers not specified, including, but not limited to:
  - Backing more than two strides.
  - Turning more than 90 degrees.
  - Equipment failure that delays completion of pattern; including dropping a rein that contacts the ground while horse is in motion.

- Balking or refusal of command where performance is delayed.
- Running away or failing to guide where it becomes impossible to discern whether the entry is on pattern.
- Jogging in excess of one-half circle or one-half the length of the arena.
- Overspins of more than 1/4 turn.
- Fall to the ground by horse or rider.

**SHW483**

Neither a no score nor a zero are eligible to place in a go round or class, but a zero may advance in a multi-go event while a no score may not.

**SHW484**

The following will result in a reduction of five points:

- Spurring in front of cinch.
- Use of either hand to instill fear or praise.
- Holding saddle with either hand.
- Blatant disobediences including kicking, biting, bucking, rearing and striking.

**SHW48**

The following will result in a reduction of two points:

- Break of gait.
- Freeze up in spins or rollbacks.
- On walk-in patterns, failure to stop or walk before executing a canter departure.
- On run-in patterns, failure to be in a canter prior to the first marker.
- If a horse does not completely pass the specified marker before initiating a stop position.

**SHW486**

Starting or performing circles or eights out of lead will be judged as follows:

**SHW486.1** Each time a horse is out of lead, a judge is required to deduct one point. The penalty for being out of lead is cumulative and the judge will deduct one penalty point for each quarter of the circumference of a circle or any part thereof that a horse is out of lead. A judge is required to penalize a horse 1/2 point for a delayed change of lead by one stride where the lead change is required by the pattern description.

**SHW486.2** Deduct 1/2 point for starting circle at a jog or exiting rollbacks at a jog up to two strides. Jogging beyond two strides, but less than 1/2 circle or 1/2 the length of the arena, deduct two points.

**SHW486.3** Deduct 1/2 point for over or under spinning up to 1/8 of a turn; deduct one point for over or under spinning 1/8 to 1/4 turn.

**SHW486.4** A 1/2 point penalty deduction will be given for failure to remain a minimum of 20 feet (6 meters) from the wall or fence when approaching a stop and/or rollback.

**SHW487**

In patterns requiring a run-around, failure to be on the correct lead when rounding the end of the arena will be penalized as follows: for 1/2 the turn or less, one point; for more than 1/2 turn, two points.

**SHW488**

Faults against the horse to be scored accordingly, but not to cause disqualification:

- Opening mouth excessively when wearing bit.
- Excessive jawing, opening mouth or head raising on stop.
- Lack of smooth, straight stop on haunches-bouncing or sideways stop.
- Refusing to change leads.

- Anticipating signals.
- Stumbling.
- Backing sideways.
- Knocking over markers.

### SHW489

Faults against the rider to be scored accordingly, but not to cause disqualification:

- Losing stirrup.
- Failure to run circles or figure eights within the markers is not considered a fault depending on arena conditions and size; however, failure to go beyond markers on rollbacks and stops is considered a fault.

### SHW490

A show may have up to three approved reining classes and no horse may be entered in both junior bit and hackamore/snaffle bit reining classes at the same show.

**SHW490.1** If three reining classes are to be held at a show, they shall be the following:

**SHW490.1.1** Senior reining shown with bit.

**SHW490.1.2** Junior reining shown with bit.

**SHW490.1.3** Hackamore/snaffle bit reining (five years old and younger, shown with hackamore or snaffle bit).

**SHW490.2** If two reining classes are to be held at a show, they shall be the following:

**SHW490.2.1** Senior reining shown with bit.

**SHW490.2.2** Junior reining shown with either bit, hackamore or snaffle bit at the discretion of the exhibitor.

**SHW490.3** If only one reining class is to be held at a show, it shall be reining – all ages – horses six years old and older must be shown in bit; horses five years old and younger may be shown in either bit, hackamore or snaffle bit at the discretion of the exhibitor.

#### **SHW461 TRAIL.**

This class will be judged on the performance of the horse over obstacles, with emphasis on manners, response to the rider and quality of movement. Credit will be given to horses negotiating the obstacles with style and some degree of speed, providing correctness is not sacrificed. Horses should receive credit for showing attentiveness to the obstacles and the capability of picking their own way through the course when obstacles warrant it, and willingly responding to the rider's cues on more difficult obstacles. Horses shall be penalized for any unnecessary delay while approaching or negotiating the obstacles. Horses with artificial appearance over obstacles should be penalized. Horses must not be required to work on the rail. The course must be designed, however, to require each horse to show the three gaits (walk, jog, lope) somewhere between obstacles as a part of its work. The quality of movement and cadence should be considered part of the maneuver score. While on the line of travel between obstacles, the horse shall be balanced, carrying his head and neck in a relaxed, natural position, with the poll level with or slightly above the withers. The head should not be carried behind the vertical, giving the appearance of intimidation, or be excessively nosed out, giving a resistant appearance.

#### **SHW462**

The course to be used must be posted at least one hour before scheduled starting time of the class.

#### **SHW463 SCORING**

Scoring will be on the basis of zero to infinity, with 70 denoting an average performance. Each obstacle will receive an obstacle score that should be added or subtracted from 70 and is subject to a penalty that

should be subtracted. Each obstacle will be scored on the following basis, ranging from plus 1 1/2 to minus 1 1/2: –1 1/2 extremely poor, –1 very poor, –1/2 poor, 0 correct, +1/2 good, +1 very good, +1 1/2 excellent. Obstacle scores are to be determined and assessed independently of penalty points.

### **SHW464**

Penalties should be assessed, per occurrence, as follows:

#### **SHW464.1 One-half point.**

- Each tick or contact of a log, pole, cone, plant, or any component of an obstacle.

#### **SHW464.2 One point**

- Each hit, bite, or stepping on a log, cone, plant or any component of the obstacle.
- Incorrect or break of gait at walk or jog for two strides or less.
- Both front or hind feet in a single-strided slot or space at a walk or jog.
- Skipping over or failing to step into required space.
- Split pole in lope-over.
- Incorrect number of strides, if specified.

#### **SHW464.3 Three points**

- Incorrect or break of gait at walk or jog for more than two strides.
- Out of lead or break of gait at lope (except when correcting an incorrect lead).
- Knocking down an elevated pole, cone, barrel, plant, obstacle, or severely disturbing an obstacle.
- Falling or jumping off or out of a bridge or a water box with one foot once the horse has got onto or into that obstacle.
- Stepping outside of the confines of an obstacle with designated boundaries (i.e., Back through, 360 degree box, side pass) with one foot once the horse has entered the obstacle.



- Missing or evading a pole that is a part of a series of an obstacle with one foot.

#### SHW464.4 Five points

- Dropping slicker or object required to be carried on course.
- First or second cumulative refusal, balk, or evading an obstacle by shying or backing.
- Letting go of gate or dropping rope gate.
- Use of either hand to instill fear or praise.
- Falling or jumping off or out of a bridge or a water box with more than one foot once the horse has got onto or into that obstacle.
- Stepping outside of the confines of an obstacle with designated boundaries (i.e., Back through, 360 degree box, side pass) with more than one foot once the horse has entered the obstacle.
- Missing or evading a pole that is a part of a series of an obstacle with more than one foot.
- Blatant disobedience (including kicking out, bucking, rearing, striking).
- Holding saddle with either hand.

#### SHW464.5 Disqualified 0 – Score

- Use of two hands (except in snaffle bit or hackamore classes designated for two hands) or changing hands on reins; except for junior horses shown with hackamore or snaffle bit, only one hand may be used on the reins, except that it is permissible to change hands to work an obstacle as outlined in WESTERN EQUIPMENT, or to straighten reins when stopped.
- Use of romal other than as outlined in western equipment.
- Performing the obstacle incorrectly or other than in specified order.
- No attempt to perform an obstacle.
- Equipment failure that delays completion of pattern.
- Excessively or repeatedly touching the horse on the neck to lower the head.

- Entering or exiting an obstacle from the incorrect side or direction.
- Working obstacle the incorrect direction; including overturns of more than 1/4 turn.
- Riding outside designated boundary marker of the arena or course area.
- Third cumulative refusal, balk, or evading an obstacle by shying or backing.
- Failure to ever demonstrate correct lead and/or gait as designated.
- Failure to follow the correct line of travel between obstacles.
- Excessive schooling, pulling, turning, stepping or backing anywhere on course.
- Failure to open and shut gate or failure to complete gate (except for novice or rookie classes where they place below all who complete course correctly).

#### SHW464.6

Faults scored according to severity which occur on the line of travel between obstacles include:

- Head carried too high.
- Head carried too low (tip of ear below the withers).
- Over-flexing or straining neck in head carriage so the nose is carried behind the vertical.
- Excessive nosing out.
- Opening mouth excessively.

**SHW464.7** Faults which will be cause for disqualification that occur on the line of travel between obstacles, except in Level 1 (Novice) amateur or Level 1 (Novice) youth classes which shall be faults scored according to severity, include: head carried too low (tip of ear below the withers consistently); over-flexing or straining neck in head carriage so the nose is carried behind the vertical consistently.

## SHW465 TRAIL COURSE

Management, when setting courses, should keep in mind that the idea is not to trap a horse, or eliminate it by making an obstacle too difficult. All courses and obstacles are to be constructed with safety in mind so as to eliminate any accidents. If difficult courses are set, Level 1 (Novice) trail should be less difficult. When the distances and spaces are measured between all obstacles, the inside base to inside base measurement of each obstacle considering the normal path of the horse should be the measuring point. Enough space must be provided for a horse to jog [at least 30 feet (9 meters)] and lope [at least 50 feet (15 meters)] for the judges to evaluate these gaits.

**SHW465.1** If disrupted, the course shall be reset. In the case that an obstacle is used in combination, the obstacle cannot be reset until the contestant finishes the entire obstacle.

**SHW465.2** The judge must walk the course and has the right and duty to alter the course in any manner. The judge may remove or change any obstacle he deems unsafe or non-negotiable. If at any time a trail obstacle is deemed to be unsafe by the judge, it shall be repaired or removed from the course. If it cannot be repaired and horses have completed the course, the score for that obstacle shall be deducted from all previous works for that class.

**SHW465.3** At least six obstacles must be used, three of which must be from the mandatory list of obstacles and at least three others selected from the list of optional obstacles.

## SHW466. MANDATORY TRAIL COURSE OBSTACLES INCLUDE:

**SHW466.1** Opening, passing through and closing gate. (Losing control of gate is to be penalized.) Use a gate which will not endanger horse or rider. If the gate has a metal, plastic or wooden support bar under the opening, contestants must work the gate moving forward through it.

**SHW466.2**

Ride over at least four logs or poles. These can be in a straight line, curved, zigzag or raised. The space between the logs is to be measured and the path the horse is to take should be the measuring point.

Trotovers and lopeovers cannot be elevated in Novice classes. All elevated elements must be placed in a cup, notched block, or otherwise secured so they cannot roll. The height should be measured from the ground to the top of the element. Spacing for walkovers, trotovers, and lopeovers should be as follows or increments thereof.

**SHW466.2.1** The spacing for walkovers shall be 20" to 24" (50 – 60 cm) and may be elevated to 12" (30 cm). Elevated walkovers should be set at least 22" (55 cm) apart.

**SHW466.2.2** The spacing for trotovers shall be 3' to 3'3" (90 –100 cm) and may be elevated to 8" (20 cm).

**SHW466.2.3** The spacing for lopeovers shall be 6' to 6 1/2' (1.8 – 2 meters) or increments thereof, and may be elevated to 8" (20 cm).

**SHW466.3** Backing obstacle. Backing obstacles to be spaced a minimum of 28" (70 cm). If elevated, 30" (75 cm) spacing is required. Entrants cannot be asked to back over a stationary object such as a wooden pole or metal bar.

**SHW466.3.1** Back through and around at least three markers.

**SHW466.3.2** Back through L, V, U, straight or similar-shaped course. May be elevated no more than 24" (60 cm).

**SHW467**

Optional trail course obstacles include but are not limited to:

**SHW467.1** Water hazard (ditch or small pond). No metal or slick bottom-boxes will be used.

**SHW467.2** Serpentine obstacles at walk or jog. Spacing to be minimum of 6' ( 1.8 meters) for jog.

**SHW467.3** Carry object from one part of arena to another. (Only objects which reasonably might be carried on a trail ride may be used.)

**SHW467.4** Ride over wooden bridge. (Suggested minimum width shall be 36" (90 cm) wide and at least six feet long). Bridge should be sturdy, safe and negotiated at a walk only.

**SHW467.5** Put on and remove slicker.

**SHW467.6** Remove and replace materials from mailbox.

**SHW467.7** Side pass (may be elevated to 12" (30 cm) maximum).

**SHW467.8** An obstacle consisting of four logs or rails, laid in a square. Minimum width of the square should be 6' (1.8 m). Each contestant will enter the square by riding over log or rail as designated. When all four feet are inside the square, rider should execute a turn, as indicated, and depart.

**SHW467.9** Any other safe and negotiable obstacle which could reasonably be expected to be encountered on a trail ride and meets the approval of the judge may be used.

**SHW467.10** A combination of two or more of any obstacle is acceptable.

## **SHW468**

Unacceptable trail course obstacles include:

- Tires
- Animals
- Hides
- PVC pipe
- Dismounting
- Jumps
- Rocking or moving bridges
- Water box with floating or moving parts

- Flames, dry ice, fire extinguisher, etc.
- Logs or poles elevated in a manner that permits such to roll
- Ground ties

### SHW451 WESTERN RIDING

The horse is judged on quality of gaits, lead changes at the lope, response to the rider, manners and disposition. The horse should perform with reasonable speed, and be sensible, well-mannered, free and easy moving. Credit shall be given for and emphasis placed on smoothness, even cadence of gaits (i.e., starting and finishing pattern with the same cadence), and the horse's ability to change leads precisely, easily and simultaneously both hind and front at the center point between markers. In order to have balance, with quality lead changes, the horse's head and neck should be in a relaxed, natural position, with his poll level with or slightly above the level of the withers. He should not carry his head behind the vertical, giving the appearance of intimidation, or be excessively nosed out, giving a resistant appearance. The horse should have a relaxed head carriage showing response to the rider's hands, with a moderate flexion at the poll. Horses may be ridden with light contact or on a reasonably loose rein. The horse should cross the log both at the jog and the lope without breaking gait or radically changing stride.

### SHW452

The judge will select one of the eight patterns to be performed. The judge is responsible for the pattern being correctly set. The three Level 1 (Green) western riding patterns may be used for Level 1 (Novice) amateur or Level 1 (Novice) youth. On the pattern:

**SHW452.1** The small circles represent pylon markers which are recommended. These should be separated by a uniform measured distance of not less than 30 feet (9 meters) nor more than 50 feet (15 meters) on the sides with 5 markers (see diagram). In Pattern 1, the three markers on the opposite side should be set adjacent to the appropriate markers. It is recommended that markers be set a

minimum of 15 feet (4 1/2 meters) from the fence and with 50 to 80 foot (15 to 24 meters) width in the pattern, as the arena permits.

**SHW452.2** A solid log or pole should be used and be a minimum of 8 feet (2.5 meters) in length.

**SHW452.3** The long serpentine line indicates the direction of travel and gaits at which the horse is to move. The shaded area represents the lead changing area between the markers. The dotted line (...) indicates walk, the dash line (– –) jog, and the solid line (–) lope.

**SHW452.4** A cone shall be placed along the wall or rail of the arena to designate where the exhibitor should initiate the walk. On Pattern 1, the cone should be placed a minimum of 15 feet before the first pylon. On Patterns 2,3,4 and 5, the cone should be placed even with the first pylon. The on-deck exhibitor should not go to the start-cone until the contestant on pattern has cleared the working area by the start-cone for the final time.

## SHW453 SCORING

Exhibitors will be scored on a basis of 0-100 with 70 denoting an average performance. Points will be added or subtracted from the maneuvers on the following bases, ranging from plus 1 1/2 to minus 1 1/2: –1 1/2 extremely poor, –1 very poor, –1/2 poor, 0 average, +1/2 good, +1 very good, +1 1/2 excellent. Maneuver scores are to be determined independently of penalty points.

## SHW454

Penalties should be assessed each time the following occur:

### SHW454.1 One-half point

- Tick or light touch of log
- Hind legs skipping or coming together during lead change
- Non-simultaneous lead change (front to hind or hind to front)

**SHW454.2 One point**

- Hitting or rolling log
- Out of lead more than one stride either side of the center point and between the markers
- Splitting the log (log between the two front or two hind feet) at the lope
- Break of gait at the walk or jog up to two strides

**SHW454.3 Three points**

- Not performing the specific gait (jog or lope) or not stopping when called for in the pattern, within 10 feet (3 meters) of the designated area
- Simple change of leads
- Out of lead at or before the marker prior to the designated change area or out of lead at or after the marker after the designated change area
- Additional lead changes anywhere in pattern (except when correcting an extra change or incorrect lead)
- Pattern 1 and 3 failure to start the lope within 30 feet (9 meters) after crossing the log at the jog
- Break of gait at walk or jog for more than two strides
- Break of gait at the lope

**SHW454.4 Five points**

- Out of lead beyond the next designated change area (note: failures to change, including cross-cantering. Two consecutive failures to change would result in two five point penalties).
- Blatant disobedience including kicking out, biting, bucking and rearing
- Holding saddle with either hand
- Use of either hand to instill fear or praise



**SHW454.5 Disqualified – 0 score**

- Illegal equipment
- Willful abuse
- Off course
- Knocking over markers
- Completely missing log
- Major refusal – stop and back more than two strides or four steps with front legs
- Major disobedience or schooling
- Failure to start lope prior to end cone in pattern 1
- Four or more simple lead changes and/or failures to change leads (except for level 1 (novice) and rookie classes)
- Failure to start lope beyond 30 feet of designated area in patterns 2, 3, 4, 5 and level 1 (green) western riding patterns 1, 2 and 4 (except for level 1 (novice) classes).
- Overturn of more than 1/4 turn

**SHW454.6**

Faults scored according to severity, which will be cause for disqualification, except in Level 1 (Novice) amateur or Level 1 (Novice) youth classes, include:

- Head carried too low (tip of ear below withers consistently)
- Over flexing or straining neck in head carriage so the nose is carried behind the vertical consistently.

**SHW454.7**

The following characteristics are considered faults and should be judged accordingly in maneuver scores:

- Opening mouth excessively
- Anticipating signals
- Stumbling

- Head carried too high
- Head carried too low (tip of ear below the withers)
- Over-flexing or straining neck in head carriage so the nose is carried behind the vertical
- Excessive nosing out

**SHW454.8****Credits**

- Changes of leads, hind and front simultaneously
- Change of lead near the center point of the lead change area
- Accurate and smooth pattern
- Even pace throughout
- Easy to guide and control with rein and leg
- Manners and disposition
- Conformation and fitness



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# RANCH RIDING SCORE SHEET

AMERICAN  
QUARTER  
HORSE  
ASSOCIATION

JUDGE \_\_\_\_\_  
CLASS \_\_\_\_\_  
DATE \_\_\_\_\_

MANEUVER SCORES: - 1 1/2 Extremely Poor, - 1 Very Poor, - 1/2 Poor, 0 Correct, + 1/2 Good, + 1 Very Good, + 1 1/2 Excellent

		MANEUVER DESCRIPTION																PENALTY TOTAL	SCORE
		MANEUVER	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15		
DRAW	EXHB #	PENALTY																➔	
		SCORE																	
SCORE																			
DRAW	EXHB #	PENALTY																➔	
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DRAW	EXHB #	PENALTY																➔	
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SCORE																			

JUDGES SIGNATURE \_\_\_\_\_



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

AQHA  
AMERICAN QUARTER  
HORSE ASSOCIATION

## REINING SCORE SHEET

JUDGE
CLASS
DATE

MANEUVER SCORES: -1 1/2 Extremely Poor, -1 Very Poor, -1/2 Poor, 0 Correct, +1/2 Good, +1 Very Good, +1 1/2 Excellent

MANEUVER DESCRIPTION		1	2	3	4	5	6	7	8	PENALTY TOTAL	SCORE
DRAW	EXH #	PENALTY									
		SCORE									
DRAW	EXH #	PENALTY									
		SCORE									
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JUDGES SIGNATURE



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Agriculture, Food and Natural Resources Content Standards

### **ABS.01.01. Performance Indicator: Apply micro- and macroeconomic principles to plan and manage inputs and outputs in an AFNR business.**

**ABS.01.01.01.c.** Create strategies to maximize the efficiency of AFNR business inputs and outputs using microeconomic principles.

Team Activity Scenario (Product)

CCSS.ELA-Literacy.L.9-10.6  
CCSS.ELA-LITERACY.L.11-12.6  
CCSS.ELA-LITERACY.RST.9-10.4  
CCSS.ELA-LITERACY.RST.11-12.4  
CCSS.MATH.CONTENT.HSS.ID.C.7  
CCSS.MATH.CONTENT.HSS.IC.B.6  
Financial Investing: Benchmarks:  
Grade 12, Statement 9

**ABS.01.01.02.c.** Analyze the impact of the current macroeconomic environment on decisions related to AFNR businesses.

Team Activity Scenario (Product)

CCSS.ELA-Literacy.L.9-10.6  
CCSS.ELA-LITERACY.L.11-12.6  
CCSS.ELA-LITERACY.RST.9-10.4  
CCSS.ELA-LITERACY.RST.11-12.4  
CCSS.MATH.CONTENT.HSS.ID.C.7  
CCSS.MATH.CONTENT.HSS.IC.B.6  
Financial Investing: Benchmarks:  
Grade 12, Statement 9

### **ABS.01.03. Performance Indicator: Devise and apply management skills to organize and run an AFNR business in an efficient, legal and ethical manner.**

**ABS.01.03.01.c.** Devise strategies to improve the operation of AFNR businesses using management skills. – Team Activity Scenario (Product)

CCSS.ELA-LITERACY.SL.9-10.6  
CCSS.ELA-LITERACY.SL.11-12.6  
CCSS.ELA-LITERACY.L.9-10.6  
CCSS.ELA-LITERACY.L.11-12.6  
CCSS.ELA-LITERACY.RST.9-10.4  
CCSS.ELA-LITERACY.RST.11-12.4

**ABS.01.03.02.c.** Devise management or operational strategies to address and adhere to local, state, federal, international and industry regulations.

Team Activity Scenario (Product)

CCSS.ELA-LITERACY.SL.9-10.6  
CCSS.ELA-LITERACY.SL.11-12.6  
CCSS.ELA-LITERACY.L.9-10.6  
CCSS.ELA-LITERACY.L.11-12.6  
CCSS.ELA-LITERACY.RST.9-10.4  
CCSS.ELA-LITERACY.RST.11-12.4

**ABS.01.03.02.c.** Devise management or operational strategies to address and adhere to local, state, federal, international and industry regulations.

Team Activity Scenario (Product)

CCSS.ELA-LITERACY.SL.9-10.6  
CCSS.ELA-LITERACY.SL.11-12.6  
CCSS.ELA-LITERACY.L.9-10.6  
CCSS.ELA-LITERACY.L.11-12.6  
CCSS.ELA-LITERACY.RST.9-10.4  
CCSS.ELA-LITERACY.RST.11-12.4

## Agriculture, Food and Natural Resources Content Standards continued

<b>ABS.05.01. Performance Indicator: Analyze the role of markets, trade, competition and price in relation to an AFNR business sales and marketing plans.</b>		
<b>ABS.05.01.01.c.</b> Evaluate and predict future trends for a specific AFNR product as related to markets, trade and price (e.g., corn, oil, wheat, etc.).	Team Activity Scenario (Product)	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1
<b>ABS.05.03. Performance Indicator: Assess marketing principles and develop marketing plans to accomplish AFNR business objectives.</b>		
<b>ABS.05.03.03.b.</b> Perform a market analysis to gather information for marketing plans for AFNR businesses (e.g., evaluation of competitors, customers, domestic and international policy, regulations and rules, standards, etc.).	Team Activity Scenario (Product)	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6
<b>AS.01.01. Performance Indicator: Evaluate the development and implications of animal origin, domestication and distribution on production practices and the environment.</b>		
<b>AS.01.01.01.c.</b> Evaluate the implications of animal adaptations on production practices and the environment.	Team Activity Scenario (Product)	HS-LS4-3
<b>AS.01.01.02.b.</b> Describe the historical and scientific developments of different animal industries and summarize the products, services and careers associated with each.	Team Activity Scenario (Product)	HS-LS4-3
<b>AS.01.02. Performance Indicator: Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts.</b>		
<b>AS.01.02.01.c.</b> Evaluate the effectiveness of different production methods and defend the use of selected methods using data and evidence. – Team Activity Scenario (Product)		AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3

## Agriculture, Food and Natural Resources Content Standards continued

AS.01.02.02.c. Devise and evaluate marketing plans for an animal agriculture product or service.	Team Activity Scenario (Product)	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
<b>AS.01.03. Performance Indicator: Analyze and apply laws and sustainable practices to animal agriculture from a global perspective.</b>		
AS.01.03.01.c. Evaluate the impact of laws pertaining to animal agriculture (e.g., pros, cons, effect on individuals, effect on businesses, etc.) and assess the compliance of production practices with established regulations.	Team Activity Scenario (Product)	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 HS-ETS1-1
AS.01.03.02.c. Select, evaluate and defend the use of sustainable practices in animal agriculture. – Team Activity Scenario (Product)		AFNR Career Cluster, Statement 2 AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 HS-ETS1-1
<b>AS.02.01. Performance Indicator: Demonstrate management techniques that ensure animal welfare.</b>		
AS.02.01.01.b. Design programs that assure the welfare of animals and prevent abuse or mistreatment.	Team Activity Scenario (Product)	HS-ETS1-2
AS.02.01.02.c. Devise, implement and evaluate safety procedures and plans for working with animals by species using information based on animal behavior and responses	Team Activity Scenario (Product) and Team Activity Practical Application	HS-ETS1-2
AS.02.01.03.c. Devise economical recommendations to increase the welfare of animals in animal systems.	Team Activity Scenario (Product)	HS-ETS1-2
<b>AS.03.01. Performance Indicator: Analyze the nutritional needs of animals.</b>		
AS.03.01.01.c. Assess nutritional needs for an individual animal based on its growth stage and production system	Team Activity Scenario (Product) and Team Activity Practical Application	
AS.03.01.02.c. Design and defend the use of a nutritional program by demonstrating the relationship between the nutrient requirements and the feedstuffs provided.	Team Activity Scenario (Product) and Team Activity Practical Application	

## Agriculture, Food and Natural Resources Content Standards continued

<b>AS.03.02 Performance Indicator: Analyze feed rations and assess if they meet the nutritional needs of animals.</b>		
AS.03.02.01.c. Select appropriate feedstuffs for animals based on a variety of factors (e.g., economics, digestive system and nutritional needs, etc.).	Team Activity Scenario (Product) and Team Activity Practical Application	
AS.03.02.02.c. Select and utilize animal feeds based on nutritional requirements, using rations for maximum nutrition and optimal economic production	Team Activity Scenario (Product) and Team Activity Practical Application	
AS.03.02.03.c. Make and defend decisions regarding whether to use feed additives and growth promotants after researching and considering scientific evidence, production system needs and goals, and input from industry professionals.	Team Activity Scenario (Product) and Team Activity Practical Application	
<b>AS.03.03 Performance Indicator: Utilize industry tools to make animal nutrition decisions.</b>		
AS.03.03.01.b. Utilize tools and equipment to perform animal nutrition tasks.	Team Activity Practical Application	
AS.03.03.02.c. Evaluate and summarize the potential impacts, positive and negative, of compliance and/or noncompliance with a feed label and feeding directions.	Team Activity Scenario (Product) and Team Activity Practical Application	
<b>AS.04.01. Performance Indicator: Evaluate animals for breeding readiness and soundness.</b>		
AS.04.01.01.b. Analyze the functions of major organs in the male and female reproductive systems.	Team Activity Practical Application	
<b>AS.04.02. Performance Indicator: Apply scientific principles to select and care for breeding animals.</b>		
AS.04.02.01.c. Select and evaluate a breeding system based on the principles of genetics	Team Activity Scenario (Product)	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
AS.04.02.02.c. Select and evaluate breeding animals and determine the probability of a given trait in their offspring.	Team Activity Scenario (Product)	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
AS.04.02.04.c. Create a plan to differentiate care of a species of breeding animals throughout their growth stages.	Team Activity Scenario (Product)	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.04.03 Performance Indicator: Apply scientific principles to breed animals.</b>		
AS.04.03.01.c.) Select animal breeding methods based on reproductive and economic efficiency.	Team Activity Scenario (Product)	
AS.04.03.02.c. Evaluate the implementation and effectiveness of artificial insemination techniques.	Team Activity Scenario (Product)	
AS.04.03.03.c. Create and evaluate plans and procedures for estrous synchronization, superovulation, flushing, embryo transfer and other reproductive management practices	Team Activity Scenario (Product)	
AS.04.03.04.c. Select and assess animal performance based on quantitative breeding values for specific characteristics.	Team Activity Scenario (Product) and Team Activity Practical Application	



## Agriculture, Food and Natural Resources Content Standards continued

<b>AS.05.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.</b>		
AS.05.01.01.b. Critique designs for an animal facility and prescribe alternative layouts and adjustments for the safe, sustainable and efficient use of the facility.	Team Activity Scenario (Product) and Team Activity Practical	AFNR Career Cluster – Animal Systems Pathway, Statement 2 STEM Career Cluster, Statement 4 STEM Career Cluster, Statement 5
<b>AS.05.02. Performance Indicator: Comply with government regulations and safety standards for facilities used in animal production.</b>		
AS.05.02.01.c. Evaluate facility designs and make recommendations to ensure that it meets standards for the legal, safe, ethical, economical and efficient production of animals.	Team Activity Scenario (Product) and Team Activity Practical	CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b
<b>AS.06.01. Performance Indicator: Classify animals according to taxonomic classification systems and use (e.g. agricultural, companion, etc.).</b>		
AS.06.01.03.b. Analyze the visual characteristics of an animal or animal product and select correct classification terminology when referring to companion and production animals.	Team Activity Scenario (Product) and Team Activity Practical – Evaluation and Oral Reasons – Identification (all parts of the event)	
<b>AS.06.02. Performance Indicator: Apply principles of comparative anatomy and physiology to uses within various animal systems.</b>		
AS.06.02.03.c. Apply knowledge of anatomical and physiological characteristics of animals to make production and management decisions	Team Activity Scenario (Product) and Team Activity Practical	HS-LS1-2
<b>AS.06.03. Performance Indicator: Select animals for specific purposes and maximum performance based on anatomy and physiology.</b>		
AS.06.03.01.c. Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth and reproduction	Team Activity Scenario (Product) and Team Activity Practical – Evaluation	STEM Career Cluster, Statement 5
AS.06.03.02.b. Compare and contrast procedures to sustainably and efficiently develop an animal to reach its highest performance potential with respect to its anatomical and physiological characteristics.	Team Activity Scenario (Product) and Team Activity Practical	STEM Career Cluster, Statement 5
AS.06.03.03.c. Evaluate and select animals to produce superior animal products based on industry standards.	Team Activity Scenario (Product) and Team Activity Practical – Evaluation	STEM Career Cluster, Statement 5
<b>AS.07.01. Performance Indicator: Design programs to prevent animal diseases, parasites and other disorders and ensure animal welfare.</b>		
AS.07.01.01.c. Select and use tools and technology to meet specific animal health management goals	Team Activity Scenario (Product) and Team Activity Practical	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
AS.07.01.02.c. Determine when an animal health concern needs to be referred to an animal health professional.	Team Activity Scenario (Product) and Team Activity Practical	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
AS.07.01.03.c. Treat common diseases, parasites and physiological disorders of animals according to directions prescribed by an animal health professional.	Team Activity Scenario (Product) and Team Activity Practical	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3

## Agriculture, Food and Natural Resources Content Standards continued

AS.07.01.04.c. Design and implement a health maintenance and a disease and disorder prevention plan for animals in their natural and/or confined environments	Team Activity Scenario (Product) and Team Activity Practical	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
AS.07.01.05.c. Identify and describe surgical and nonsurgical veterinary treatments and procedures to meet specific animal health care objectives.	Team Activity Scenario (Product) and Team Activity Practical	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
AS.07.02.01.c. Design and evaluate a biosecurity plan for an animal production operation.	Team Activity Scenario (Product) and Team Activity Practical	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.02. Performance Indicator: Analyze biosecurity measures utilized to protect the welfare of animals.</b>		
AS.07.02.02.b. Analyze the health risk of different zoonotic diseases to humans and identify prevention methods.	Team Activity Scenario (Product) and Team Activity Practical	
<b>AS.08.01. Performance Indicator: Design and implement methods to reduce the effects of animal production on the environment.</b>		
AS.08.01.01.b. Assess methods of reducing the effects of animal agriculture on the environment.	Team Activity Scenario (Product) and Team Activity Practical	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 1 HS-LS2-6 HS-LS2-7
<b>AS.08.02. Performance Indicator: Evaluate the effects of environmental conditions on animals and create plans to ensure favorable environments for animals.</b>		
AS.08.02.02.b. Implement and evaluate the effectiveness of methods to ensure optimal environmental conditions for animals.	Team Activity Scenario (Product) and Team Activity Practical	HS-LS4-6
<b>CS.01.01. Performance Indicator: Examine issues and trends that impact AFNR systems on local, state, national and global levels.</b>		
CS.01.01.01.c. Evaluate and explain AFNR issues and their impacts to audiences with limited AFNR knowledge	Team Activity Scenario	
CS.01.01.02.c. Evaluate emerging trends and the opportunities they may create within the AFNR systems	Team Activity Scenario	
<b>CS.01.02. Performance Indicator: Examine technologies and analyze their impact on AFNR systems.</b>		
CS.01.02.01.c. Solve problems in AFNR workplaces or scenarios using technology.	Team Activity Scenario	
<b>CS.01.03. Performance Indicator: Identify public policies and their impact on AFNR systems.</b>		
CS.7.02.01.c. Evaluate a public policy within AFNR systems and defend or challenge it	Team Activity Scenario	
CS.7.02.02.c. Create a plan for implementing a new public policy that will positively impact AFNR systems.	Team Activity Scenario	
<b>CS.02.01. Performance Indicator: Research geographic and economic data related to AFNR systems.</b>		
CS.02.01.02.c. Devise a strategy to solve a problem in an AFNR system using a set of economic data.	Team Activity Scenario	

## Agriculture, Food and Natural Resources Content Standards continued

<b>CS.02.02. Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy.</b>		
CS.02.02.01.c. Devise a strategy for explaining components of AFNR systems to audiences with limited knowledge.	Team Activity Scenario	
CS.02.02.03.c. Evaluate how positive or negative changes in the local, state, national or global economy impacts AFNR systems.	Team Activity Scenario	
<b>CS.04.01. Performance Indicator: Identify and implement practices to steward natural resources in different AFNR systems.</b>		
CS.04.01.01.b. Analyze available practices to steward natural resources in AFNR systems (e.g., wildlife and land conservation, soil and water practices, ecosystem management, etc.).	Team Activity Practical	
CS.04.01.02.b. Analyze and assess sustainability practices that can be applied in AFNR systems (e.g., energy efficiency, recycle/reuse/repurpose, green resources, etc.).	Team Activity Practical	
<b>CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.</b>		
CRP.01.01.02.b. Assess personal level of responsibility and examine opportunities for improvement.	Evaluation and Reasons	
<b>CRP.01.02 Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.</b>		
CRP.01.02.01.c. Make and defend personal decisions after analyzing their near- and long-term impacts on self and others.	Evaluation and Reasons Evaluation and Reasons – Team Activity – Scenario Product	
CRP.01.02.02.c. Make and defend professional decisions after evaluating their near- and long-term impacts on employers and community.	Team Activity – Scenario Product	
<b>CRP.01.03. Performance Indicator: Identify and act upon opportunities for professional and civic service at work and in the community.</b>		
CRP.01.03.01.c. Devise strategies for involvement in professional service opportunities at work and in the community (e.g., coaching/mentorship, presentations at meetings, etc.).	Team Activity – Scenario Product	
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
CRP.02.01.01.c. Apply academic knowledge and skills to solve problems in the workplace and reflect upon the results achieved	The entire event – all parts	
CRP.02.01.02.c. Apply academic knowledge and skills to solve problems in the community and reflect upon results achieved	Team Activity – Scenario Product	
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
CRP.02.02.01.c. Apply technical concepts to solve problems in the workplace and reflect upon the results achieved.	Team Activity – Practical Application	

*Agriculture, Food and Natural Resources Content Standards continued*

<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Oral Reasons – Team Activity – Scenario Product	
<b>CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.</b>		
CRP.04.02.02.b. Apply techniques for ensuring clarity, logic and coherence to edit written communications (e.g., emails, reports, presentations, technical documents, etc.).	Oral Reasons – Team Activity – Scenario Product	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Team Activity – Scenario Product and Team Practical	
CRP.04.03.02.b. Assess active listening strategies by observing others in formal and informal settings. Team Activity – Scenario Product and Team Practical		
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
CRP.05.01.03.c. Synthesize information and resources and apply to workplace and community situations to make positive decisions.	Team Activity – Scenario Product and Team Practical	
<b>CRP.05.02. Performance Indicator: Make, defend and evaluate decisions at work and in the community using information about the potential environmental, social and economic impacts.</b>		
CRP.05.02.01.c. Evaluate and defend decisions applied in the workplace and community situations.	Team Activity – Scenario Product and Oral Reasons	
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
CRP.06.01.01.c. Evaluate workplace and community situations and devise strategies to apply original ideas.	Team Activity – Scenario Product	
CRP.06.01.02.c. Devise strategies (e.g., ask questions, brainstorm ideas, present facts and information etc.) to challenge common assumptions in workplace and community situations.	Team Activity – Scenario Product	
<b>CRP.06.02. Performance Indicator: Assess a variety of workplace and community situations to identify ways to add value and improve the efficiency of processes and procedures.</b>		
CRP.06.02.02.c. Construct and implement methods to improve workplace and community processes and procedures.	Team Activity – Scenario Product	
<b>CRP.06.03. Performance Indicator: Create and execute a plan of action to act upon new ideas and introduce innovations to workplace and community organizations.</b>		
CRP.06.03.01.c. Design a plan of action to introduce a new idea or innovation into the workplace and community.	Team Activity – Scenario Product	

*Agriculture, Food and Natural Resources Content Standards continued*

CRP.06.03.02.b. Elicit and assimilate input and feedback from individuals and organizations about new ideas or innovations for the workplace or community.	Team Activity – Scenario Process	
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.c. Evaluate how applying critical thinking skills can impact workplace and community situations.	All section of the event	
CRP.08.01.02.c. Devise strategies to apply reason, logic and input from multiple perspectives to solve workplace and community problems.	All section of the event	
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.01.c. Devise strategies to evaluate the effectiveness of solutions for resolving workplace and community problems.	Team Activity – Scenario Product and Process	
CRP.08.02.02.c. Evaluate and select solutions with greatest potential for success to solve workplace and community problems.	Team Activity – Scenario Product and Process	
<b>CRP.08.03. Performance Indicator: Establish plans to solve workplace and community problems and execute them with resiliency.</b>		
CRP.08.03.01.b. Analyze and determine the best problem-solving model to apply to workplace and community problems.	All sections of the event	
<b>CRP.09.01. Performance Indicator: Model characteristics of ethical and effective leaders in the workplace and community (e.g. integrity, self-awareness, self-regulation, etc.).</b>		
CRP.09.01.01.c. Evaluate ethical and effective leadership characteristics demonstrated by others.	Team Activity – Scenario Product	
<b>CRP.11.01. Performance Indicator: Research, select and use new technologies, tools and applications to maximize productivity in the workplace and community.</b>		
CRP.11.01.01.b. Analyze advantages and disadvantages of new technologies, tools and applications to maximize productivity in the workplace and community.	Team Activity – Scenario Product	
CRP.11.01.02.b. Select, apply and use new technologies, tools and applications in workplace and community situations to maximize productivity.	Team Activity – Scenario Product	
<b>CRP.11.02. Performance Indicator: Evaluate personal and organizational risks of technology use and take actions to prevent or minimize risks in the workplace and community.</b>		
CRP.11.02.01.b. Assess the physical, financial and professional risks associated with using technology in the workplace and community.	Team Activity – Scenario Product	

*Agriculture, Food and Natural Resources Content Standards continued*

<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
<b>CRP.12.01.01.b.</b> Formulate action plans to complete team-oriented projects in the workplace and community, including plans for personal contributions.	Team Activity – all parts	
<b>CRP.12.01.02.b.</b> Apply consensus building techniques to accomplish results in team-oriented situations.	Team Activity – all parts	
<b>CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).</b>		
<b>CRP.12.02.01.b.</b> Assess team dynamics and match strategies to increase team member engagement.	Team – all parts	
<b>CRP.12.02.02.b.</b> Select strategies to engage team members and apply in a variety of situations.	Team – all parts	



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# LIVESTOCK EVALUATION

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS



## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



### **Purpose**

*Provide the opportunity to learn and apply livestock industry and production priorities through evaluation and selection of beef cattle, swine, sheep and meat goats.*

## Objectives

*The objective of the National FFA Livestock Evaluation Career Development Event is to:*

- Measure students' knowledge in the following categories:
  - To make accurate observations of livestock.
  - To determine the desirable traits in market and breeding livestock.
  - To make logical decisions based on these observations.
  - To discuss and to defend their decisions for their placing.
  - To instill an understanding of desirable selection, production, management and marketing techniques for livestock.
- Understand and interpret the value of performance data based on industry standards.
- Develop the ability to select and market livestock that will satisfy consumer demands and provide increased economic returns to producers as well as meet the needs of the industry.
- Become proficient in communicating the terminology of the industry and the consumer.
- Provide an opportunity for participants to associate with professionals in the industry.
- Utilize current technology as it relates to the livestock industry.
- Develop employability skills for future agricultural career choices.

## Event Rules

- Each team will be comprised of four members. All four scores will be used to determine the total team score.
- It is highly recommended that participants wear FFA Official Dress for this event.
- Event information may be added or deleted as changes occur in the livestock industry. When new criteria are adopted, the information will be forwarded to all states by Jan. 1 of the event year by the national FFA program manager responsible for career development events.
- Participants will report to the event superintendent or designee for instructions at the time and place shown in the current year's team orientation packet.
- Any participant in possession of an electronic device in the event area is subject to disqualification.

## Event Format

### EQUIPMENT

Materials students must provide:

- Participants must bring two No. 2 pencils.
- Teams may be asked to provide two laptops depending on each year's activities (all computers must have wireless Internet access).
- The announcement regarding laptops will be included in the team orientation packet provided to each certified team.

Equipment provided:

- **All paper and support boards will be provided. Participants are not to bring any paper or clipboards.**
- All other necessary materials will be provided by event committee.

## Day 1

### INDIVIDUAL ACTIVITIES

#### KEEP CULL (50 POINTS EACH WITH 150 POINTS TOTAL)

**Keep/cull classes:** There will be three selection classes that may be beef, swine, sheep or meat goats; each made up of eight breeding animals. Participants will be required to select the four best animals from the eight, using visual appraisal and performance data. Performance data will be provided. Production/performance data (including EPDs) may be used in the keep/cull classes of beef, swine, sheep or meat goats. Performance criteria, when used, shall be based on current industry standards.

#### WRITTEN EXAM (25 QUESTIONS – TWO POINTS EACH, 50 POINTS TOTAL)

**Written test:** The objective, multiple choice exam is designed to determine team members understanding of the livestock industry. The exam will consist of 25 multiple choice questions (two points each). Thirty minutes will be given for the exam.

## **TEAM ACTIVITIES (370 POINTS)**

### **ASSESSMENT AND SOLUTIONS (QUESTIONS CLASS) (50 POINTS)**

Team members working collaboratively will answer 10 questions drawn from a live animal class with a scenario and performance data.

### **TEAM PROCESS (20 POINTS)**

Teams will be evaluated based on the Team Activity Preparation Rubric.

The team activity portion of the livestock evaluation CDE will be separated into two sections. The sections will focus on a market activity and a breeding activity. Teams will be split into two pairs to work on the two activities. This will be decided randomly by the committee and announced at the event; therefore, all team members should be prepared for each section.

### **MARKET ACTIVITY (150 POINTS)**

Two team members will be assigned to participate in the market activity. Students will work collaboratively to provide a response to the scenario provided by event officials. Team members will view a video auction (Western Video Markets, Superior, etc.,) and purchase a group of animals (steers, heifers, market hogs, etc.). They will use a laptop and determine mileage and transportation cost. Predetermined animal pick-up and delivery locations will be provided. Participants will be required to calculate several expenses possibly based on weight, quantity processing cost per head and transportation cost. Value will be determined by final sale price. Teams' final answer(s) will be derived from several steps (including calculation of cost and income); therefore, allowing the accumulation of partial points. Examples of costs and income are animal cost, transportation, labor expense, feed consumption, feed conversion rate, feed cost and market value. Marketing scenario may address terminal and/or seedstock emphasis.

**BREEDING ACTIVITY (150 POINTS)**

Two team members will be assigned to participate in the genetics activity. Students will work collaboratively to provide a response to the scenario provided by event officials. Teams will be given a group of females (heifers, gilts, ewes, etc.,) with performance data, ultrasound data, etc. A group of four or five males (bulls, boars, rams, etc.,) with performance data and genetic background will be used to determine mating decisions. Mating decisions will need to correlate with a given outcome scenario (replacements, market cattle, show cattle, bulls) and an environmental scenario (labor availability, weather, terrain, feed availability, etc.,) provided by the committee. Teams' final answers will be derived from several areas allowing the accumulation of partial points. Such areas are mating methods (artificial insemination or natural), cost of mating methods, sire selections for environmental conditions and specific pairings (more than one sire that can earn points with some of greater value than others).

## Day 2

### **LIVESTOCK EVALUATION/PLACING CLASSES (50 POINTS/CLASS, 400 POINTS TOTAL)**

Eight classes of four animals each will be placed using a computerized scorecard. Classes may be breeding or market animals from beef, swine, sheep, or meat goat species. At least one class will include the use of production/performance data.

### **ORAL REASONS (50 POINTS/CLASS, 200 POINTS TOTAL)**

Four sets of oral reasons will be designated by the event superintendent at the beginning of the event. One set of reasons will be given on the production data class. Reasons will be given after all classes have been placed. Participants will be provided paper to take notes on each reason class for preparation. Use of notes during the reason presentation is strongly discouraged.



## Scoring

All team member scores will be used to determine final team placing.

	Individual Points	Team Points
<b>Team</b>		
Process (ability of team to work together)		20
Market activity		150
Breeding activity		150
Assessment and Solutions (questions class)		50
<b>Individuals</b>		
Classes – 8 at 50 points each	400	1,600
Reasons – 4 at 50 points each	200	800
Keep/cull – 3 at 50 points each	150	600
Written Exam – 25 questions at 2 points each	50	200
<b>TOTALS</b>	<b>800</b>	<b>3,570</b>

## TIEBREAKERS

If ties occur, the following events will be used in order to determine individual and team outcome:

1. Total of oral reasons.
2. Total of placing classes.
3. Total of keep/cull classes.



## Awards

*Awards will be presented at the awards ceremony.*

Awards are presented to teams as well as individuals based upon their rankings. The individual and the team scoring the highest in each species of livestock, oral reasons and exam will receive special recognition. The top five team scores in the team activity will receive a certificate. Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

## References

*This list of references is not intended to be all-inclusive.*

Other sources may be utilized and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

- National FFA CDE Question and answers [FFA.org](http://FFA.org) past exams and team activities
- Beef Improvement Federation [www.beefimprovement.org](http://www.beefimprovement.org) - resource center
- National Swine Registry <http://www.nationalswine.com/>
- Certified Pedigreed swine <http://cpsswine.com/>
- National Pork board <http://www.pork.org/>
- Gillispie, James R. Modern Livestock and Poultry Production most current edition. Albany, NY: Delmar Publishers, Inc. 2015.
- Instructional Material Services <https://www.myimsservices.com>
- Goat Handbook [www.texasgoat.com/Goat\\_Handbook/](http://www.texasgoat.com/Goat_Handbook/)
- [www.judgingconnection.com](http://www.judgingconnection.com)
- [www.judging101.com](http://www.judging101.com)
- [www.livestockjudging.com](http://www.livestockjudging.com)
- Cyber livestock judging <http://extension.usu.edu/cyberlivestock/htm/livestock-judging>
- Evaluating meat goats <https://www.four-h.purdue.edu/downloads/cde/meat%20goat%20selection2.pdf>
- <http://judgingpro.com/>
- Rayfield, John S, Smith, Kasee L, Park, Travis and Croom, D. Barry Principles of Agriculture, Food, and Natural Resources most current edition. Tinley Park, IL; Goodheart-Willcox Publisher, 2015

## Animal Science Related Careers

- Agriculture teacher
- Extension agent
- Breed representative
- Nutritionist
- Sales and or marketing representative
- Producer
- Veterinarian
- Collegiate educator
- Researcher
- Attorney
- Agriculture policy professional
- Consultant
- Farm/ranch manager
- Herdsman
- Livestock auctioneer
- Geneticist
- Agricultural lender
- Livestock buyer
- Transportation logistics
- Livestock judging coach
- Commodity professional
- Commodity broker
- Animal science technician



NATIONAL FFA  
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## Team Activity Preparation Rubric

(20 points)

INDICATOR	Strong evidence of skill is present 4 points	Most evidence of skill is present 3 points	Some evidence of skill is present 2 points	Little evidence of skill is present 1 point	Team Score
<b>Problem solving technique</b>	All members make a serious effort to determine solution.	Most members make a serious effort to determine solution.	Some make a serious effort to determine solution.	Few make a serious effort to determine solution.	
<b>Oral communication</b>	All members communications are purposeful with recommendations for improvement, clarity, logic and purpose.	Most members' communications are purposeful with recommendations for improvement, clarity, logic and purpose.	Some members' communications are purposeful with recommendations for improvement, clarity, logic and purpose.	Few members' communications are purposeful with recommendations for improvement, clarity, logic and purpose.	
<b>Active listening</b>	All members are listening to others input.	Most members are listening to others input.	Some members are listening to others input.	Few members are listening to others input.	
<b>Team contribution</b>	Everyone on the team contributes to the mission of the team .	Most on the team contributes to the mission of the team.	Some on the team contributes to the mission of the team.	Few on the team contributes to the mission of the team.	
<b>Task completion</b>	Task is fully completed.	Most of the task is completed.	Some of the task is completed.	Little of the task is completed.	
<b>TOTAL</b>					

Use only whole numbers



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Agriculture, Food and Natural Resources Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.01.01. Performance Indicator: Evaluate the development and implications of animal origin, domestication and distribution on production practices and the environment.</b>		
<b>AS.01.01.01.c.</b> Evaluate the implications of animal adaptations on production practices and the environment.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Exam	HS-LS4-3
<b>AS.01.01.02.c.</b> Predict trends and implications of future developments within different animal industries on production practices and the environment.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Exam	HS-LS4-3
<b>AS.01.02. Performance Indicator: Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts.</b>		
<b>AS.01.02.01.c.</b> Evaluate the effectiveness of different production methods and defend the use of selected methods using data and evidence.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Exam Oral reasons	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
<b>AS.01.02.02.b.</b> Calculate costs of marketing versus predicted increases in sales.	Team activity – marketing activity	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
<b>AS.01.02.02.c.</b> Devise and evaluate marketing plans for an animal agriculture product or service.	Team activity – breeding activity	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.01.03. Performance Indicator: Analyze and apply laws and sustainable practices to animal agriculture from a global perspective.</b>		
AS.01.03.01.c. Evaluate the impact of laws pertaining to animal agriculture (e.g., pros, cons, effect on individuals, effect on businesses, etc.) and assess the compliance of production practices with established regulations.	Exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 HS-ETS1-1
<b>AS.02.01. Performance Indicator: Demonstrate management techniques that ensure animal welfare.</b>		
AS.02.01.02.b. Analyze and document animal welfare procedures used to ensure safety and maintain low stress when moving and restraining animals.	Exam	HS-ETS1-2
<b>AS.02.02. Performance Indicator: Analyze procedures to ensure that animal products are safe for consumption.</b>		
AS.02.01.02.b. Analyze and document animal welfare procedures used to ensure safety and maintain low stress when moving and restraining animals.	Exam	HS-ETS1-2
AS.02.02.01.b. Utilize tools, technology and equipment to perform animal husbandry and welfare tasks.	Keep and cull classes	HS-ETS1-2
AS.02.02.01.c. Select, evaluate and defend the use of specific tools, technology or equipment used to perform animal husbandry and welfare tasks.	Livestock evaluation and placing Oral reasons	HS-ETS1-2
AS.02.02.02.b. Analyze consumer concerns with animal production practices relative to human health.	Team activity – marketing activity Exam	HS-ETS1-2
<b>AS.03.01. Performance Indicator: Analyze the nutritional needs of animals.</b>		
AS.03.01.01.c. Assess nutritional needs for an individual animal based on its growth stage and production system.	Exam	
AS.03.01.02.a. Differentiate between nutritional needs of animal species.	Exam	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.03.02 Performance Indicator: Analyze feed rations and assess if they meet the nutritional needs of animals.</b>		
AS.03.02.01.a. Compare and contrast common types of feedstuffs and the roles they play in the diets of animals.	Exam	
AS.03.02.02.a. Examine the importance of a balanced ration for animals based on the animal's growth stage (e.g., maintenance, newborn, gestation, lactation, etc.).	Exam	
<b>AS.04.01. Performance Indicator: Evaluate animals for breeding readiness and soundness.</b>		
AS.04.01.01.c. Select breeding animals based on characteristics of the reproductive organs.	Team activity – breeding activity Team activity – marketing activity Oral reasons Livestock evaluation and placing Keep and cull classes Exam	
AS.04.01.02.c. Evaluate and select animals for reproductive readiness.	Team activity – breeding activity Team activity – marketing activity Oral reasons Livestock evaluation and placing Keep and cull classes Exam	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
AS.04.01.03.c. Treat or cull animals with reproductive problems.	Team activity – breeding activity Team activity – marketing activity Oral reasons Livestock evaluation and placing Keep and cull classes Exam	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.04.02. Performance Indicator: Apply scientific principles to select and care for breeding animals.</b>		
AS.04.02.01.c. Select and evaluate a breeding system based on the principles of genetics.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes Exam	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
AS.04.02.02.c. Select and evaluate breeding animals and determine the probability of a given trait in their offspring.	Team activity – breeding activity Team activity – marketing activity Oral reasons Livestock evaluation and placing Keep and cull classes Exam	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
AS.04.02.03.b. Analyze how DNA analysis can detect genetic defects in breeding stock	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes Exam	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3



## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.04.02.04.a.</b> Identify and summarize different needs of breeding animals based on their growth stages (e.g., newborn, parturition, gestation, gestation lengths, etc.).	Exam	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.04.03 Performance Indicator: Apply scientific principles to breed animals.</b>		
<b>AS.04.03.01.c.</b> Select animal breeding methods based on reproductive and economic efficiency.	Team activity – breeding activity Livestock evaluation and placing Keep and cull classes	
<b>AS.04.03.02.a.</b> Analyze the materials, methods and processes of artificial insemination.	Team activity – breeding activity Livestock evaluation and placing Keep and cull classes	
<b>AS.04.03.03.b.</b> Analyze the processes of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer.	Exam	
<b>AS.04.03.04.c.</b> Select and assess animal performance based on quantitative breeding values for specific characteristics.	Team activity – breeding activity Livestock evaluation and placing Keep and cull classes	
<b>AS.05.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.</b>		
<b>AS.05.01.02.a.</b> Identify and summarize equipment, technology and handling facility procedures used in modern animal production (e.g., climate control devices, sensors, automation, etc.).	Exam	AFNR Career Cluster – Animal Systems Pathway, Statement 2 STEM Career Cluster, Statement 4 STEM Career Cluster, Statement 5
<b>AS.06.01. Performance Indicator: Classify animals according to taxonomic classification systems and use (e.g. agricultural, companion, etc.).</b>		
<b>AS.06.01.01.c.</b> Assess taxonomic characteristics and classify animals according to the taxonomic classification system.	Exam	
<b>AS.06.01.02.c.</b> Recommend different uses for an animal species based upon an analysis of local market needs.	Team activity – breeding activity Livestock evaluation and placing Keep and cull classes	
<b>AS.06.01.03.c.</b> Apply knowledge of classification terms to communicate with others about animal systems in an effective and accurate manner.	Team activity – breeding activity Team activity – marketing activity	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.06.02. Performance Indicator: Apply principles of comparative anatomy and physiology to uses within various animal systems.</b>		
<b>AS.06.02.03.c.</b> Apply knowledge of anatomical and physiological characteristics of animals to make production and management decisions.	Team activity – breeding activity Team activity – marketing activity Oral reasons Livestock evaluation and placing Keep and cull classes Exam	HS-LS1-2
<b>AS.06.03. Performance Indicator: Select animals for specific purposes and maximum performance based on anatomy and physiology.</b>		
<b>AS.06.03.01.c.</b> Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth and reproduction.	Team activity – breeding activity Team activity – marketing activity Oral reasons Livestock evaluation and placing Keep and cull classes Exam	STEM Career Cluster, Statement 5
<b>AS.06.03.02.a.</b> Evaluate an animal against its optimal anatomical and physiological characteristics.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes	STEM Career Cluster, Statement 5
<b>AS.06.03.03.c.</b> Evaluate and select animals to produce superior animal products based on industry standards.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes	STEM Career Cluster, Statement 5
<b>AS.07.01. Performance Indicator: Design programs to prevent animal diseases, parasites and other disorders and ensure animal welfare.</b>		
<b>AS.07.01.01.a.</b> Identify and summarize specific tools and technology used in animal health management.	Exam	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.01.02.a.</b> Explain methods of determining animal health and disorders.	Exam	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.01.03.a.</b> List and summarize the characteristics of wounds, common diseases, parasites and physiological disorders that affect animals.	Exam	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.01.04.a.</b> Identify and summarize characteristics of causal agents and vectors of diseases and disorders in animals. E	Exam	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.01.05.a.</b> Explain the clinical significance of common veterinary methods and treatment (e.g., aseptic techniques, antibiotic use, wound management, etc.).	Exam	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.07.02. Performance Indicator: Analyze biosecurity measures utilized to protect the welfare of animals</b>		
AS.07.02.01.a. Summarize the importance of biosecurity to the animal industry.	Exam	
AS.07.02.02.a. Identify and describe zoonotic diseases including their historical significance and potential future implications.	Exam	
<b>AS.08.02. Performance Indicator: Evaluate the effects of environmental conditions on animals and create plans to ensure favorable environments for animals.</b>		
AS.08.02.01.a. Identify and summarize methods for ensuring optimal environmental conditions for animals.	Exam	HS.LS4-6
<b>CS.01.02. Performance Indicator: Examine technologies and analyze their impact on AFNR systems.</b>		
CS.01.02.01.c. Solve problems in AFNR workplaces or scenarios using technology.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes	
<b>CS.02.01. Performance Indicator: Research geographic and economic data related to AFNR systems.</b>		
CS.02.01.01.c. Evaluate geographic data and select necessary data sets to solve problems within AFNR systems.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes	
CS.02.01.02.b. Analyze a set of economic data and analyze how it impacts an AFNR system.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes	
<b>CS.06.01. Performance Indicator: Explain foundational cycles and systems of AFNR.</b>		
CS.06.01.02.c. Evaluate AFNR systems and predict how the systems may change or adapt in the future of food, fiber and fuel production based on current trends and data.	Entire event	
<b>CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.</b>		
CRP.01.01.01.a. Define personal responsibility and distinguish how it applies in workplace and community (e.g., make educated choices, listen and follow directions, ask for help when needed, meet expected standards, etc.).	Entire event	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.01.02 Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.</b>		
CRP.01.02.01.b. Assess the pros and cons of personal decisions based on their anticipated impact on self and others.	Keep and cull classes	
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
CRP.02.01.01.c. Apply academic knowledge and skills to solve problems in the workplace and reflect upon the results achieved.	Entire event	
CRP.02.01.02.c. Apply academic knowledge and skills to solve problems in the community and reflect upon results achieved.	Entire event	
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
CRP.02.02.01.c. Apply technical concepts to solve problems in the workplace and reflect upon the results achieved.	Entire event	
CRP.02.02.02.c. Apply technical concepts to solve problems in the community and reflect upon results achieved.	Team activity – breeding activity	
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.01.b. Analyze use of verbal and non-verbal communication strategies in workplace situations.	Team activity process Oral reasons	
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Team activity process Oral reasons	
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
CRP.05.01.02.c. Evaluate workplace and community situations and recommend the information and resources needed to support good decisions.	Team activity – breeding activity Team activity – marketing activity Keep and cull classes	
CRP.05.01.03.c. Synthesize information and resources and apply to workplace and community situations to make positive decisions.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.05.02. Performance Indicator: Make, defend and evaluate decisions at work and in the community using information about the potential environmental, social and economic impacts.</b>		
CRP.05.02.01.c. Evaluate and defend decisions applied in the workplace and community situations.	Oral reasons	
CRP.05.02.02.c. Evaluate workplace and community situations and propose decisions to be made based upon the positive impact made on environment, social and economic areas.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes	
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
CRP.06.01.02.c. Devise strategies (e.g., ask questions, brainstorm ideas, present facts and information etc.) to challenge common assumptions in workplace and community situations.	Team activity process	
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Entire event	
CRP.08.01.02.b. Assess solutions to workplace and community problems for evidence of reason, logic and consideration of multiple perspectives.	Entire event	
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.01.b. Assimilate and prioritize potential solutions to solve problems in the workplace and community. TABA, TAMA, KC, P	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes	
CRP.08.02.02.c. Evaluate and select solutions with greatest potential for success to solve workplace and community problems.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes	
<b>CRP.08.03. Performance Indicator: Establish plans to solve workplace and community problems and execute them with resiliency.</b>		
CRP.08.03.02.c. Implement and evaluate plans to solve workplace and community problems.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.09.03. Performance Indicator: Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community (e.g., positively influencing others, effectively communicating, etc.).</b>		
CRP.09.03.02.c. Model respectful and purposeful behaviors that contribute to positive morale and culture in the workplace and community (e.g., effectively communicating, recognizing accomplishments of others, etc.).	Team activity process	
<b>CRP.10.03. Performance Indicator: Assimilate input and/or advice from experts (e.g., counselors, mentors, etc.) to plan career and personal goals in a chosen career area.</b>		
CRP.10.03.01.c. Devise strategies to gather answers and information from career area experts to plan and execute goals.	Entire event	
CRP.10.03.02.c. Assimilate input and advice from experts and formulate plans to implement into career and personal goals for chosen career areas.	Entire event	
<b>CRP.11.01. Performance Indicator: Research, select and use new technologies, tools and applications to maximize productivity in the workplace and community.</b>		
CRP.11.01.01.b. Analyze advantages and disadvantages of new technologies, tools and applications to maximize productivity in the workplace and community.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes	
CRP.11.01.02.b. Select, apply and use new technologies, tools and applications in workplace and community situations to maximize productivity.	Team activity – breeding activity Team activity – marketing activity Livestock evaluation and placing Keep and cull classes	
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
CRP.12.01.01.c. Evaluate the effectiveness of team-oriented projects at work and in the community and make recommendations for future improvements.	Team activity process	
CRP.12.01.02.c. Devise and implement methods to obtain feedback from team members on their experiences after completing workplace and community projects.	Team activity process	
CRP.12.01.03.c. Evaluate personal level of cultural and global competence and implement plans for growth and improvement in workplace and community situations.	Team activity process	



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# MARKETING PLAN

2017-2021



NATIONAL FFA

CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS



## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](http://FFA.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The marketing plan event is designed to assist students with developing practical skills in the marketing process through the development and presentation of a marketing plan. Students research and present a marketing plan for an agricultural product, supply or service. It is intended as a competitive activity involving a team of three persons working for an actual local agribusiness, either an existing or start-up enterprise, to support the outreach mission of FFA.*

Local chapters may involve the entire chapter, a specific agriculture class or a three person team in the development of the plan. A three person team will present the results of primary research involving the local community that provides a reasonable and logical solution to a marketing problem. Understanding of the marketing process is manifested in the marketing plan, which is presented in a written plan and in a live presentation to qualified judges. Though only three individuals are on a team, any number of students may assist with the primary and secondary research.

## Objectives

Through participation in the national event, participants will be able to:

- To encourage students to demonstrate an understanding of the marketing plan process.
- To provide an activity to focus student and community attention on the agrimarketing curriculum.
- To encourage students to explore and prepare for possible careers in agrimarketing.
- To help develop partnerships and improve relations between industry, local FFA chapters and the general public.

## Event Rules

A team representing a state will consist of three members listed at the state and national levels from the same chapter. Only the three certified team members can take an active role in the presentation of materials and use of technology during the presentation.

It is highly recommended that participants wear FFA Official Dress for this event.

At least three qualified judges will be used. Judges should be selected to represent a mix of industry, education and communication and will have a sufficient understanding of the marketing planning process.

- The judges' written evaluations will be distributed at the awards ceremony.
- Teams will receive their rank for the written plans.
- A timekeeper will be provided.

## Event Rules

### EQUIPMENT

Equipment provided at the event site:

- Two tripod easels
- One LCD projector with standard VGA cable
- One screen
- One AV cart including power strip and extension cord
- One table
- Three chairs

Students should not assume there will be Internet connectivity at the event site. If teams plan to use Internet resources, it is recommended that they are embedded into the media presentations.

It is the responsibility of the team to provide any additional equipment.

### WRITTEN PLAN (100 POINTS)

#### Instructions

A marketing plan should be focused on the end consumer. This is not a business plan.

- Teams should select an actual local agribusiness, either an existing or start-up enterprise, that serves the community and decide on the product or service for the marketing plan. Teams should work with an off-campus organization. They should not use their chapter as a client.
- Emphasis should be placed on the “value added” concept using marketing techniques to increase the value of products or services.
- A marketing plan is concerned with the future. Historical information is very valuable, but the actual plan must be a projection. A plan presented in the current year should be

developed for the following year. A three-year timeframe may be needed, which would mean the inclusion of the two years following the current year.

- The project outline should include the following aspects of the marketing process:
  - **Brief description of product or service attributes: size, quality, etc. (5 points)**
  - **Market analysis (30 points)**
    - Client's status in current market
    - Trends in the industry
    - Buyer profile and behavior
    - Competition's SWOT analysis
    - Product's/client's SWOT analysis
    - Primary research results (surveys, focus groups, interviews)
  - **Business proposition (20 points)**
    - Develop a mission statement
    - Make key planning assumptions (cite sources of information)
    - Have short and long-term goals – must be measurable, specific, attainable and have completion dates
    - Identify target market – specific market segments which achieve the goals
  - **Strategies and action plan (25 points)**
    - Product
    - Price
    - Place
    - Promotion
    - Position
  - **Projected budget (10 points)**

The budget should be future oriented and include the current year plus two additional years in advance.

    - Cost of strategies
    - Pro forma income statement which details the realistic costs and returns of the marketing strategies
    - Calculate the financial return of the marketing plan

- **Evaluation (5 points)**
  - Benchmarks to track progress toward goals
  - Identify tools to measure established benchmarks
  - Recommendations for alternative strategies, if benchmarks are not reached
- **Technical and business writing skills (5 points)**

### Procedures

A copy of the written plan, in PDF format (no larger than 20 megabytes) must be uploaded by Sept. 1, 5 p.m. Eastern Standard Time.

- A penalty of 10 percent will be assessed for documents received after the Sept. 1 upload deadline.
- If written plan is not received seven days after the upload deadline, the team may be subject to 25 point deduction. States qualifying after the Sept. 1 deadline will have ten days from state qualifying event date to submit their written plan.
- State name and chapter number **MUST** be on the written plan title page. If not included, a penalty will be assessed to the written plan.
- In addition, no chapter certification changes will be accepted after Sept. 1 for marketing plan.

The document should not exceed eight single-sided, 8.5"x11" pages and must be ten point or larger type size. Different formats and page sizes can be used as long as the document does not exceed the equivalent of eight single-sided, 8.5" x 11" pages. A five point deduction will be applied to all marketing plans that do not follow these guidelines.

- Title page - one page
  - Project title
  - State name
  - Chapter name
  - Chapter number
  - Year

- Text and appendices - seven pages
  - Marketing plan
  - Surveys
  - Graphs
  - Maps
  - Promotional pieces
- Written expression is important. Attention should be given to language, general appearance, structure and format.

### **LIVE PRESENTATION (200 POINTS)**

The team assumes the role of a marketing consultant. The judges assume the role of the selected client.

Each team will be allowed five minutes to set up before their 15 minute time allowance begins. After the presentation, teams are required to reset the equipment as they found it.

In the case of equipment failure, every effort will be made to rectify the problem as quickly as possible; however, at the judges' discretion, a team may be asked to move forward with the presentation. A back-up plan is recommended.

The live presentation should not exceed fifteen minutes. Five points will be deducted from the final score for each minute or major fraction thereof, over fifteen minutes for the presentation. The timekeeper shall be responsible for keeping an accurate record of time.

Each member of the team should participate in the question and answer session.

- The preliminary presentation will be followed by five minutes maximum of clarifying questions.
- During the semifinal round, there will be seven minutes maximum of both clarifying and general marketing questions. A minimum of three general marketing questions will be asked.

- In the final round, the presentation will be followed by ten minutes maximum of both clarifying and general marketing questions.

Visual aids are only limited by your imagination. Do not assume that the lights can be adjusted or the competition room can be drastically remodeled. Scoring will be based on how effectively visual aids are used, not how elaborate they are. Remember that visual aids should enhance and clarify what the speakers are saying; not replace them. Visual aids, i.e., flyers, promotional materials, webpage, advertisements, mailers, etc., should support the marketing effort and not the product itself. If props don't enhance the presentation, they should not be used.

Before the presentation, teams are allowed to hand judges one single-sided, 8.5"x11" page with changes/corrections to the written plan.

No other handouts or samples are allowed.



## Scoring

*Teams will be ranked in numerical order on the basis of the final score to be determined by each judge without consultation.*

The judges' ranking of each team then shall be added, and the winner will be the team whose total ranking is the lowest. Other placings will be determined in the same manner (low rank method of selection). All event scorecards are at the end of this chapter of the handbook.

## TIEBREAKER

Ties will be broken based on the greatest number of low ranks. Team low ranks will be counted and the team with the greatest number of low ranks will be declared the winner. If a tie still exists, then the event superintendent will rank the teams' written plan scores. The team with the lowest rank from the response to questions will be declared the winner. If a tie still exists then the team's raw scores will be totaled. The team with the greatest total of raw points will be declared the winner.



## Awards

*Awards will be presented to individuals and/or teams based upon their rankings at the awards ceremony.*

Teams participating in the preliminary round will receive a bronze placing, teams continuing on to the semifinal round will receive a silver placing and all teams competing at the final round will receive a gold placing. Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

## Resources

This list of references is not intended to be all-inclusive. Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

- National FFA Core Catalog
  - National Career Development Event Questions and Answers: [FFA.org](http://FFA.org)
  - Power of Demonstration DVD: <http://shop.FFA.org>
- Agricultural Marketing Resource Center: <http://www.agmrc.org/>
- Final Hall Presentations



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Written Marketing Plan Rubric

100 points

CHAPTER			STATE		TEAM NUMBER	
INDICATOR	Very strong evidence of skill present 5–4 points	Moderate evidence of skill present 3–2 points	Strong evidence of skill not present 1–0 points	Points Earned	Weight	Total Points
Description of product/client status	The plan contains details of the products/services; from the customer's point of view, and identifies key competitors and how the product/service is positioned to compete.	The plan describes the products/services; however, detail on the features, benefits, and competitors is lacking.	Little to no information is provided on the product /service, its features and benefits, or its competitors.		x 1	
Market Analysis						
Client's status in current market	Information is thoroughly and clearly reported, including such things as the type of product/service, current marketing efforts, current knowledge about customers and competitors, etc.	Information is for the most part, thoroughly and clearly reported. But some information that may be critical to the marketing plan is missing.	Information is provided, but there is a great deal of potentially important information missing.		x 1	
Industry trends	Describes how major trends and information helped identify immediate opportunity.	Describes major trends that could impact this industry in the near future.	Gives a brief history of the industry, but does not demonstrate understanding of trends.		x 1	
Buyer profile and behavior	Describes in-depth the buyer in the customer profiles buying roles, buying behavior, and buyer decision making process.	Briefly describes the buyer in the customer profiles buying roles, buying behavior, and buyer decision making process.	The buyer profile section is incomplete.		x 1	
Competition's SWOT analysis	A thorough SWOT analysis is provided, and reasoning for each item in the SWOT is provided and logical.	SWOT analysis is provided, but there are some missing points and reasoning for each item is not always thoroughly provided and/or logical.	SWOT analysis is provided, but there are missing points and there is no reasoning provided for the items.		x 1	

Marketing Plan

Written Marketing Plan Rubric continued

INDICATOR	Very strong evidence of skill present 5–4 points	Moderate evidence of skill present 3–2 points	Strong evidence of skill not present 1–0 points	Points Earned	Weight	Total Points
<b>Product/client's SWOT analysis</b>	A thorough SWOT analysis is provided, and reasoning for each item in the SWOT is provided and logical.	SWOT analysis is provided, but there are some missing points and reasoning for each item is not always thoroughly provided and/or logical.	SWOT analysis is provided, but there are missing points and there is no reasoning provided for the items.		x 1	
<b>Primary Research results</b> (survey, focus groups, interviews)	Excellent plan for collection of data justified with many facts from current business environment.	Adequate data collection plan justified with a few facts from business environment.	Data collection plan is unorganized and not supported by business environment.		x 1	
<b>Business Proposal</b>						
<b>Mission statement</b>	Useful mission statement that is relevant to the business.	Mission statement is not totally relevant to the business.	Irrelevant use, not matching business use		x 1	
<b>Key planning assumption</b>	Identifies and validates key assumptions in the strategy.	Identifies and validates most of the key assumptions in the strategy.	Does not surface the key assumptions or validation for the strategy.		x 1	
<b>Short and long-term goals</b>	Short- and long-term business goals are attainable and time-bound.	Short- and long-term business goals may not be attainable or they're not time-bound.	Goals are missing or are irrelevant to the business.		x 1	
<b>Target market</b>	Clearly identified by demographics and product/service meets needs/wants of target group.	Somewhat identified by demographics and product/service may meet needs/wants of target group.	Not identified by demographics and product/service does not meet needs/wants of target group.		x 1	
<b>Strategies and Action Plan</b>						
<b>Product</b>	Clearly evident what product/service is being provided.	Somewhat evident what product/service is being provided.	Unclear what product/service is being provided.		x 1	
<b>Price</b>	Includes the pricing structure and explains why/how these prices were determined.	Includes the pricing structure but does not explain how the prices were determined.	Does not provide complete pricing structure; some products or services are missing. No rationale for the pricing strategy is given.		x 1	
<b>Place</b>	Location is very convenient for target market.	Location is accessible for target market.	Location is not very convenient for target market.		x 1	

Marketing Plan

Written Marketing Plan Rubric continued

INDICATOR	Very strong evidence of skill present 5–4 points	Moderate evidence of skill present 3–2 points	Strong evidence of skill not present 1–0 points	Points Earned	Weight	Total Points
Promotion	Promotional material makes target market clearly aware of what the product/service is, what it does and where it is available.	Promotional material makes target market somewhat aware of what the product/service is, what it does and where it is available.	Promotional materials does not make target market aware of what the product/service is, what it does and where it is available.		x 1	
Position	Unique selling position (USP) in the market clearly determined.	Unique selling position (USP) in the market is somewhat determined.	Unique selling position (USP) in the market is not determined.		x 1	
<b>Budget</b> ( income statement, costs, returns, accuracy)						
	Income statement is complete and demonstrates a reasonable return on investment (ROI); all calculations are accurate and accurately categorized.	Income statement is complete and demonstrates a questionable return on investment (ROI); most calculations are accurate and accurately categorized.	Income statement is not complete and demonstrates an unreasonable return on investment (ROI); most calculations are inaccurate and inaccurately categorized.		x 2	
<b>Evaluation</b>						
	Evaluates data or criteria in a way that reflects an in-depth understanding of the product/service.	Evaluates data or criteria in a way that reflects some basic understanding of the product/service.	Has difficulty evaluating important data or criteria, which demonstrate a lack of understanding of the product/service.		x 1	
<b>Technical Business Writing</b>						
	The plan contains no more than five spelling or grammatical errors. If any sources have been referenced, proper citations have been used. The plan is formatted according to the handbook.	The plan contains more than five spelling or grammatical errors. Citations, if needed, have been cited correctly. The plan is formatted according to the handbook.	The plan has many spelling or grammatical errors. No citations have been provided. The plan has not been formatted appropriately.		x 1	
Deduction: Written plan received after post-mark. Deduct 10 percent of possible plan score or 10 points.						
Deduction: Five points deducted for incorrect written plan format.						
<b>WRITTEN MARKETING PLAN TOTAL POINTS</b>						



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Marketing Plan Presentation Rubric

200 points

CHAPTER

STATE

TEAM NUMBER

INDICATOR	Very strong evidence of skill present 5–4 points	Moderate evidence of skill present 3–2 points	Strong evidence of skill not present 1–0 points	Points Earned	Weight	Total Score
<b>Marketing Process</b> (Understanding and clear presentation of the six parts of the marketing plan)						
<b>Brief description/client status</b>	Clear and engaging description of a want or unmet need in the market using data to support claims is presented.	Somewhat clear description of a want or unmet need in the market is presented.	Unclear description of a want or unmet need in the market is presented.		x 1	
<b>Marketing analysis</b> <ul style="list-style-type: none"> <li>Status in market</li> <li>Industry trends</li> <li>Buyer profile</li> <li>SWOT analysis</li> </ul>	Clear and compelling narrative that seamlessly integrates all important market research concepts from the written plan into the presentation.	Clear narrative that integrates some market research concepts from the written plan into the presentation.	No clear narrative or demonstration of market research concepts from the written plan in the presentation.		x 2	
<b>Primary research</b>	Market is clearly explained using primary market research tools to persuasively support that the business in the presentation.	Market is somewhat explained and demonstrates the use of some primary market research tools to support the business in the presentation.	Market is not explained and do not demonstrate the use of primary market research tools in the presentation.		x 7	
<b>Business proposal</b> <ul style="list-style-type: none"> <li>Mission statement</li> <li>Key planning assumptions</li> <li>Goals</li> <li>Target market</li> </ul>	Clear and compelling narrative that seamlessly integrates all important business concepts from the written plan into the presentation.	Clear narrative that integrates some business concepts from the written plan into the presentation.	No clear narrative that demonstrates business concepts from the written plan in the presentation.		x 3	
<b>Strategies/action plan</b> <ul style="list-style-type: none"> <li>Product</li> <li>Price</li> <li>Place,</li> <li>Promotion, Position</li> </ul>	Strategies/actions plans from the written plan are pervasively included into the presentation.	Some strategies/action plan from the written plan are included in the presentation.	No clear presentation of strategies/action plans are included in the presentation.		x 6	

Marketing Plan

Marketing Plan Presentation Rubric continued

INDICATOR	Very strong evidence of skill present 5–4 points	Moderate evidence of skill present 3–2 points	Strong evidence of skill not present 1–0 points	Points Earned	Weight	Total Score
<b>Budget</b> <ul style="list-style-type: none"> <li>ROI</li> <li>Cost of strategies</li> </ul>	Clear and compelling narrative that seamlessly integrates all important financial concepts from the written plan into the presentation.	Clear narrative that integrates some financial concepts from the written plan into the presentation.	No clear narrative or demonstration of financial concepts from the written plan in the presentation.		x 5	
<b>Evaluation</b> <ul style="list-style-type: none"> <li>Benchmarks</li> <li>Measuring tools</li> <li>Alternative strategies</li> </ul>	Clear and compelling narrative that seamlessly integrates all of the important evaluation information from the written plan is included in the presentation.	A narrative that integrates some evaluation information from the written plan is included in the presentation.	No clear demonstration of evaluation information from the written plan is included in the presentation.		x 2	
<b>Communication</b>	Speaks with confidence, presence, poise and eye contact; excellent use of grammar enhances the entire presentation. All members participated equally.	Some problems with pauses, pacing and/or eye contact and language; includes grammar that is average. Two members took an active role in the presentation.	Reads from notes, rarely looks at audience; has problems with pronunciation and/or very low level of grammar is used. All members did not participate equally		x 4	
<b>Question and Answers</b>	Knowledge is evident and provides a clear, concise well-thought out answer to the questions	Provides answers that are somewhat unclear and at times does not answer questions.	Seems caught off guard by questions and either does not answer the question or provides a rambling answer		x 10	
<b>Presentation Total Points</b>						
<b>Deduction: Five points for each minute, or major fraction thereof, presentation went over 15 minutes.</b>						
<b>Written Plan Total Points</b>						
<b>Sub-total (written and presentation)</b>						
<b>NET TOTAL POINTS</b>						
<b>TEAM RANKING</b>						





NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Agriculture, Food and Natural Resources Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.03.01. Performance Indicator: Develop, assess and manage cash budgets to achieve AFNR business goals.</b>		
<b>ABS.03.01.01.b.</b> Examine and interpret cash budgets for AFNR businesses.	Written plan	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.03.01.01.c.</b> Develop cash budgets for AFNR businesses.	Written plan	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.03.01.02.b.</b> Examine and identify strategies to manage components of cash budgets to minimize liabilities and maximize profit in AFNR businesses (e.g., delayed payment of expenses, prepayment of expenses, etc.).	Written plan	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.03.01.02.c.</b> Predict the impact of management decisions on cash budgets in AFNR businesses.	Written plan	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.05.01. Performance Indicator: Analyze the role of markets, trade, competition and price in relation to an AFNR business sales and marketing plans.</b>		
<b>ABS.05.01.01.b.</b> Analyze the role of trade and price in the market structure as it relates to AFNR businesses.	Written plan	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13
<b>ABS.05.01.01.c.</b> Evaluate and predict future trends for a specific AFNR product as related to markets, trade and price (e.g., corn, oil, wheat, etc.).	Written plan	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.05.01.02.b.</b> Compare and contrast different forms of market competition and how they can be applied to different AFNR businesses.	Written plan	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13
<b>ABS.05.01.02.c.</b> Design and conduct experiments to determine market competition effectiveness of different AFNR businesses.	Written plan	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13
<b>ABS.05.03. Performance Indicator: Assess marketing principles and develop marketing plans to accomplish AFNR business objectives.</b>		
<b>ABS.05.03.01.b.</b> Assess alternative marketing strategies as related to marketing principles for AFNR businesses (e.g. value-adding, branding, niche marketing, etc.).	Written plan	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>ABS.05.03.01.c.</b> Deconstruct and analyze current AFNR marketing plans to determine the effectiveness of implementation of marketing principles and alternative marketing strategies.		AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.05.03.02.b.</b> Compare and contrast the strategies of marketing for products and services used in AFNR businesses (e.g., direct marketing, commodities, etc.).	Written plan	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>ABS.05.03.02.c.</b> Devise plans to implement and evaluate marketing strategies for products and services used in AFNR businesses	Written plan	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>ABS.05.03.03.b.</b> Perform a market analysis to gather information for marketing plans for AFNR businesses (e.g., evaluation of competitors, customers, domestic and international policy, regulations and rules, standards, etc.).	Written plan	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.05.03.03.c.</b> Construct comprehensive marketing plans for AFNR businesses.	Written plan	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>CS.02.01. Performance Indicator: Research geographic and economic data related to AFNR systems.</b>		
<b>CS.02.01.02.b.</b> Analyze a set of economic data and analyze how it impacts an AFNR system.	Written plan	
<b>CS.02.01.02.c.</b> Devise a strategy to solve a problem in an AFNR system using a set of economic data.	Written plan	
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
<b>CRP.04.01.01.b.</b> Analyze use of verbal and non-verbal communication strategies in workplace situations.	Presentation	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
<b>CRP.04.01.01.c.</b> Evaluate other's verbal and non-verbal communications (e.g., speeches, presentations, oral reports, etc.) and propose recommendations for improvement in clarity, logic, purpose and professionalism.	Presentation	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
<b>CRP.04.01.02.b.</b> Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Presentation	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
<b>CRP.04.01.02.c.</b> Evaluate personal strengths and areas for growth with regard to speaking formally and informally with clarity, logic, purpose and professionalism, and identify ways to improve.	Presentation	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.</b>		
CRP.04.02.01.b. Compare and contrast the structure of different forms of written communication.	Written plan	AFNR Career Cluster, Statement 7
CRP.04.02.01.c. Evaluate the effectiveness of different forms of written communication for achieving their intended purpose.	Written plan	AFNR Career Cluster, Statement 7
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Presentation	
CRP.04.03.01.c. Evaluate personal effectiveness and devise a plan to improve active listening skills.	Presentation	
CRP.04.03.02.b. Assess active listening strategies by observing others in formal and informal settings.	Presentation	
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	Presentation	
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
CRP.05.01.01.b. Analyze how the process of decision making is used in workplace and community situations.	Written plan	
CRP.05.01.01.c. Evaluate workplace and community decision-making processes and devise strategies for improvement.	Written plan	
CRP.05.01.02.b. Analyze past workplace and community situations to determine if appropriate information and resources were used to make an effective decision.	Written plan	
CRP.05.01.02.c. Evaluate workplace and community situations and recommend the information and resources needed to support good decisions.	Written plan	
CRP.05.01.03.b. Analyze workplace and community decisions and assess the information and resources used to make those decisions.	Written plan	

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
CRP.05.01.03.c. Synthesize information and resources and apply to workplace and community situations to make positive decisions.	Written plan	
<b>CRP.05.02. Performance Indicator: Make, defend and evaluate decisions at work and in the community using information about the potential environmental, social and economic impacts.</b>		
CRP.05.02.01.b. Apply a structured decision-making process to improve workplace and community situations.	Written plan	
CRP.05.02.01.c. Evaluate and defend decisions applied in the workplace and community situations.	Written plan	
CRP.05.02.02.b. Assess past decisions made in workplace and community and analyze their effects on environmental, social and economic situations.	Written plan	
CRP.05.02.02.c. Evaluate workplace and community situations and propose decisions to be made based upon the positive impact made on environment, social and economic areas.	Written plan	
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
CRP.06.01.01.b. Synthesize information, knowledge and experiences to generate ideas for workplace and community situations.	Entire event	
CRP.06.01.01.c. Evaluate workplace and community situations and devise strategies to apply original ideas.	Written plan	
CRP.06.01.02.b. Analyze how assumptions can impact outcomes in a variety of workplace and community situations.	Written plan	
CRP.06.01.02.c. Devise strategies (e.g., ask questions, brainstorm ideas, present facts and information etc.) to challenge common assumptions in workplace and community situations.	Written plan	
<b>CRP.07.01. Performance Indicator: Select and implement reliable research processes and methods to generate data for decision-making in the workplace and community.</b>		
CRP.07.01.01.b. Analyze how different research methods are used to generate data in a variety of situations.	Written plan	

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
CRP.07.01.01.c. Evaluate business' and organizations' use of research methods and processes and propose recommendations for improvement.	Written plan	
CRP.07.01.02.b. Assess the positives and negatives of using different research strategies and methods to generate data for workplace and community decisions.	Written plan	
CRP.07.01.02.c. Design plans for use and implementation of reliable research methods to generate data for decision making in workplace and community situations.	Written plan	
<b>CRP.07.02. Performance Indicator: Evaluate the validity of sources and data used when considering the adoption of new technologies, practices and ideas in the workplace and community.</b>		
CRP.07.02.01.b. Assess data sources for reliability and validity.	Written plan	
CRP.07.02.01.c. Propose valid and reliable data sources to use when considering the adoption of new technologies, practices and ideas.	Written plan	
CRP.07.02.02.b. Assimilate data to assist in making a decision about the adoption of a new technology, practice or idea by workplaces and community organizations.	Written plan	
CRP.07.02.02.c. Create and defend proposals for new technologies, practices and ideas using valid and reliable data sources.	Written plan	
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Whole event	
CRP.08.01.01.c. Evaluate how applying critical thinking skills can impact workplace and community situations.		
CRP.08.01.02.b. Assess solutions to workplace and community problems for evidence of reason, logic and consideration of multiple perspectives.	Whole event	
CRP.08.01.02.c. Devise strategies to apply reason, logic and input from multiple perspectives to solve workplace and community problems.	Whole event	

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.08.02.</b> Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.	Whole event	
<b>CRP.08.02.01.b.</b> Assimilate and prioritize potential solutions to solve problems in the workplace and community.	Whole event	
<b>CRP.08.02.01.c.</b> Devise strategies to evaluate the effectiveness of solutions for resolving workplace and community problems.	Whole event	
<b>CRP.08.02.02.b.</b> Apply decision-making processes to generate possible solutions to solve workplace and community problems.	Whole event	
<b>CRP.08.02.02.c.</b> Evaluate and select solutions with greatest potential for success to solve workplace and community problems.	Whole event	
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
<b>CRP.12.01.01.b.</b> Formulate action plans to complete team-oriented projects in the workplace and community, including plans for personal contributions.	Whole event	
<b>CRP.12.01.01.c.</b> Evaluate the effectiveness of team-oriented projects at work and in the community and make recommendations for future improvements.	Whole event	
<b>CRP.12.01.02.b.</b> Apply consensus building techniques to accomplish results in team-oriented situations.	Whole event	
<b>CRP.12.01.02.c.</b> Devise and implement methods to obtain feedback from team members on their experiences after completing workplace and community projects.	Whole event	
<b>CRP.12.01.03.b.</b> Assess the need and benefit for cultural and global competency in team settings at work and in the community.	Whole event	
<b>CRP.12.01.03.c.</b> Evaluate personal level of cultural and global competence and implement plans for growth and improvement in workplace and community situations.	Whole event	





# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

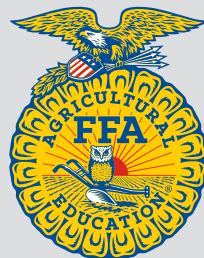
The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# MEATS EVALUATION AND TECHNOLOGY

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

### IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Objectives

- Develop employment skills for students who are interested in exploring or pursuing career opportunities in the meat animal industry.
- Assist the local agricultural education instructor in motivating students to become knowledgeable consumers of meat animal products and/or involved in the industry of meat animal marketing and merchandising.
- Develop broader analytical skills, critical thinking strategies and an understanding of appropriate meat terminology for high school students.
- Develop the ability to evaluate meat animal products in order to optimize economic returns to producers and industry as well as to meet the needs of the consumer.
- Develop cooperation and communication skills.

## Event Rules

*Each team will be comprised of three members. All scores will be used to determine the total team score.*

Participants will report for instructions to the team orientation meeting at the time and place indicated in the current year's team orientation packet.

### CLOTHING

Participants must come to the event prepared to work in a cold storage facility (approximately 0° C) for approximately three hours. Participants are required to wear protective clothing:

- Hard hats
- Clean, white frocks
- Hairnets
- Warm clothing and proper footwear (must be closed toed footwear)
- No jewelry or exposed body piercings or alterations
- No chewing of gum or candy

While official dress is not worn during the event, it is recommended for awards presentation activities.

All participants are expected to be prompt at their stations throughout the event; no provision will be made for tardiness and will cause late participants to lose event points.

No conversation will be allowed between participants after the individual activities begin. Conversation among participants constitutes disqualification.

Participants and official judges are to make their placing and identifications without handling the exhibit.

Two minutes stand back time on placing classes will be utilized when applicable.

## Event Format

The event is comprised of the following activities:

- Individual activities consist of written exam, retail meat cuts identification, Beef Quality and Yield Grading, evaluation classes, ten questions (from two of the evaluation classes).
- Team activities consists of meat formulation problem solving, value based pricing, anatomy, keep/cull, retail identification scenario and/or food safety/sanitation scenario.

## EQUIPMENT

- Each participant will be provided two No. 2 pencils, a clean clipboard and an electronic calculator.
- Participants must not bring any blank paper, notes, USDA Beef Grading worksheet, any electronic communication items, purses or backpacks. Blank paper, USDA Beef Grading worksheet sheets and scan forms will be provided by the committee.

## INDIVIDUAL ACTIVITIES

### BEEF QUALITY AND YIELD GRADING

Participants will quality grade and yield grade two to four beef carcasses (20 points per carcass).

**40 POINTS (TWO CARCASSES)**

**60 POINTS (THREE CARCASSES)**

**80 POINTS (FOUR CARCASSES)**

- **Quality Grading:** Participants may use the worksheet provided for Beef Grading. The participant should complete the section of answers for quality grading on the computerized scorecard. Ten points are awarded for each correct grade. Each will be scored for the applicable adjacent grade as follows: 10, 8, 5, 0. However, in the case of “B” Maturity, Select High and Select Low will be awarded zero points.

- **Yield Grading:** Participants may use the worksheet provided for Beef Grading. Participant is to calculate the final “Yield Grade” to the nearest one-tenth of a grade. Ten points are awarded for each correct grade. The participant should complete the section of answers for yield grading on the computerized scorecard.

Full points will be earned for 1/10th above or below official yield grade. A two point deduction will be made for 2/10th – 5/10th above or below official yield grade. A five point deduction for 6/10th – 9/10th above or below official yield grade. Zero points will be awarded for answers one yield grade above or below the official yield grade.

Official United States Department of Agriculture Yield Grades are 1.0 – 5.9.

### **SCORING EXAMPLE**

Official Yield Grade (FYG Official) = 2.2

FYG 2.1- 2.3 = full points (10)

FYG 1.7 – 2.0 or 2.4-2.7 = minus 2 points

FYG 1.3 – 1.6 or 2.8 – 3.1 = minus 5 points

Zero points for any FYG a full yield grade above or below official FYG



## **EVALUATION CLASSES (200–400 POINTS)**

Four to eight evaluation classes will be formatted as placing, keep/cull and/or value based pricing. Class exhibits and formats will be as follows:

- Carcasses (beef or pork)
  - Backfat Recommendations for Placing Unribbed Pork Carcasses
- Wholesale/subprimal cuts (beef, pork, lamb)
- Retail cuts (beef, pork, lamb)
- Processed meats (cured/smoked center ham slices, shank or rump portion of ham, boneless ham, sliced bacon, fresh pork sausage, smoked sausage)
  - Reference: Guidelines for placing processed meats

### **Placing class (50 points/class)**

Class will be comprised of four exhibits that must be ranked first to last.

### **Keep/cull class (50 points/class)**

Participants will be provided with a scenario that is an industry standard or situation. Participants will be given time to review the scenario and then time to evaluate the meat product and make a selection based on the provided information.

- Reference: Keep Cull Class Example

### **Value-based pricing (50 points/class)**

Participants will place four exhibits (carcasses or wholesale cuts or subprimal cuts) based upon value (per hundred weight) derived from the pricing structure provided on the pricing sheet. The prices will reflect current market values. Pricing sheet will be provided to each participant.

- Reference: Value Based Pricing Class Example

## **QUESTION CLASSES (50 POINTS)**

Two of the evaluation classes will be selected for questions. A total of ten questions will be asked covering both classes; typically five questions per class but it could vary if needed to make the best possible questions. Participants will be given a short time period to study their notes before answering questions after they have observed and placed the classes. Participants will not be able to use their notes when answering questions. Questions will be worth five points each.

### **Guidelines for Questions:**

- All questions must be written in a manner that they can be answered by only one of the following responses: 1, 2, 3, 4
- Questions should pertain to the criteria and differences used in placing the class (Trimness, Muscling, Quality and/or Sex). Questions that do not relate to the placing of the class or are not significant to the overall evaluation are not desirable questions and should not be used if possible.
- When asking questions about the differences within a class, the differences must be visually distinguishable.
- A separate scan form will be used for questions during the event.

## **RETAIL MEAT CUTS IDENTIFICATION (210 POINTS)**

Participants will identify 30 retail meats cuts found on the “Meats Identification Card.” The official key (Retail Cuts Coding) is located at the end of this chapter of the hand-book. Only the cuts listed are eligible to be used in this event. Participants will be given one point for correct species identification, two point for correct primal cut identification, one point for correct cookery and three points for correct retail name. Answers will be recorded on a computerized scan form/sheet.



### Clarification of Terms for Retail Identification

**Chop:** Smaller, flat cuts of meat, usually from the pork, veal or lamb rib, loin or shoulder, generally ranging from  $\frac{1}{2}$ " to  $1\frac{1}{2}$ " in thickness. A chop usually is of a size to be a single meal portion.

**Slice:** A section of meat, usually less than one inch thick, taken from the center or either side of center of the leg of pork, lamb or veal.

**Steak:** A flat cut of meat, larger than a chop, ranging from  $\frac{3}{4}$ " to  $1\frac{1}{2}$ " of thickness cut from various parts of a beef carcass, or the shoulder of pork and veal. The size of a steak often is sufficient to provide more than one portion.

**Roast (Meat Cut):** Cuts of meat larger than steaks, chops or slices (usually two or more inches thick). This cut is intended to serve more than two people.

### WRITTEN EXAM (100 POINTS)

Each participant will be given a 50 question written exam relating to meat storage and handling, cookery, nutrition, food safety (HACCP principles, bio-security and personal safety), processed meats, legislation and history, purchasing meat and animal care and handling. Questions could include multiple choice, true/false or situation based questions. Value per question will be based on question type.

- See references for written exam resource material.

## TEAM ACTIVITIES

Each team will be required to complete four problems from the list provided below. Any given area below may be used more than once in any given year. Both product and process will be scored for a total of 220 points.

The committee will have the latitude to select the most appropriate activities each year in regards to the product available.

- **Meat Formulation and/or Quality Control Problem Solving**  
The following criteria are standards for meat formulation in the industry:
  - **Freezing:** Freezing of red meat is considered 28° F and below
  - **Freshness:** Start counting from the date of processing (zero hour) back toward slaughter date. For example, processing Oct. 26 with a 72 hour freshness specification means Oct. 25, 24 and 23 are good dates; Oct. 22 or earlier are unacceptable dates
- Utilizing product, photos or diagrams participants will be asked to identify the following from selected locations on the exhibit
  - Major Muscle groups
  - Major bones
  - Utilizing Retail Identification cuts, the participants will work as a team to solve a meats problem. A scenario will be provided which will allow participants to apply meats concepts to all of cuts from the Meat Identification list
  - Utilizing keep/cull class(es), the participants will work as a team to appraise a class of retail cuts
  - Value Based Pricing scenario (Beef, Pork, and/or Lamb)
- Food safety (HACCP principles, sanitation, safe handling, preparation, cookery and standard operating procedures)

## Scoring

The event will be divided in the following sections and scored as follows:

Individual Activities	Possible Maximum Points
Written exam	100
Retail meat cuts identification (30 cuts)	210
Beef quality and yield grading (2 or 4 carcasses)	40–80
Evaluation of 4–8 classes	200–400
Ten questions (from two of the evaluation classes)	50
Total possible points per individual	600–840
Team activity	220
Total maximum points possible per team	2,020–2,740

## TIEBREAKERS

If ties occur, the following sections of the event will be used in order to determine award recipients:

### INDIVIDUAL

1. Identification retail meat cuts
2. Grading
3. Class questions

### TEAM

1. Team activity score
2. Retail Identification total of the team
3. Grading total of the team
4. Class questions total of the team



## Awards

*Awards will be presented at the awards ceremony to teams as well as individuals based upon their rankings.*

Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

## References

*This list of references is not intended to be all-inclusive.*

Other sources may be utilized and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

- National FFA Core Catalog – [www.shop.FFA.org](http://www.shop.FFA.org)
  - Retail Meat Instructional Materials/Instructor Combo Pack
  - Retail Meat Team Combo Pack
  - Retail Meats Field Guide
  - Retail Meats Flash Cards
  - Meat Identification Tutorial CD-ROM
  - Meat Buyer's Guide
  - NAMP Meat Posters
  - Beef, Lamb, Pork and Veal Cut Charts
  - Meats Evaluation Scan Forms
  - FFA Learn-National FFA CDE Q&A's [www.FFA.org](http://www.FFA.org)
- CEV Multimedia, 1020 SE Loop 289, Lubbock, TX 79404, (800) 922-9965
  - Retail Cuts Identification (DVD)
  - Meat Science and Food Safety (DVD) - written exam resource
- Beef Myology - <http://bovine.unl.edu>
- National Cattlemen's Beef Association, 9110 E. Nichols Ave. #300, Centennial, CO 80112, (303) 694-0305/1-800-368-3138
  - USDA Marbling Photographs
  - Guide to Identifying Meat Cuts
  - <https://store.beef.org/>

*Meats Evaluation and Technology*

- American Meat Science Association (AMSA), 2441 Village Green Place, Champaign, Illinois 61874, (800) 517-2672
  - <http://www.meatscience.org/students/meat-judging-program>
  - Email: [information@meatscience.org](mailto:information@meatscience.org)
  - USDA Marbling Photographs
  - Meat Evaluation Handbook
- Art Services, Inc., 3015 Earl Place, N.E., Washington, D.C., 20018, (202) 526-5607
  - Beef Ribeye Grids
- NASCO, 901 Janesville Avenue, P.O. Box 901, Fort Atkinson, WI 53538-0901, 1-800-558-9595
  - Preliminary Yield Grade Rulers (<http://www.enasco.com/product/C02615N>)
  - Beef and Pork Ribeye Grids
- Example Meats Evaluation Websites of Classes and Materials
  - <http://aggiemeat.tamu.edu/meat-identification-pictures>
  - <http://animalscience.unl.edu/ANSCExtensionMeatScienceLearningAids>

## TEAM PRACTICUM EXAMPLES

### TEAM PRACTICUM EXAMPLE #1 (50 POINTS)

Utilizing carcass, primal or subprimal exhibit, participants will be asked to identify the following from selected locations on the exhibit:

Major muscle groups:

- Longissimus dorsi
- Infraspinatus
- Spinalis dorsi
- Psoas major
- Iuteus medius
- Biceps femoris
- Semitendinosus
- Semimembranosus

Major bones:

- Scapula
- Humerus
- Femur
- Thoracic vertebrae
- Lumbar vertebrae

#### Example Scenario:

Specific areas on one or more carcasses or wholesale/subprimal cuts or retail cuts will be identified. Based on the identified areas, participants will confer with team members to answer the following items.

1. Find the area on the carcass marked “A”. Which of the following muscles can be found within this area of the carcass?
  - a. Biceps femoris
  - b. Longissimus dorsi
  - c. Semimembranosus
  - d. Semitendinosus

2. On the Porterhouse steak at station #1, name the muscle identified by the tag “A”:
  - a. Spinalis dorsi
  - b. Gluteus medius
  - c. Semitendinosus
  - d. Psoas major
3. On the Chuck Roast at station #2, name the bone specified by tag “B”:
  - a. Femur
  - b. Lumbar vertebrae
  - c. Scapula
  - d. Humerus



**TEAM PRACTICUM EXAMPLE #2 (50 POINTS)**

Utilizing the Retail Identification cuts provided, the participants will work as a team to solve a meats problem. A scenario will be provided which will allow participants to apply meats concepts from present cuts.

**Example of possible questions: 2–10 questions**

The Retail Identification cuts utilized in the CDE represent the product you have available in your present meats operation. With this in mind, communicate with your teammates to fill the following orders.

- The organizer of a family reunion is planning the annual event. The family wants a low-cost beef cut that can be cooked, shredded and smothered in BBQ sauce. Which cut is most appropriate?
  - a. Retail Cut #9
  - b. Retail Cut #12
  - c. Retail Cut #23
  - d. Retail Cut #29

**TEAM PRACTICUM EXAMPLE #3 (50 POINTS)**

Utilizing keep/cull class(es), the participants will work as a team to appraise a class of subprimal or retail cuts. A scenario will be provided which will allow participants to make conclusions. Team members will identify the four exhibits to keep and mark it appropriately on a computerized scorecard form to fit the scenario given to them by the officials.

**Example Scenario:**

As a consumer, you arrive at a supermarket meat counter with the objective of selecting ribeye steaks for a social gathering being hosted at your house. The guests include your immediate supervisor from work and her husband. Consequently, you wish to select the steaks that are most juicy, flavorful and tender. Refer to the Keep/Cull section from Individual Activities for further instructions.

**TEAM PRACTICUM EXAMPLE #4 (50 POINTS)**

Value Based Pricing Class (Beef, Pork or Lamb)

**Example Scenario:**

As a team you will review a Grid Pricing Sheet given by the officials. Team members are to evaluate, communicate and reach a conclusion on the correct placing of the class based on the value of the carcasses or wholesale/primal cuts. Refer to the Value Based Pricing Class section from individual activities for more information.

## Individual and Team Activity Examples

### WRITTEN TEST EXAMPLES

#### Sample Questions:

- What is the maximum amount of fat that ground beef may contain?
  - \*A. 30%
  - B. 10%
  - C. 40%
  - D. 20%
- What is the least desirable method of thawing frozen meat?
  - \*A. Defrosting at room temperature
  - B. Defrosting in refrigerator
  - C. Defrosting in a microwave
  - D. Cooking from frozen state

*\*Correct answer*

### MEAT FORMULATION PROBLEM SOLVING

Participants will be given a situational problem involving the least cost formulation of a batch of particular meat products (hamburger, wiener, bologna, etc.). This problem will be worth 50 points and consist of procedural questions and the actual determination of the least cost price.

- **Freezing:** Freezing of red meat is considered 28°F and below.
- **Freshness:** Start counting from the date of processing (zero hour) back toward slaughter date. For example, processing on Oct. 26 with a 72-hour freshness specification means Oct. 25, 24 and 23 are good dates; Oct. 22 or earlier are unacceptable dates.

## Meat Formulation Problem Solving

USDA Food Standards and Labeling Policy for Ground Beef:

- May not contain added fat.
- Maximum total fat 30 percent.
- Cheek meat is permitted up to 25 percent and must be declared in the ingredients statement. For more than 25 percent, show as “Ground Beef and Cheek Meat,” all the same size. Beef of skeletal origin, or from the diaphragm or esophagus (weasand) may be used in the preparation of chopped beef, ground beef or hamburger. Heart meat and tongue meat as organ meats are not acceptable ingredients in chopped beef, ground beef or hamburger.

Specifications on ground beef for this activity:

- No variety meats may be used.
- No product more than five days old may be used.
- All fresh products must be stored at a temperature not to exceed 34° F.
- Least cost determined should be performed on acceptable ingredients to select the lowest cost product that meets all ground beef guidelines.

You have received an order with the following specifications:

- Desired fat content of finished product = 20%
- Batch size = 5,000 lbs.
- Manufacture date = Wednesday, October 20, 2016

**AVAILABLE INGREDIENTS**

PRODUCT	Slaughter Date	Temp. °F	% Fat Content	\$ Price/ lb.
Beef Heart	October 15	33°	4	.41
80% Trimmings	October 16	35°	20	1.40
75% Trimmings	October 17	34°	25	1.28
Beef Flank	October 14	33°	2	.91
Chuck Tender	October 17	33°	16	1.58
Pork Trimmings	October 18	34°	15	.86
Ribeye Roll	October 18	34°	12	2.12
Bull Product	October 16	34°	8	1.74

**Instructions:** Carefully read each item and possible answers.

Mark the correct answer on the appropriate form. Completely fill the chosen oval to indicate your answer.

**Solution:** Which of the following was the correct formulation for this problem?

1. 75% Trimmings and Beef Heart
2. **75% Trimming and Bull Product**
3. 75% Trimming and Chuck Tender
4. 75% Trimming and Ribeye Roll
5. 80% Trimmings and Beef Heart
6. 80% Trimmings and Bull Product
7. 80% Trimmings and Chuck Tender
8. Beef Heart and Beef Flank
9. Chuck Tender and Bull Product
10. The correct solution is not listed

1. What was the total cost of the correct final batch?
  - A. \$2,523
  - B. \$4,544
  - C. \$5,356
  - D. \$7,067**
  - E. \$7,240
  
2. What was the price per pound of the correct final batch?
  - A. \$1.28
  - B. \$1.41**
  - C. \$1.45
  - D. \$1.74
  - E. \$7.67
  
3. What was the percentage of lean in the correct final batch?
  - A. 17%
  - B. 20%
  - C. 29%
  - D. 71%
  - E. 80%**
  
4. What percentage of the correct final batch was Chuck Tender?
  - A. 0%**
  - B. 16%
  - C. 29%
  - D. 56%
  - E. 71%

5. How much Bull Product was in the correct final batch?
- A. 0 lbs.
  - B. 1,450 lbs.**
  - C. 2,523 lbs.
  - D. 3,550 lbs.
  - E. 4,544 lbs.
6. Which ingredient was excluded on the basis of temperature?
- A. 80% Trimmings**
  - B. Beef Flank
  - C. Beef Hearts
  - D. Bull Product
  - E. Pork Trimmings
7. How much fat was in the correct final batch?
- A. 0 lbs.
  - B. 1,000 lbs.**
  - C. 2,000 lbs.
  - D. 4,000 lbs.
  - E. 5,000 lbs.
8. What percentage of the correct final batch was from 75% Trimmings?
- A. 0%
  - B. 29%
  - C. 71%**
  - D. 75%
  - E. 100%



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## Calculations for Formulation Problem

Batch size = 5,000 Lbs.

	Ingredient Name	Price/Lb.	Fat content	Desired fat%	Multiples	Proportion of batch	Lbs. of batch		Cost
Ingredient with most fat =	75% Trimmings	\$1.28	25%	20%	4	0.44	2,200	Lbs.	\$2,216
Ingredient with least fat =	Chuck Tender	\$1.58	16%		5	0.56	2,800	Lbs.	\$4,424
Sum=					9	Total cost of batch =			\$7,240
Price per pound =									\$1.45
Possible questions:		Amount of fat=	1,000	Lbs.					
		Amount of lean=	4,000	Lbs.					
		Percentage of fat =	20	%					
		Percentage of lean =	80	%					

Batch size = 5,000 Lbs

	Ingredient Name	Price/Lb.	Fat content	Desired fat%	Multiples	Proportion of batch	Lbs. of batch		Cost
Ingredient with most fat =	75% trimmings	\$1.28	25%	20%	8	0.62	3,100	Lbs.	\$3,968
Ingredient with least fat =	Ribeye Roll	\$2.12	12%		5	0.38	1,900	Lbs.	\$4,028
Sum=					13	Total cost of batch =			\$7,996
Price per pound =									\$1.60
Possible questions:		Amount of fat=	1,000	Lbs.					
		Amount of lean=	4,000	Lbs.					
		Percentage of fat =	20	%					
		Percentage of lean =	80	%					



Meats Evaluation and Technology

Calculations for Formulation Problemcontinued

Batch size =									
	Ingredient Name	Price/Lb.	Fat content	Desired fat%	Multiples	Proportion of batch	Lbs. of batch		Cost
Ingredient with most fat =	75% Trimmings	\$1.28	25%	20%	12	0.17	3550	Lbs.	\$4,544
Ingredient with least fat =	Bull product	\$1.74	8%		5	0.29	1,450	Lbs.	\$2,523
Sum=					17	Total cost of batch =			\$7,067
Price per pound =									\$1.41
Possible questions:		Amount of fat=	1,000	Lbs.					
		Amount of lean=	4,000	Lbs.					
		Percentage of fat =	20	%					
		Percentage of lean =	80	%					

## National Pork Board Backfat Recommendation

**NOTE:** Policy Statement-Backfat Recommendations for Placing Unribbed Pork Carcass Classes — The National Pork Board has published live and carcass specifications for the “ideal” market hog, known as Symbol III (National Pork Board, 2005).

Pork carcasses with less than 0.60 inches backfat have a higher incidence of bellies which are too thin for high quality bacon production and also tend to have unacceptably low marbling levels and less palatable pork. If this situation is presented in competition, students would be expected to evaluate the given carcass or carcasses against contemporaries within the class and rank accordingly.

### KEEP CULL EXAMPLE

Select the four ribeye steaks to be sold to a high value “white table cloth” restaurant that advertises superior quality.

Scoring: Four meat products to be kept will have an aggregate score of 50 points.

CORRECT SELECTION	*					*	*	*
Exhibit Item	a	b	c	d	e	f	g	h
Points Possible	12	8	5	5	4	18	11	9

\*The four correct selections will add up to 50 points. The culled items will have a lesser value than the fourth place item kept.

## Value Based Pricing Example

*Participants will place or keep/cull (scenario will be provided) four exhibits (carcasses or wholesale cuts) based upon value (per hundred weight) derived from the pricing structure provided on the pricing sheet. The prices will reflect current market values. Pricing sheet will be provided to each participant.*

Carcasses exhibiting dairy type are ineligible for Yield Grade 1 or 2 premiums. Carcasses classified as Hardbone will exhibit C, D or E skeletal maturity and should be yield graded only. Carcasses with blood splash or Dark Cutter are ineligible for quality grading and should be yield graded only. A bruise is classified as an area located on the carcass where excess trimming has been performed and a major portion of the major muscle groups in the chuck, rib, loin or round has been removed.

## A SAMPLE BEEF CARCASS PRICING SHEET (TRAINING AID)

Values in parentheses are discounts and should be subtracted from the Carcass Base Price, which is established based on the exhibits USDA Quality and Yield Grade. Prices on the Grid Pricing Sheet may change from year to year.

### Example Class:

Carcass #1: Carcass Weight = 758 pounds

Quality Grade = Choice –

Yield Grade = 2.5

Base Value = \$125.00

No Discounts

Carcass Value = \$125.00

**Carcass #2:** Carcass Weight = 976 pounds

Quality Grade = Choice +/o

Yield Grade = 3.9

Base Value = \$127.00

Weight Discounts = minus \$4.00

Carcass Value = \$123.00

**Carcass #3:** Carcass Weight = 758 pounds

Quality Grade = Choice +/o

Yield Grade = 3.2

Base Value = \$127.00

Dairy Discounts = minus \$5.00

Carcass Value = 122.00

**Carcass #4:** Carcass Weight = 843 pounds

Quality Grade = Ineligible due to being a Dark Cutter

Yield Grade = 3.5

Base Value = \$92.00

Bruise on Left Side Loins extending into the Longissimus dorsi muscle =  
minus \$10.00

Carcass Value = \$82.00

**Final Placing:** 1 – 2 – 3 – 4

## Pricing Sheet Example

Prices based on the USDA Beef Carcass Price Equivalent Index  
and the USDA National Carcass Premiums and Discounts

### BASE PRICE (\$/CWT.)

	Prime	Choice +/o	Choice -	Select	Standard	Hardbone	Dark Cutter/ Blood splash
YG 1	\$136	\$130	\$126	\$119	\$110	\$96	\$92
YG 2	\$134	\$128	\$125	\$117	\$108	\$96	\$92
YG 3	\$133	\$127	\$123	\$116	\$107	\$96	\$92
YG 4	\$121	\$115	\$112	\$104	\$95	\$84	\$81
YG 5	\$113	\$108	\$104	\$97	\$87	\$77	\$73

### DISCOUNTS (\$/CWT.)

Carcass Weight			
<500	(\$27)	Dairy Type *	(\$5)
500 to 549	(\$16)	Bruise	(\$10) per side **
550 to 599	(\$4)		
900 to 949	(\$2)		
950 to 999	(\$4)		
1000 and up	(\$19)		

### Notes

\*Carcasses exhibiting dairy type are ineligible for YG1 and YG2 premiums

\*\*Maximum discount of \$20 per carcass for bruising

## Examples of Questions For Evaluation Classes

Sample Acceptable Questions:

- Which beef carcass had the largest ribeye?
- Which pork carcass had the least backfat opposite the last rib?
- Which ribeye steak exhibited the brightest colored lean?
- Which ham was trimmest beneath the butt face?
- Which beef rib exhibited the most marbling in the blade face?

Sample Unacceptable Questions:

- Which pork carcass had a missing foot?
- Which beef carcass displayed indications of a bruise?
- Which ribeye steak was bigger?



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## Retail Cuts Code Sheet with Cookery

Species	Primal	Retail Cut	Cooking Method	Species	Primal	Retail Cut	Cooking Method
B	B	89	M	Beef	Brisket	Corned	Moist
B	B	15	M	Beef	Brisket	Flat Half, Bnls	Moist
B	B	10	M	Beef	Brisket	Whole, Bnls	Moist
B	C	26	M	Beef	Chuck	7-bone Pot-roast	Moist
B	C	03	M	Beef	Chuck	Arm Pot-Roast	Moist
B	C	04	M	Beef	Chuck	Arm Pot-Roast, Bnls	Moist
B	C	06	M	Beef	Chuck	Blade Roast	Moist
B	C	13	D/M	Beef	Chuck	Eye Roast, Bnls	Dry/Moist
B	C	45	D	Beef	Chuck	Eye steak, Bnls	Dry
B	C	20	M	Beef	Chuck	Mock Tender Roast	Moist
B	C	48	M	Beef	Chuck	Mock Tender Steak	Moist
B	C	21	D	Beef	Chuck	Petite Tender	Dry
B	C	29	D/M	Beef	Chuck	Shoulder Pot Roast (Bnls)	Dry/Moist
B	C	58	D	Beef	Chuck	Top Blade Steak (Flat Iron)	Dry
B	D	47	D/M	Beef	Flank	Flank Steak	Dry/Moist
B	F	49	D	Beef	Loin	Porter House Steak	Dry
B	F	55	D	Beef	Loin	T-bone Steak	Dry
B	F	34	D	Beef	Loin	Tenderloin Roast	Dry
B	F	56	D	Beef	Loin	Tenderloin Steak	Dry
B	F	59	D	Beef	Loin	Top Loin Steak	Dry
B	F	60	D	Beef	Loin	Top Loin Steak, Bnls	Dry
B	F	64	D	Beef	Loin	Top Sirloin Cap Steak, Bnls	Dry
B	F	63	D	Beef	Loin	Top Sirloin Steak, Bnls Cap Off	Dry
B	F	62	D	Beef	Loin	Top Sirloin Steak, Bnls	Dry
B	F	40	D	Beef	Loin	Tri Tip Roast	Dry
B	G	28	M	Beef	Plate	Short Ribs	Moist
B	G	54	D/M	Beef	Plate	Skirt steak, Bnls	D/M
B	H	22	D	Beef	Rib	Rib Roast	Dry
B	H	13	D	Beef	Rib	Ribeye Roast, Bnls	Dry
B	H	45	D	Beef	Rib	Ribeye Steak, Bnls	Dry
B	H	50	D	Beef	Rib	Ribeye Steak, Lip-On	Dry
B	I	08	D/M	Beef	Round	Bottom Round Roast	Dry/Moist
B	I	09	D/M	Beef	Round	Bottom Round Rump Roast	Dry/Moist
B	I	43	M	Beef	Round	Bottom Round Steak	Moist
B	I	14	D/M	Beef	Round	Eye Round Roast	Dry/Moist
B	I	46	D/M	Beef	Round	Eye Round Steak	Dry/Moist
B	I	51	M	Beef	Round	Round Steak	Moist

## Meats Evaluation and Technology

## Retail Cuts Code Sheet with Cookerycontinued

Species	Primal	Retail Cut	Cooking Method	Species	Primal	Retail Cut	Cooking Method
B	I	52	M	Beef	Round	Round Steak, Bnls	Moist
B	I	36	D/M	Beef	Round	Tip Roast – Cap Off	Dry/Moist
B	I	57	D	Beef	Round	Tip Steak – Cap Off	Dry
B	I	39	D	Beef	Round	Top Round Roast	Dry
B	I	61	D	Beef	Round	Top Round Steak	Dry
B	N	82	M	Beef	Various	Beef for Stew	Moist
B	N	83	D/M	Beef	Various	Cubed Steak	Dry/Moist
B	N	84	D	Beef	Various	Ground Beef	Dry
P	E	44	D/M	Pork	Ham/Leg	Pork Fresh Ham Center Slice	Dry/Moist
P	E	25	D/M	Pork	Ham/Leg	Pork Fresh ham Rump Portion	Dry/Moist
P	E	27	D/M	Pork	Ham/Leg	Pork Fresh ham Shank Portion	Dry/Moist
P	E	91	D	Pork	Ham/Leg	Smoked Ham, Bnls	Dry
P	E	90	D	Pork	Ham/Leg	Smoked Ham, Center Slice	Dry
P	E	96	D	Pork	Ham/Leg	Smoked Ham, Rump Portion	Dry
P	E	97	D	Pork	Ham/Leg	Smoked Ham, Shank Portion	Dry
P	E	32	D	Pork	Ham/Leg	Tip Roast, Bnls	Dry
P	E	38	D	Pork	Ham/Leg	Top Roast, Bnls	Dry
P	F	05	D/M	Pork	Loin	Back Ribs	Dry/Moist
P	F	66	D/M	Pork	Loin	Blade Chops	Dry/Moist
P	F	67	D/M	Pork	Loin	Blade Chops, Bnls	Dry/Moist
P	F	06	D/M	Pork	Loin	Blade Roast	Dry/Moist
P	F	68	D	Pork	Loin	Butterflied Chops Bnls	Dry
P	F	11	D	Pork	Loin	Center Loin Roast	Dry
P	F	12	D	Pork	Loin	Center Rib Roast	Dry
P	F	70	D	Pork	Loin	Loin Chops	Dry
P	F	71	D	Pork	Loin	Rib Chops	Dry
P	F	73	D	Pork	Loin	Sirloin Chops	Dry
P	F	53	D	Pork	Loin	Sirloin Cutlets	Dry
P	F	30	D	Pork	Loin	Sirloin Roast	Dry
P	F	93	D	Pork	Loin	Smoked Pork Loin Chop	Dry
P	F	95	D	Pork	Loin	Smoked Pork Loin Rib Chop	Dry
P	F	34	D	Pork	Loin	Tenderloin, Whole	Dry
P	F	74	D	Pork	Loin	Top Loin Chops	Dry
P	F	75	D	Pork	Loin	Top Loin Chops, Bnls	Dry
P	F	37	D	Pork	Loin	Top Loin Roast, Bnls	Dry
P	J	02	D/M	Pork	Shoulder	Arm Picnic, Whole	Dry/Moist
P	J	03	D/M	Pork	Shoulder	Arm Roast	Dry/Moist
P	J	41	D/M	Pork	Shoulder	Arm Steak	Dry/Moist
P	J	07	D/M	Pork	Shoulder	Blade Boston Roast	Dry/Moist
P	J	42	D/M	Pork	Shoulder	Blade Steak	Dry/Moist
P	J	94	D/M	Pork	Shoulder	Smoked Picnic, Whole	Dry/Moist
P	K	98	D	Pork	Side	Slab Bacon	Dry
P	K	99	D	Pork	Side	Sliced Bacon	Dry



## Meats Evaluation and Technology

## Retail Cuts Code Sheet with Cookerycontinued

Species	Primal	Retail Cut	Cooking Method	Species	Primal	Retail Cut	Cooking Method
P	K	17	M	Pork	Side/Belly	Fresh Side	Moist
P	L	32	D/M	Pork	Spareribs	Pork Spareribs	Dry/Moist
P	N	85	D	Pork	Various	Ground Pork	Dry
P	N	86	M	Pork	Various	Hock	Moist
P	N	83	D/M	Pork	Various	Pork Cubed steak	Dry/Moist
P	N	87	D	Pork	Various	Pork Sausage Links	Dry
P	N	87	D	Pork	Various	Sausage	Dry
P	N	92	M	Pork	Various	Smoked Pork Hock	Moist
P	N	69	D/M	Pork	Various	Country Style Ribs	Dry/Moist
L	A	24	D/M	Lamb	Breast	Ribs (Denver Style)	Dry/Moist
L	E	01	D	Lamb	Leg	American Style Roast	Dry
L	E	44	D	Lamb	Leg	Center Slice	Dry
L	E	16	D	Lamb	Leg	Frenched Style Roast	Dry
L	E	18	D	Lamb	Leg	Leg Roast, Bnls	Dry
L	E	73	D	Lamb	Leg	Sirloin Chops	Dry
L	E	31	D	Lamb	Leg	Sirloin Half	Dry
L	E	70	D	Lamb	Loin	Loin Chops	Dry
L	E	19	D	Lamb	Loin	Loin Roast	Dry
L	H	71	D	Lamb	Rib	Rib Chops	Dry
L	H	72	D	Lamb	Rib	Rib Chops Frenched	Dry
L	H	22	D	Lamb	Rib	Rib Roast	Dry
L	H	23	D	Lamb	Rib	Rib Roast, Frenched	Dry
L	J	65	D/M	Lamb	Shoulder	Arm Chops	Dry/Moist
L	J	66	D/M	Lamb	Shoulder	Blade Chops	Dry/Moist
L	J	33	D/M	Lamb	Shoulder	Square Cut	Dry/Moist
L	N	88	M	Lamb	Various	Shank	Moist
B	M	76	D/M	Beef	Variety	Heart	Dry/Moist
L	M	76	D/M	Lamb	Variety	Heart	Dry/Moist
P	M	76	D/M	Pork	Variety	Heart	Dry/Moist
B	M	77	D/M	Beef	Variety	Kidney	Dry/Moist
L	M	77	D/M	Lamb	Variety	Kidney	Dry/Moist
P	M	77	D/M	Pork	Variety	Kidney	Dry/Moist
B	M	78	D/M	Beef	Variety	Liver	Dry/Moist
L	M	78	D/M	Lamb	Variety	Liver	Dry/Moist
P	M	78	D/M	Pork	Variety	Liver	Dry/Moist
B	M	79	M	Beef	Variety	Oxtail	Moist
B	M	80	D/M	Beef	Variety	Tongue	Dry/Moist
L	M	80	D/M	Lamb	Variety	Tongue	Dry/Moist
P	M	80	D/M	Pork	Variety	Tongue	Dry/Moist
B	M	81	M	Beef	Variety	Tripe	Moist



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## USDA BEEF GRADING WORKSHEET

### CARCASS YIELD GRADING

CARCASS NO.	PYG		Carcass Weight	Required REA	Rib Eye Area		% KPH		FYG
	Est.	Adj.			Est.	Adj.	Est.	Adj.	
1									
2									
3									
4									

Identify the final yield grade (to the nearest tenth) and complete the scan form correspondingly. Full points will be earned for a correct answer and 1/10th above or below official yield grade. A two point deduction will be made for 2/10th – 5/10th above or below official yield grade. A four point deduction for 6/10th – 9/10th above or below official yield grade. Zero points will be awarded for answers one yield grade above or below the official yield grade. Perfect score will be a maximum of forty points for each yield grading (ten points for four carcasses).

### CARCASS QUALITY GRADING

CARCASS NO.	Age		Marbling	Quality Grade
	Skeletal Maturity	Lean Adj.		
1				
2				
3				
4				

- Prime High
- Prime Average
- Prime Low
- Choice High
- Choice Average
- Choice Low
- Select High
- Select Low
- Standard High
- Standard Low
- Commercial High
- Commercial Average
- Commercial Low
- Utility High
- Utility Average
- Utility Low

The participant should establish the quality grades for each carcass according to USDA standards. Each participant should complete the section of answers for quality grading on the computerized scorecard.

Canner and Cutter grades will not be used in the event. Ten points are awarded for each correct grade. Each will be scored for the applicable adjacent grade as follows: 10, 8, 5, 0. Yet, in the case of “B” Maturity; Select High and Select Low will be awarded zero points. Perfect score will be a maximum of forty points for quality grading (10 points each for four carcasses).

## Processed Meat Class Guidelines: Specifications for Evaluating Slice Bacon

### DESCRIPTION:

The term “bacon” is used to describe the cured belly of a swine carcass. Sliced bacon describes slices of cured pork belly that are normally found in 12 oz. or larger vacuum packages in retail stores. The product entry should be judged as an entire package and the bacon slices should be uniform in length and shape. Firm, dry (but not overly dry) slices are desirable, while wet, oily slices are not desirable. The presence of purge or exudate (water in the package or excess on the product’s surface) suggests that the bacon slices were generated from a lower quality belly.

### EVALUATION:

Sliced bacon should be evaluated by the following criteria:

- **Fat-to-lean ratio:** The ideal fat-to-lean ratio of sliced bacon is approximately 50–55% lean and 45–50% fat. This is determined by averaging the fat vs. lean of several slices.
- **Lean and fat color:** The color of the lean portion of the bacon slices should be a desirable reddish-pink, cured color. The color should also be uniform among all muscles within each bacon slice, as well as among all of the bacon slices. A bright white fat is also desirable.
- **Physical defects:** Any signs of visual oiliness/greasiness should downgrade the bacon slices exhibit. Also, lean/fat separation, tiger-stripping (light colored vertical stripes observed perpendicular to the direction of the lean and fat), and shattering/cracking of fat is also considered a defect. Finally, bacon slices should be uniform in conformation. Rectangular shaped slices devoid of “v” or valley shaped regions are non-desirable.

## Processed Meat Class Guidelines: Specifications for Evaluating Frankfurters/Smoked Sausage

### DESCRIPTION:

Frankfurters (Coarse Ground & Emulsified) and Small Diameter Smoked and Cooked Sausages are generally smoked, and the external appearance should be a golden, mahogany color.

The product entry should be judged as a whole, and links should be consistent in length and diameter. For natural and collagen casing products, the ends should not be excessively trimmed and/or there should not be excessive casing twists at the ends of the sausage. Smoke streaks and spots should be downgraded. The internal appearance is evaluated by cutting a link in half lengthwise to expose the interior of the sausage. Internal attributes should include a deep, reddish-pink, cured color with uniform particle size and ingredient distribution.

### EVALUATION:

Frankfurters and Small Diameter Smoked and Cooked Sausages should be evaluated by the following criteria:

- **External appearance:** The external appearance should be desirable. A golden, mahogany color should exist. The color should be uniform throughout each and all of the links. The links should be very uniform in shape and size (including diameter). If spices (such as a black pepper) or non-meat ingredients (e.g., cheese) are present on the surface, they should be uniformly dispersed throughout. Any noticeable defects (e.g. greasiness, pin holes, wrinkles, touch-marks, etc.) should downgrade the exhibit.
- **Internal appearance:** The internal appearance should be desirable. For beef and/or pork sausages, a deep, reddish-pink cured color should exist. For poultry sausages, a light reddish-pink color is

desired. The texture of the sausage should not be too dry or too wet. Too much connective tissue should be downgrade the exhibit. The lean and fat particle size should be uniform throughout the sausage. If spices/non-meat ingredients are visually present, they should be uniform in size and uniformly distributed throughout the sausage. Any air pockets, voids, unidentified objects (such as hard cartilage or bone) should downgrade the exhibit.

## Processed Meat Class Guidelines: Specifications for Evaluating Center-cut Ham Slices

### DESCRIPTION:

Bone-in, center-cut ham slices are removed from the center section of bone-in hams. The cured and smoked center ham slice should be free of skin, bruises, blood clots and lymph glands. Ham slices should be approximately round and exhibit a cured and smoked appearance. The lean meat should possess a fine, smooth texture with a uniform and bright, reddish-pink color (a slightly two toned or iridescent color is permissible). Excessive under-trimming or over-trimming of the ham slice for any reason is not desirable.

### EVALUATION:

Bone-in, center-cut ham slices should be evaluated by the following criteria:

- **Cutability:** Ham slices with a great area of exposed lean, little external/internal fat, and a small amount of bone are desirable. For a smoked, cured ham, the center slice should display acceptable muscling as evaluated by the depth and width of the cushion and forecushion areas. Subcutaneous fat and intermuscular fat (“fat pockets”) should not be excessive. No more than 1/8 in. of subcutaneous fat should be present. The size of the bone should be included in the evaluation, as a larger bone is less desirable.
- **Color:** A uniform dark, reddish-pink cured color should be observed on all muscle surfaces. This cured color should be uniform throughout the entire ham slice with as little color variation between muscles as possible.
- **Physical defects:** “Blood splashing” (specks or spots of blood), uncured spots, “two toning,” or “greening” should not be present on the exposed cut surface. The texture of the exposed cut surface

should be smooth and fine. Coarse texture may be the result of using meat of carcasses from mature animals or from inadequate cooking. The cut surface should be firm and non-exudative with no separation of muscle groups. The pickle pocket should be as small as possible with the least amount of sinewy appearance.

## Market Pricing Information

Based on Current Market Quotations and Conditions

### PORK CARCASSES/WHOLESALE PRICING

As a team students will evaluate each pork carcass or center cut loin and calculate the percent Fat Free Lean Index (FFLI), using the Fat Free Lean Index (FFLI) formula; Pounds of Fat Free Lean =  $8.5876 - (21.8957 \times 10\text{th rib fat thickness}) + (3.0047 \times \text{loin eye area}) + (.4650 \times \text{hot carcass weight})$ ; Percentage Fat Free Lean =  $(\text{Pounds of Fat Free Lean} / \text{hot carcass weight}) \times 100$ . Students will use pricing structure provided on the pricing sheet to establish a final carcass/wholesale value and answer questions or rank exhibits on value from highest to lowest. (NOTE: When center-cut loins are used, estimated hot carcass weight will be provided.)



### 1. THE BASE WHOLESALE PRICE FOR PORK CARCASSES = \$68.00/CWT.

Use the Lean Value Table for adjustments to the base wholesale price. (The values within this table are percentages of the base wholesale pork carcass price listed above. They are determined by % muscle and warm carcass weight.)

% Muscle in Carcass									
Hot Carc.	58.0	56.0	54.0	52.0-	50.0-	48.0-	46.0-	44.0-	<44.0
Weight	+	57.9	55.9	53.9	51.9	49.9	47.9	45.9	
<149	70.0%	70.0%	70.0%	70.0%	70.0%	70.0%	68.0%	68.0%	65.0%
150-159	93.0%	95.0%	100.0%	97.0%	94.0%	94.0%	92.0%	89.0%	82.0%
160-169	97.0%	100.0%	100.0%	100.0%	98.0%	97.0%	97.0%	90.0%	83.0%
170-179	100.0%	102.0%	102.0%	100.0%	100.0%	100.0%	98.0%	91.0%	84.0%
180-189	100.0%	102.0%	104.0%	102.0%	100.0%	100.0%	98.0%	91.0%	84.0%
190-199	102.0%	104.0%	104.0%	104.0%	102.0%	100.0%	98.0%	91.0%	84.0%
200-209	102.0%	104.0%	106.0%	106.0%	104.0%	102.0%	98.0%	91.0%	84.0%
210-219	102.0%	106.0%	106.0%	106.0%	104.0%	102.0%	98.0%	90.0%	83.0%
220-229	102.0%	104.0%	104.0%	104.0%	102.0%	100.0%	95.0%	88.0%	81.0%
230-239	100.0%	102.0%	102.0%	102.0%	100.0%	98.0%	92.0%	85.0%	78.0%
240-250	95.0%	100.0%	100.0%	98.0%	96.0%	93.0%	88.0%	81.0%	74.0%
>250	95.0%	95.0%	94.0%	92.0%	90.0%	88.0%	83.0%	76.0%	69.0%

**2. CALCULATE AN INDIVIDUAL PRICE FOR EACH CARCASS ON A \$/CWT. WHOLESALE CARCASS BASIS.****3. IF THE MUSCLE QUALITY IS NOT THE NORMAL**

RFN (Reddish pink, firm, non-exudative), subtract the following amounts from the final value \$/cwt of each carcass:

- PSE (Pale, soft, exudative) = \$8.00/cwt.
- DFD (Dark, firm, dry) = \$4.00/cwt.

**Example:**

Exhibit A

Hot Carcass Weight = 192

10<sup>th</sup> rib Fat = .8

LEA = 7.8

Quality = RFN

Exhibit B

Hot Carcass Weight = 211

10<sup>th</sup> rib Fat = .5

LEA = 9.8

Quality = PSE

**Example:**

Pounds of Fat Free Lean =  $8.5876 - (21.8957 \times .8) + (3.0047 \times 7.8) + (4.650 \times 192)$ ; Percentage Fat Free Lean =  $(103.78/192) \times 100 = 54.1\%$

Value =  $68.00(\text{base price}) \times 104.00\% (\text{FFLI}) = \$70.72$

**Example:**

Pounds of Fat Free Lean =  $8.5876 - (21.8957 \times .5) + (3.0047 \times 9.8) + (4.650 \times 211)$ ; Percentage Fat Free Lean =  $(125.20/211) \times 100 = 59.3\%$

Value =  $68.00(\text{base price}) \times 102.00\% (\text{FFLI}) - 8.00 (\text{PSE Quality}) = \$61.36$

**TEAM PRACTICUM EXAMPLE (50 POINTS)**

Utilizing the provided pricing sheet, as a team evaluate each pork carcass or center-cut loin wholesale cuts and calculate the percent at Free Lean Index (FFLI), using the Fat Free Lean Index (FFLI) formula; Pounds of Fat Free Lean =  $8.5876 - (21.8957 \times 10\text{th rib fat thickness}) + (3.0047 \times \text{loin eye area}) + (.4650 \times \text{hot carcass weight})$ ; Percentage Fat Free Lean =  $(\text{Pounds of Fat Free Lean} / \text{hot carcass weight}) \times 100$ . Students will use pricing structure provided on the pricing sheet to establish a final carcass/wholesale value and answer questions or rank exhibits on value from highest to lowest.

What was the final price of Exhibit A on a \$/cwt. wholesale carcass basis?

- A. \$70.72
- B. \$61.36
- C. \$62.72
- D. \$66.72
- E. \$15.00

What was the percent boneless closely retail cuts value for Exhibit A?

- A. 54.1%
- B. 49.8%
- C. 59.3%
- D. 61.3%
- E. 42.9%

What is the total dollar value of Exhibit A?

- A. \$135.78
- B. \$100.00
- C. \$122.00
- D. \$500.00
- E. \$327.50

What is the total dollar value of Exhibit B?

- A. \$129.47
- B. \$186.58
- C. \$123.00
- D. \$122.00
- E. \$100.00

What was the percent boneless closely retail cuts value for Exhibit 2?

- A. 50.0%
- B. 35.7%
- C. 40.8%
- D. 59.3%
- E. 45.8%

**TEAM PRACTICUM EXAMPLE (50 POINTS)**

**Example Scenario:** As a team you will review the current pricing information given by officials. Team members are to evaluate, communicate and reach a conclusion on the correct placings of the class based on the value of the pork carcass hundred pounds carcass.

Exhibit 1: \$70.72

Exhibit 2: \$61.63

Exhibit 3: \$71.72

Exhibit 4: \$59.58

Placing: 7



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## Agriculture, Food and Natural Resources Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.01.01. Performance Indicator: Apply micro- and macroeconomic principles to plan and manage inputs and outputs in an AFNR business.</b>		
<b>ABS.01.01.01.b.</b> Apply microeconomic principles to calculate values associated with different inputs and outputs in AFNR businesses (e.g., price, point of equilibrium, opportunity costs, marginal costs, etc.).	Team Activity – Value Based, Evaluation Classes – Placing and Value Based	CCSS.ELA-Literacy.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 Financial Investing: Benchmarks: Grade 12, Statement 9
<b>ABS.01.01.02.c.</b> Analyze the impact of the current macroeconomic environment on decisions related to AFNR businesses	Team Activity – Problem Solving, Evaluation Classes – Placing, Value Based and Keep/Cull	CCSS.ELA-Literacy.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 Financial Investing: Benchmarks: Grade 12, Statement 9
<b>ABS.01.02. Performance Indicator: Read, interpret, evaluate and write statements of purpose to guide business goals, objectives and resource allocation.</b>		
<b>ABS.01.02.01.b.</b> Assess approaches to create statements of purpose for AFNR businesses.	Team Activity – Food Safety	CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RI.9-10.4 CCSS.ELA-LITERACY.RI.11-12.4
<b>ABS.01.03.</b> Performance Indicator: Devise and apply management skills to organize and run an AFNR business in an efficient, legal and ethical manner.		

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.01.03.02.b.</b> Assess how local, state, federal, international and industry regulations positively and negatively affect the management and operation of AFNR businesses.	Team Activity – Food Safety and Problem Solving, Grading	<p>CCSS.ELA-LITERACY.SL.9-10.6  CCSS.ELA-LITERACY.SL.11-12.6  CCSS.ELA-LITERACY.L.9-10.6  CCSS.ELA-LITERACY.L.11-12.6  CCSS.ELA-LITERACY.RST.9-10.4  CCSS.ELA-LITERACY.RST.11-12.4  CCSS.ELA-LITERACY.W.9-10.2  CCSS.ELA-LITERACY.W.11-12.2  CCSS.ELA-LITERACY.W.9-10.9  CCSS.ELA-LITERACY.W.11-12.9  CCSS.ELA-LITERACY.SL.9-10.6  CCSS.ELA-LITERACY.SL.11-12.6  CCSS.ELA-LITERACY.RI.9-10.4  CCSS.ELA-LITERACY.RI.11-12.4  CCSS.ELA-LITERACY.L.9-10.6  CCSS.ELA-LITERACY.L.11-12.6  CCSS.ELA-LITERACY.RST.9-10.4  CCSS.ELA-LITERACY.RST.11-12.4  Earning Income: Benchmarks: Grade 12, Statements 1  Earning Income: Benchmarks: Grade 12, Statements 2  Earning Income: Benchmarks: Grade 12, Statements 4  Protecting and Insuring: Benchmarks: Grade 12, Statements 8  Protecting and Insuring: Benchmarks: Grade 12, Statements 9  Protecting and Insuring: Benchmarks: Grade 12, Statements 10  Protecting and Insuring: Benchmarks: Grade 12, Statements 12</p>
<b>ABS.01.03.03.b.</b> Analyze the importance of using ethical standards and develop methods to communicate ethical standards within AFNR businesses.	Team Activity – Food Safety and Problem Solving	<p>CCSS.ELA-LITERACY.SL.9-10.6  CCSS.ELA-LITERACY.SL.11-12.6  CCSS.ELA-LITERACY.L.9-10.6  CCSS.ELA-LITERACY.L.11-12.6  CCSS.ELA-LITERACY.RST.9-10.4  CCSS.ELA-LITERACY.RST.11-12.4  CCSS.ELA-LITERACY.W.9-10.2  CCSS.ELA-LITERACY.W.11-12.2  CCSS.ELA-LITERACY.W.9-10.9  CCSS.ELA-LITERACY.W.11-12.9  CCSS.ELA-LITERACY.SL.9-10.6  CCSS.ELA-LITERACY.SL.11-12.6  CCSS.ELA-LITERACY.RI.9-10.4  CCSS.ELA-LITERACY.RI.11-12.4  CCSS.ELA-LITERACY.L.9-10.6  CCSS.ELA-LITERACY.L.11-12.6  CCSS.ELA-LITERACY.RST.9-10.4  CCSS.ELA-LITERACY.RST.11-12.4  Earning Income: Benchmarks: Grade 12, Statements 1  Earning Income: Benchmarks: Grade 12, Statements 2  Earning Income: Benchmarks: Grade 12, Statements 4  Protecting and Insuring: Benchmarks: Grade 12, Statements 8  Protecting and Insuring: Benchmarks: Grade 12, Statements 9  Protecting and Insuring: Benchmarks: Grade 12, Statements 10  Protecting and Insuring: Benchmarks: Grade 12, Statements 12</p>

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.02.01. Performance Indicator: Apply fundamental accounting principles, systems, tools and applicable laws and regulations to record, track and audit AFNR business transactions (e.g., accounts, debits, credits, assets, liabilities, equity, etc.).</b>		
<b>ABS.02.01.01.b.</b> Evaluate the implementation of accounting systems and procedures used for record keeping in AFNR businesses	Team Activity – Food Safety	CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Earning Income: Benchmarks: Grade 12, Statements 7 Earning Income: Benchmarks: Grade 12, Statements 8
<b>ABS.02.01.02.c.</b> Recommend and select tools and services to track, record and audit AFNR business transactions that meet business needs and priorities (e.g., electronic and paper based systems, etc.).	Team Activity – Food Safety	CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Earning Income: Benchmarks: Grade 12, Statements 7 Earning Income: Benchmarks: Grade 12, Statements 8
<b>ABS.02.01.03.a.</b> Identify and examine applicable laws and regulations related to recording, tracking and auditing AFNR business transactions (e.g., Generally Accepted Accounting Principles, data security, etc.).	Team Activity – Problem Solving, Food Safety, Identification and Keep/Cull	CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Earning Income: Benchmarks: Grade 12, Statements 7 Earning Income: Benchmarks: Grade 12, Statements 8
<b>ABS.02.01.03.a.</b> Identify and examine applicable laws and regulations related to recording, tracking and auditing AFNR business transactions (e.g., Generally Accepted Accounting Principles, data security, etc.).	Team Activity – Problem Solving, Food Safety, Identification and Keep/Cull	CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Earning Income: Benchmarks: Grade 12, Statements 7 Earning Income: Benchmarks: Grade 12, Statements 8
<b>ABS.02.02. Performance Indicator: Assemble, interpret and analyze financial information and reports to monitor AFNR business performance and support decision-making (e.g., income statements, balance sheets, cash-flow analysis, inventory reports, break-even analysis, return on investment, taxes, etc.).</b>		
<b>ABS.02.02.02.c.</b> Create recommendations to improve management of inventory in AFNR businesses (e.g., maintaining optimal levels, calculating costs of carrying input and output inventory, supply chain management, etc.).	Evaluating Class – Value Base, Keep/Cull, Team Activity – Value Base, Problem Solving and Keep/Cull	CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2



## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.03.01. Performance Indicator: Develop, assess and manage cash budgets to achieve AFNR business goals.</b>		
<b>ABS.03.01.01.b.</b> Examine and interpret cash budgets for AFNR businesses.	Team Activity – Value Base, Keep/Cull and Problem Solving, Evaluating Class – Value Base and Keep/Cull	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.03.01.01.b.</b> Examine and interpret cash budgets for AFNR businesses.	Team Activity – Value Base, Keep/Cull and Problem Solving, Evaluating Class – Value Base and Keep/Cull	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.03.01.01.b.</b> Examine and interpret cash budgets for AFNR businesses	Team Activity – Value Base, Keep/Cull and Problem Solving, Evaluating Class – Value Base and Keep/Cull	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.03.01.02.b.</b> Examine and identify strategies to manage components of cash budgets to minimize liabilities and maximize profit in AFNR businesses (e.g., delayed payment of expenses, prepayment of expenses, etc.).	Team Activity – Value Base, Keep/Cull and Problem Solving, Evaluating Class – Value Base and Keep/Cull	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
<b>ABS.04.02. Performance Indicator: Develop production and operational plans for an AFNR business.</b>		
<b>ABS.04.02.01.c.</b> Make recommendations to improve operational plans for an AFNR business based on best practices.	Team Activity – Value Base, Food Safety, Keep/Cull and Problem Solving, Evaluating Class – Value Base and Keep/Cull, Questions	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.04.02.02.b.</b> Identify and assess alternative production systems for a specific agricultural product.	Team Activity – Value Base, Keep/Cull, Food Safety and Problem Solving, Evaluating Class – Value Base and Keep/Cull, Identification and Grading	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.05.01. Performance Indicator: Analyze the role of markets, trade, competition and price in relation to an AFNR business sales and marketing plans.</b>		
<b>ABS.05.01.01.b.</b> Analyze the role of trade and price in the market structure as it relates to AFNR businesses.	Team Activity – Value Base and Keep/Cull, Evaluating Class – Value Base and Keep/Cull, Grading and Identification	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Agribusiness Systems Pathway, Statement 1 Financial Investing: Benchmarks: Grade 12, Statement 13
<b>ABS.05.02. Performance Indicator: Assess and apply sales principles and skills to accomplish AFNR business objectives.</b>		
<b>ABS.05.02.01.b.</b> Apply the sales process to AFNR businesses and communicate ways of accomplishing the businesses' goals and objectives.	Team Activity – Value Base, Keep/Cull and Problem Solving, Evaluating Class – Value Base, and Keep/Cull, Grading and Identification	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5
<b>ABS.05.02.02.b.</b> Assess different responses/customer reactions that could be presented during different types of sales calls used in AFNR businesses (e.g., competitor prices, competing products, post-sale service, complaints about product, etc.).	Team Activity – Value Base, Keep/Cull and Problem Solving, Evaluating Class – Value Base and Keep/Cull, Identification	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5
<b>ABS.05.03. Performance Indicator: Assess marketing principles and develop marketing plans to accomplish AFNR business objectives.</b>		
<b>ABS.05.03.01.b.</b> Assess alternative marketing strategies as related to marketing principles for AFNR businesses (e.g. value-adding, branding, niche marketing, etc.).	Team Activity – Value Base and Keep/Cull, Evaluating Class – Value Base and Keep/Cull, Grading and Identification	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.05.03.02.b.</b> Compare and contrast the strategies of marketing for products and services used in AFNR businesses (e.g., direct marketing, commodities, etc.).	Team Activity – Value Base and Keep/Cull, Evaluating Class – Value Base and Keep/Cull, Grading, Placing and Identification	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>AS.01.01. Performance Indicator: Evaluate the development and implications of animal origin, domestication and distribution on production practices and the environment.</b>		
<b>AS.01.01.01.b.</b> Evaluate and describe characteristics of animals that developed in response to the animal's environment and led to their domestication.	Exam and Grading	HS-LS4-3
<b>AS.01.02. Performance Indicator: Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts.</b>		
<b>AS.01.02.01.c.</b> Evaluate the effectiveness of different production methods and defend the use of selected methods using data and evidence.	Team Activity – Value Base and Keep/Cull, Evaluating Class – Value Base and Keep/Cull, Grading and Identification	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
<b>AS.01.02.02.b.</b> Calculate costs of marketing versus predicted increases in sales.	Team Activity – Problem Solving	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
<b>AS.01.03. Performance Indicator: Analyze and apply laws and sustainable practices to animal agriculture from a global perspective.</b>		
<b>AS.01.03.01.b.</b> Analyze the structure of laws governing animal industries, international trade and animal production policies.	Team Activity – Problem Solving, Food Safety, Value Base and Keep/Cull, Evaluating Class – Value Base and Keep/Cull, Grading and Identification	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 HS-ETS1-1

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.02.01. Performance Indicator: Demonstrate management techniques that ensure animal welfare.</b>		
AS.02.01.01.c. Implement and evaluate quality-assurance programs and procedures for animal production	Team Activity – Food Safety	HS-ETS1-2
AS.02.01.02.c. Devise, implement and evaluate safety procedures and plans for working with animals by species using information based on animal behavior and responses.	Team Activity – Food Safety and Problem Solving	HS-ETS1-2
<b>AS.02.02. Performance Indicator: Analyze procedures to ensure that animal products are safe for consumption.</b>		
AS.02.02.01.c. Select, evaluate and defend the use of specific tools, technology or equipment used to perform animal husbandry and welfare tasks.	Team Activity – Food Safety, Problem Solving, Keep/Cull and Value Based, Evaluating Class – Value Based, Keep/Cull and Placing, Exam and Grading	HS-ETS1-2
AS.02.02.02.c. Research and evaluate programs to assure the safety of animal products for consumption.	Team Activity – Food Safety	HS-ETS1-2
<b>AS.04.01. Performance Indicator: Evaluate animals for breeding readiness and soundness.</b>		
AS.04.01.01.a. Identify and categorize the male and female reproductive organs of the major animal species	Team Activity – Value Based, Questions, Evaluating Class – Value Based	NA
<b>AS.04.02. Performance Indicator: Apply scientific principles to select and care for breeding animals.</b>		
AS.04.02.01.b. Compare and contrast the use of genetically superior animals in the production of animals and animal products.	Team Activity – Value Base and Keep/Cull, Evaluating Class – Value Base and Keep/Cull, Placing, and Grading	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.04.03 Performance Indicator: Apply scientific principles to breed animals.</b>		
AS.04.03.04.b. Compare and contrast quantitative breeding value differences between genetically superior animals and animals of average genetic value.	Questions, Grading, Evaluating Class – Placing, Value Based and Keep/Cull, Team Activity – Value Based and Keep/Cull	NA
<b>AS.05.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.</b>		
AS.05.01.02.c. Select, use and evaluate equipment, technology and handling procedures to enhance sustainability and production efficiency.	Team Activity – Food Safety and Value Based	AFNR Career Cluster – Animal Systems Pathway, Statement 2 STEM Career Cluster, Statement 4 STEM Career Cluster, Statement 5

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.05.02. Performance Indicator: Comply with government regulations and safety standards for facilities used in animal production.</b>		
<b>AS.05.02.01.c.</b> Evaluate facility designs and make recommendations to ensure that it meets standards for the legal, safe, ethical, economical and efficient production of animals.	Team Activity – Food Safety – Evaluating Class – Value Base and Keep/Cull and Placing	CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b
<b>AS.05.02.02.c.</b> Evaluate the impact of laws pertaining to animal systems.	Team Activity – Food Safety, Problem Solving and Value Based	CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b
<b>AS.06.01. Performance Indicator: Classify animals according to taxonomic classification systems and use (e.g. agricultural, companion, etc.).</b>		
<b>AS.06.01.01.c.</b> Assess taxonomic characteristics and classify animals according to the taxonomic classification system.	Identification, Team Activity – Identification	NA
<b>AS.06.01.02.c.</b> Recommend different uses for an animal species based upon an analysis of local market needs.	Team Activity – Value Based – Evaluating Class – Value Based	NA
<b>AS.06.01.03.b.</b> Analyze the visual characteristics of an animal or animal product and select correct classification terminology when referring to companion and production animals.	Entire Event	NA
<b>AS.06.02. Performance Indicator: Apply principles of comparative anatomy and physiology to uses within various animal systems.</b>		
<b>AS.06.02.03.c.</b> Apply knowledge of anatomical and physiological characteristics of animals to make production and management decisions.	Grading, Team Activity – Anatomy, Identification	HS-LS1-2
<b>AS.06.03. Performance Indicator: Select animals for specific purposes and maximum performance based on anatomy and physiology.</b>		
<b>AS.06.03.01.c.</b> Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth and reproduction	Grading, Value Based, Keep/Cull, Placing and Identification	STEM Career Cluster, Statement 5

## Meats Evaluation and Technology

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.06.03.02.c.</b> Choose, implement and evaluate sustainable and efficient procedures (e.g., selection, housing, nutrition and management) to produce consistently high-quality animals that are well suited for their intended purposes.	Team Activity – Problem Solving and Grading, Evaluating Class – Placing, Keep/Cull and Value Based	STEM Career Cluster, Statement 5
<b>AS.06.03.03.c.</b> Evaluate and select animals to produce superior animal products based on industry standards.	Entire Event	STEM Career Cluster, Statement 5
<b>AS.07.02. Performance Indicator: Analyze biosecurity measures utilized to protect the welfare of animals.</b>		
<b>AS.07.02.01.c.</b> Design and evaluate a biosecurity plan for an animal production operation.	Team Activity – Food Safety	NA
<b>CS.01.02. Performance Indicator: Examine technologies and analyze their impact on AFNR systems.</b>		
<b>CS.01.02.01.c.</b> Solve problems in AFNR workplaces or scenarios using technology.	Team Activity – Problem Solving	
<b>CS.01.02.02.c.</b> Evaluate the importance of technology use and how it impacts AFNR systems.	Exam	
<b>CS.02.01. Performance Indicator: Research geographic and economic data related to AFNR systems.</b>		
<b>CS.02.01.02.c.</b> Devise a strategy to solve a problem in an AFNR system using a set of economic data.	Team Activity – Value Based	
<b>CS.02.02. Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy.</b>		
<b>CS.02.02.03.b.</b> Assess the economic impact of an AFNR system on a local, state, national and global level.	Exam, Team Activity – Value Based and Problem Solving	
<b>CS.03.01. Performance Indicator: Identify required regulations to maintain and improve safety, health and environmental management systems.</b>		
<b>CS.03.01.01.b.</b> Assess health, safety and environmental procedures to comply with regulatory and safety standards.	Exam, Team Activity – Food Safety	
<b>CS.03.01.02.b.</b> Analyze existing required regulations within an AFNR workplace	Exam, Team Activity – Food Safety and Problem Solving	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CS.03.02. Performance Indicator: Develop a plan to maintain and improve health, safety and environmental compliance and performance.</b>		
CS.03.02.01.b. Analyze health and safety performance plans of an AFNR business.	Exam, Team Activity – Food Safety	AFNR Career Cluster, Statement 6
<b>CS.03.03. Performance Indicator: Apply health and safety practices to AFNR worksites.</b>		
CS.03.03.01.b. Analyze and summarize current health and safety practices of AFNR business.	Exam, Team Activity – Food Safety	
CS.03.03.02.b. Assess various emergency response plan requirements for an AFNR worksite and/or facility.	Exam, Team Activity – Food Safety	
CS.03.03.02.b. Assess various emergency response plan requirements for an AFNR worksite and/or facility.	Exam, Team Activity – Food Safety	
<b>CS.03.04. Performance Indicator: Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.</b>		
CS.03.04.01.b. Analyze and summarize protective equipment requirements on various AFNR tools and equipment.	Exam	
C3.06.04.02.c. Evaluate and select appropriate tools and equipment to complete AFNR tasks.	Exam	
<b>CS.06.02. Performance Indicator: Explain the connection and relationships between different AFNR systems on a national and global level.</b>		
CS.06.02.01.b. Analyze differences between AFNR systems on a national and global scale.	Team Activity – Problem Solving	
<b>CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.</b>		
CRP.01.01.01.b. Analyze and predict how personal responsibility impacts the workplace and community.	Team Activity Process	
CRP.01.01.02.c. Model personal responsibility in workplace and community situations.	Team Activity – Process	



## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.01.02 Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.</b>		
CRP.01.02.01.b. Assess the pros and cons of personal decisions based on their anticipated impact on self and others.	Team Activity – Process	
CRP.01.02.02.b. Analyze the pros and cons of professional decisions based upon impact on employers and community.	Team Activity – Process	
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
CRP.02.01.01.c. Apply academic knowledge and skills to solve problems in the workplace and reflect upon the results achieved.	Entire Event	
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
CRP.02.02.01.c. Apply technical concepts to solve problems in the workplace and reflect upon the results achieved.	Entire Event	
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.01.b. Analyze use of verbal and non-verbal communication strategies in workplace situations.	Team Activity – Process	
<b>CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.</b>		
CRP.04.02.02.c. Compose clear and coherent written documents (e.g., agendas, audio-visuals, drafts, forms, etc.) for formal and informal settings.	Exam, Team Activity- Problem Solving	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Team Activity – Process	
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	Team Activity – Process	



## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
CRP.05.01.01.c. Evaluate workplace and community decision-making processes and devise strategies for improvement.	Team Activity - Process	
CRP.05.01.02.c. Evaluate workplace and community situations and recommend the information and resources needed to support good decisions.	Team Activity - Process	
CRP.05.01.03.c. Synthesize information and resources and apply to workplace and community situations to make positive decisions.	Team Activity - Process	
<b>CRP.05.02. Performance Indicator: Make, defend and evaluate decisions at work and in the community using information about the potential environmental, social and economic impacts.</b>		
CRP.05.02.01.b. Apply a structured decision-making process to improve workplace and community situations.	Team Activity - Process	
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge</b>		
CRP.06.01.01.b. Synthesize information, knowledge and experiences to generate ideas for workplace and community situations.	Team Activity - Process	
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Team Activity - Process	
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.02.b. Apply decision-making processes to generate possible solutions to solve workplace and community problems.	Entire Event	
<b>CRP.08.03. Performance Indicator: Establish plans to solve workplace and community problems and execute them with resiliency.</b>		
CRP.08.03.02.b. Create plans to solve workplace and community problems.	Team Activity	

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.09.01. Performance Indicator: Model characteristics of ethical and effective leaders in the workplace and community (e.g. integrity, self-awareness, self-regulation, etc.).</b>		
CRP.09.01.02.c. Model characteristics and actions of ethical and effective leaders in workplace and community situations (e.g., integrity, self-awareness, etc.).	Team Activity - Process	
<b>CRP.09.03. Performance Indicator: Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community (e.g., positively influencing others, effectively communicating, etc.).</b>		
CRP.09.03.02.c. Model respectful and purposeful behaviors that contribute to positive morale and culture in the workplace and community (e.g., effectively communicating, recognizing accomplishments of others, etc.).	Team Activity - Process	
<b>CRP.11.01. Performance Indicator: Research, select and use new technologies, tools and applications to maximize productivity in the workplace and community.</b>		
CRP.11.01.01.b. Analyze advantages and disadvantages of new technologies, tools and applications to maximize productivity in the workplace and community.	Team Activity – Problem Solving	
CRP.11.01.02.b. Select, apply and use new technologies, tools and applications in workplace and community situations to maximize productivity.	Team Activity – Problem Solving, Value Based	
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
CRP.12.01.02.b. Apply consensus building techniques to accomplish results in team-oriented situations.	Team Activity - Process	
<b>CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).</b>		
CRP.12.02.01.b. Assess team dynamics and match strategies to increase team member engagement.	Team Activity - Process	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>FPP.01.01. Performance Indicator: Analyze and manage operational and safety procedures in food products and processing facilities.</b>		
<b>FPP.01.01.01.b.</b> Analyze and document attributes and procedures of current safety programs in food products and processing facilities.	Exam, Team Activity – Food Safety	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3
<b>FPP.01.01.02.c.</b> Devise strategies to maintain equipment and facilities for food products and processing systems.	Team Activity – Food Safety	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3
<b>FPP.01.02. Performance Indicator: Apply food safety and sanitation procedures in the handling and processing of food products to ensure food quality.</b>		
<b>FPP.01.02.01.c.</b> Identify sources of contamination in food products and/or processing facilities and develop ways to eliminate contamination.	Exam, Team Activity – Food Safety	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.02.c.</b> Examine, interpret and report outcomes from safe handling procedures and results from quality assurance tests.	Exam, Team Activity – Food Safety	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.03.c.</b> Interpret and evaluate results of quality assurance tests on food products and examine steps to implement corrective procedures.	Exam, Team Activity – Food Safety	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.03. Performance Indicator: Apply food safety procedures when storing food products to ensure food quality.</b>		
<b>FPP.01.03.01.b.</b> Analyze characteristics of food products and determine appropriate storage procedures.	Exam	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>FPP.01.03.02.c.</b> Evaluate the effectiveness of a current documentation procedure used within a food products and processing facility and recommend improvements	Exam, Team Activity – Food Safety	
<b>FPP.02.03. Performance Indicator: Apply principles of human behavior to develop food products to provide a safe, wholesome and nutritious food supply for local and global food systems.</b>		
<b>FPP.02.03.02.c.</b> Design new food products that meet a variety of goals (e.g., consumer preferences, market, nutritional needs, regulatory requirements, etc.).	Exam, Team Activity – Formulation	
<b>FPP.03.01. Performance Indicator: Implement selection, evaluation and inspection techniques to ensure safe and quality food products.</b>		
<b>FPP.03.01.01.c.</b> Outline procedures to assign quality and yield grades to food products according to industry standards.	Grading, Questions, Evaluation, Team Activity – Value Based	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.02.b.</b> Assemble procedures to perform quality-control inspections of raw food products for processing.	Exam, Team Activity – Food Safety, Evaluation	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.03.a.</b> Identify and describe protocols for inspection and harvesting techniques for animal food products (e.g., pre-mortem and post-mortem inspections, Food Safety Inspection Service guidelines (FSIS), etc.).	Exam, Team Activity – Food Safety, Anatomy	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.04.c.</b> Evaluate and grade food products from different classifications of food products.	Exam, Team Activity – Value Based, Evaluation, Grading, Identification	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.02. Performance Indicator: Design and apply techniques of food processing, preservation, packaging and presentation for distribution and consumption of food products.</b>		
<b>FPP.03.02.01.b.</b> Compare weights and measurements of products and perform conversions between units of measure.	Team Activity- Value Based, Grading, Identification and Evaluation	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.02.c.</b> Evaluate food quality factors on foods prepared for different markets (e.g., shelf life, shrinkage, appearance, weight, etc.).	Exam, Team Activity – Value Based, Evaluation, Grading, Identification	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3

## Meats Evaluation and Technology

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>FPP.03.02.03.a.</b> Identify methods of food preservation and give examples of foods preserved by each method.	Exam, Team Activity – Quality, Evaluation, Identification	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.03. Performance Indicator: Create food distribution plans and procedures to ensure safe delivery of food products.</b>		
<b>FPP.03.03.02.a.</b> Examine the various paths food products take to get from food processing centers to consumers.	Identification, Team Activity – Food Safety and Exam	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 HS-ETS1-2
<b>FPP.03.03.03.c.</b> Propose distribution plans for food products that meet specific market demands.	Exam, Identification, Evaluation, Grading, Team Activity – Value Based	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 HS-ETS1-2
<b>FPP.04.01. Performance Indicator: Examine the scope of the food industry by evaluating local and global policies, trends and customs for food production.</b>		
<b>FPP.04.01.01.b.</b> Analyze the similarities and differences amongst policies and legislation that affect the food products and processing system in the U.S. or around the world.	Exam, Evaluation, Grading, Team Activity – Value Based, Food Safety	HS-ETS1-3 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 2
<b>FPP.04.01.02.c.</b> Devise a strategy to create food products that meet a specific consumer trend in a specific market.	Exam, Evaluation, Grading, Team Activity – Value Based, Formulations, Question	HS-ETS1-3 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 2
<b>FPP.04.01.03.b.</b> Analyze food production and distribution outcomes based on cultural customs.	Exam, Grading, Evaluation, Team Activity – Formulation	HS-ETS1-3 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 2

## Meats Evaluation and Technology

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>FPP.04.02. Performance Indicator: Evaluate the significance and implications of changes and trends in the food products and processing industry in the local and global food systems.</b>		
<b>FPP.04.02.01.b.</b> Analyze and document significant changes and trends in the food products and processing industry.	Exam, Evaluation, Grading, Team Activity – Formulation	NSFL Buying Goods and Services, Benchmarks: Grade 12, Statement 1
<b>FPP.04.02.02.a.</b> Identify and explain environmental and safety concerns about the food supply.		NSFL Buying Goods and Services, Benchmarks: Grade 12, Statement 1
<b>FPP.04.02.03.b.</b> Evaluate desirable and undesirable outcomes of emerging technologies used in the food products and processing systems.		NSFL Buying Goods and Services, Benchmarks: Grade 12, Statement 1
<b>FPP.04.03.01.b.</b> Evaluate the changes in the food products and processing industry brought about by industry organizations or regulatory agencies.		NSFL Buying Goods and Services, Benchmarks: Grade 12, Statement 1
<b>FPP.04.03.02.b.</b> Assess the application of industry standards in the food products and processing industry.		NSFL Buying Goods and Services, Benchmarks: Grade 12, Statement 1



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

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# MILK QUALITY AND PRODUCTS

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS



## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The purpose of the National FFA Milk Quality and Products Career Development Event is to promote practical learning activities in milk quality and dairy products, as well as assisting students in developing team decision-making skills.*

The focus of the National FFA Milk Quality and Products Career Development Event is raw milk quality, dairy products, federal milk marketing orders and attributes of selected milk products. The five general areas that contribute to milk quality and consumer demand are:

- Milk production
- Milk and dairy product quality and safety
- Milk processing or manufacturing
- Raw milk marketing
- Facility operations:
  - Safety/sanitation
  - Labor

For information about milk production and related careers, see the reference section at the end of this handbook.

## Objectives

*This event will provide the participant with the ability to:*

### UTILIZE KNOWLEDGE OF MILK QUALITY

- Producing quality milk:
  - Regulations
  - Grades and classes of milk
  - Factors necessary to produce quality milk
- Cleaning and sanitizing:
  - General types of cleaners and sanitizers
  - Water hardness
  - Milkstone
  - Approved milking equipment and design
  - Proper milking procedures
- Cooling milk
- Identifying diseases transmitted to consumers via milk
- Recognizing causes of off flavors in milk

### UTILIZE KNOWLEDGE OF MILK PRICING

- Marketing and marketing concepts:
  - Pricing trends
  - Economics
  - Supply and demand
- Federal milk marketing orders, economics and distribution:
  - Transportation costs
  - Cooperatives
  - Pricing

## **UTILIZE KNOWLEDGE OF THE COMPOSITION AND QUALITY CHARACTERISTICS OF RAW AND PASTEURIZED MILK AND MILK PRODUCTS**

- Nonfat solids portion:
  - Milkfat
  - Adulterants, including water
  - Bacterial standards and testing
  - Quality testing
- Understand the causes and control of mastitis, its influences on milk quality and cheese yield and the use of mastitis detection methods in controlling the disease:
  - Causes
  - Prevention
  - Detection (California Mastitis Test and Direct Microscopic Somatic Cell Count)
  - Treatment
  - Regulatory programs
- Identify cheese varieties and characterize properties
- Identify flavor defects and evaluate milk quality
- Understand importance of dairy food safety programs
- Identify and compare dairy vs. non-dairy products

## Event Rules

- Teams will consist of four members.
- Team ranking is determined by combining the scores of all team participants.
- It is highly recommended that all participants be in official FFA dress for this event.
- Participants will report for instructions to the event superintendent at the time and place shown in the current year's team orientation packet.
- Participants are not to use strong deodorant, perfume, chewing gum or other detractors to the taste and smell senses.
- Any participant in possession of an electronic device in the event area is subject to disqualification. (Calculators will be provided.)
- Allergy Information: Food products used in this event may contain or come in contact with potential allergens. Advisors must submit a special needs request form for participants with any allergies with certification. The event committee will make all reasonable efforts to accommodate students with food allergies.

## Event Format

### EQUIPMENT

- Materials to be provided by the student:
  - Two no. 2 pencils
  - Bottled water and/or palate cleanser
- Materials provided by the CDE committee:
  - All paper and other supplies
  - Calculators
  - Clipboards
- Participants are **not** to bring:
  - Glass of any kind to the event
  - Cell phones, calculators or other electronic devices

### FLOW OF EVENT

- Milk Flavor Identification and Evaluation: 20 minutes
- Product Identification: 20 minutes
- California Mastitis Test: 20 minutes
- Cheese Identification: 20 minutes
- Written Exam: 40 minutes
- Problem Solving: 40 minutes
- Team Activity: Varied based on activities

## Team Activity

*Team members will work together to determine producer milk acceptability based on some or all of the following tests.*

Teams may have to perform the acceptability tests or analyze test results given. Teamwork will be assessed during the completion of the acceptability tests.

Examples of acceptability tests include:

- Recent producer history
- Percent TA (acidity)
- DMSCC (Direct Microscopic Somatic Cell Count)
- SPC (Standard Plate Count)
- PI count (Preliminary Incubation Count)
- Antibiotic screening test
- Sample temperature
- Sample freezing point
- Equipment
- Sanitation
- Food Safety

Teams will present their test findings, acceptability solution and improvement recommendations to a panel of judges. Order of participation and presentations will be based upon a random lottery draw.

## TEAM ACTIVITY SCORING

- Accuracy of report results: 100 points
- Content of comments: 200 points
- Presentation (written/oral): 50 points
- Teamwork/Process: 50 points

## INDIVIDUAL ACTIVITIES

### MILK FLAVOR IDENTIFICATION AND EVALUATION (120 POINTS, 6 POINTS FOR FLAVOR ID, 6 POINTS FOR INTENSITY SCORE)

- Ten milk samples will be scored on flavor defect (taste and odor) using the computerized scorecard. Check only the most serious defect in a sample even if more than one flavor is detected (all samples of milk are prepared from pasteurized whole vitamin D milk intended for table use). Milk samples will be tempered to 60°F. Only those cups provided at the event may be used. (Six points per correct answer.)
- Participants are to use whole numbers when scoring “Defect Intensity”. If no defect is noted, participants should check, “No defect” and score as a ten (See Scoring Guide below). (Six points per correct answer.)

Palate cleansers (e.g., apples, apple juice or soda crackers) will be allowed for refreshing.

#### Scoring Guide

Refer to the current scorecard being used at the national level. Scores may range from 1 to 10. On a quality basis:

10	excellent (no defect)
8 to 9	good
5 to 7	fair
2 to 4	poor
1	unacceptable/un-salable

**EXAMPLE: MILK FLAVOR**

DEFECTS	SCORES*		
	Slight	Definite	Pronounced
Acid	3	2	1
Bitter	5	3	1
Feed	9	8	5
Flat/Watery	9	8	7
Foreign	5	3	1
Garlic/Onion	5	3	1
Malty	5	3	1
No defect	10	10	10
Oxidized	6	4	1
Rancid	4	2	1
Salty	8	6	4

\*Suggested scores are given for three intensities of flavor. All numbers within the range may be used. Intermediate numbers may also be used; for example, a bitter sample of milk may score four.

**PRODUCT IDENTIFICATION-DAIRY VERSUS NON-DAIRY (100 POINTS, 6 POINTS IDENTIFICATION, 4 POINTS FAT CONTENT)**

- A total of ten samples consisting of dairy and non-dairy products will be identified and assigned a milk fat content score.
- The following products may be included among the samples:
  - Dairy Products: nonfat (skim) milk (.05%), reduced fat milk (2%), milk (3.25%), half and half (10.5%), butter (80%), sour cream (18%), flavored milk (3.3%) light whipped cream (30%), heavy cream (35%)



- Non-Dairy Products: Margarine, non-dairy creamer, non-dairy sour cream, non-dairy milk, non-dairy flavored beverage and non-dairy whipped topping all of these are to be categorized as non-dairy fat.

### CALIFORNIA MASTITIS TEST (40 POINTS)

- The California Mastitis Test will be scored using even numbers from 0 to 8 inclusive. (See below for the Scoring Guide for the California Mastitis Test.)
- Five samples of milk will be evaluated for abnormality, using the California Mastitis Test method.

#### Scoring Guide

CMT Test Score	Appearance	Participant Score	* Somatic Cell Count
Negative	Mixture liquid, no precipitate	0	0
T	Slight precipitate tends to disappear with paddle movement	2	200-300,000
1	Distinct precipitate but does not gel	4	400-500,000
2	Distinct gel formation	6	1,200,000 – 1,500,000
3	Strong gel formation, which tends to adhere to paddle. Forms distinct central peak	8	Over 5,000,000

\*Reference

### CHEESE IDENTIFICATION (100 POINTS)

- Ten cheese samples for identification will be selected from those listed. Cubes of the cheeses will be available for tasting.

**Note:** More than one sample of a given cheese may be used.

A score of four points is given for each variety correctly identified.

Uncolored cheeses may be used.

(40 points possible)

- In addition to identifying cheese samples, participants will classify characteristics of identified cheeses using the following matrix. Participants will have six characteristics to select based on the ten identified cheese samples. An example cheese characteristic problem can be found in the reference section of this handbook. (60 points possible).



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Cheese Characteristics Matrix

A description of major varieties of cheeses popular among American consumers.

VARIETY	Moisture (%) (Maximum) <sup>1</sup>	Fat (%) (Minimum) <sup>2</sup>	Pasta Filata <sup>3</sup>	Brine/surface Salted	Ripened by	Origin
Blue/Bleu	46	50	no	yes	mold	France
Brie	52.5	20	no	no	bacteria and mold	France
Cheddar Mild	39	50	no	no	bacteria	England
Cheddar Sharp	39	50	no	no	bacteria	England
Colby	40	50	no	no	bacteria	US
Cream	55	33	no	no	unripened	US
Feta	60	42	no	yes	bacteria	Greece
Gouda	45	48	no	yes	bacteria	Netherlands
Havarti	54	30	no	no	bacteria	Denmark
Gruyere	39	45	no	yes	bacteria	Switzerland
Monterey Jack	44	50	no	no	bacteria	US
Mozzarella	60	45	yes	yes	bacteria	Italy
Munster	46	50	no	no	bacteria	France
Parmesan	32	32	no	yes	bacteria	Italy
Processed American	40	50	no	no	bacteria	US
Provolone	45	45	yes	yes	bacteria	Italy
Queso Fresco	59	18	no	no	unripened	Mexico
Ricotta	73	4	no	no	unripened	Italy
Romano	34	38	no	yes	bacteria	Italy
Swiss	41	43	no	yes	bacteria	Switzerland

<sup>1</sup>Some cheeses have a range in moisture permitted, but these are the highest permitted amounts.

<sup>2</sup>Some cheese standards use percentage by weight of total solids (e.g., cheddar) while others use percentage by weight of the cheese (e.g., cream).

<sup>3</sup>Curd is stretched in hot water to align the protein molecules and provide stretch to the curd

## Cheese Characterization Example Problem

The six items in the “characteristics” column are based on the information found in the Cheese Characterization Matrix in this handbook.

Cheese samples are from the cheese identification activity. Participants will select all characteristics that apply to each sample. Answers will be recorded on the event-specific scan form. Characteristics in the problem can change each year.

CHARACTERISTICS	SAMPLE NUMBERS				
	1 (Cheddar)	2 (Cream)	3 (Swiss)	4 (Mozzarella)	5 (Bleu)
Maximum moisture = 39%	X				
Minimum fat in the solids = 33%		X			
Receives “pasta filata treatment”				X	
Salted in brine				X	
Ripened by molds					X
Originated in England	X				

**PROBLEM SOLVING (100 POINTS)**

The problem solving test will consist of a total of 20 critical-thinking, multiple choice questions. Topics may include, but are not limited to:

- Decisions about the quality and acceptability of milk.
- Calculations of the value of milk and components of milk.
- Decisions about components of milk and milk products (including processing procedures).
- Decisions about the use of chemicals in cleaning and sanitizing operations.

**WRITTEN EXAM (120 POINTS)**

The written exam will be comprised of a total of 60 multiple choice items. The exam will be given in two parts with one part consisting of thirty (30) questions on quality milk production and a second part of thirty (30) questions on milk marketing.

**TIEBREAKERS**

If ties occur, the following events will be used in order to determine award recipients:

**TEAM**

1. Team activity
2. Milk identification total score of all team members
3. Cheese identification score for all team scores

**INDIVIDUAL**

1. Milk identification
2. Cheese identification
3. Product identification
4. Problem solving

## Scoring

The event will be worth 2,720 total points based on positive-type scoring.

ACTIVITY	Points/ Sample	Samples	Individual Points	Team Points
Milk flavor identification and evaluation	12 points/ sample	10 samples	120	480
Product identification	10 points/ sample	10 samples	100	400
California Mastitis Test	8 points/ sample	5 samples	40	160
Cheese type identification	10 points/ sample	10 samples	100	400
Problem Solving		20 questions	100	400
Written Exam		60 questions	120	480
Total Possible Individual Points			580	2,320
			Team Activity	400
TOTAL POINTS PER TEAM				2,720



## Awards

*Awards will be presented at the awards ceremony.*

Awards are presented to teams as well as individuals based upon their rankings.

## SPECIALTY AWARDS – CERTIFICATES

### INDIVIDUAL

- Milk Flavor Identification – Top three Individuals
- Cheese Evaluation – Top three Individuals
- CMT Interpretation – Top three Individuals
- Problem Solving – Top three Individuals
- Written Exam – Top three Individuals
- Dairy/Non-Dairy Product Identification – Top three individuals

### TEAM

- Team Activity/Performance – Top five teams for overall team activity and individual performance
- Coaches – Top five

## References

*This list of references is not intended to be all-inclusive.*

- Other sources may be utilized and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.
- National FFA National Career Development Event Questions and Answers [FFA.org](http://FFA.org)
- Hoard's Dairyman, P.O. Box 801, Fort Atkinson, Wisconsin 53538. Phone (414) 563-5551. Issues used are from November of previous year to May of current year.
- California Mastitis Test published by the University of Missouri-Columbia Extension Division, Columbia, Missouri 65211. (Single copy free, write for price quote for multiple copies).
- California Mastitis Test kit can be ordered from NASCO. Toll free 1-800-558-9595 or toll call, 1-414-563-2446. NASCO, 901 Janesville Avenue, Fort Atkinson, WI 53538.
- Dairy Business <http://dairybusiness.com/> 7. *Agricultural Marketing Service* – <http://www.ams.usda.gov/AMSv1.0/DairyLandingPage>
- Dairy Foods: Producing the Best, Dr. Robert Marshall; Instructional Materials Laboratory <http://dass.missouri.edu/aged/resources/dairy-foods-booklet.pdf>
- The Dairy Practices Council: Guidelines [www.dairypc.org](http://www.dairypc.org)
  - #21 – Raw Milk Quality Tests
  - #24 – Troubleshooting High Bacteria Counts of Raw Milk
  - #38 – Preventing Off-Flavors in Milk
  - #71 – Prevention of and Testing for Added Water in Milk
  - #98 – Milking Procedures for Dairy Cattle



- Pasteurized Milk Ordinance <http://www.idfa.org/docs/default-source/news-files/2013-pmo-final.pdf?sfvrsn=0>
  - SECTION 1. DEFINITIONS
  - SECTION 6. THE EXAMINATION OF MILK AND/OR MILK PRODUCTS
  - SECTION 7. STANDARDS FOR GRADE “A” MILK AND/OR MILK PRODUCTS
  - ITEM 15p. PROTECTION FROM CONTAMINATION
  - APPENDIX E. EXAMPLES OF 3-OUT-OF-5 COMPLIANCE ENFORCEMENT PROCEDURES
  - APPENDIX G. CHEMICAL AND BACTERIOLOGICAL TESTS
  - APPENDIX K. HACCP PROGRAM
  - APPENDIX N. DRUG RESIDUE TESTING AND FARM SURVEILLANCE
  - **NOTE:** In the document items followed by a “p” referred to the Pasteurized side, items followed by an “r” refer to the Raw side.
- Code of Federal Regulations Title 21, Part 133 – Cheeses and Related Cheese Products <http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?CFRPart=133>
- Code of Federal Regulations Title 21, Part 131 – Milk and Cream <http://www.accessdata.fda.gov/scripts/cdrh/cfdocs/cfcfr/CFRSearch.cfm?CFRPart=131>

## Milk Production and Related Careers

The production of high quality raw milk requires the following:

- Clean and healthy cows.
- Equipment that is constructed appropriately from approved materials.
- Proper installation, cleaning, sanitizing and operation of the equipment.
- Rapid cooling of milk in compliance with regulatory requirements.
- Delivery of milk to the processor within 48 hours.
- Prevention of milk adulterants such as water, antibiotics, pesticides, cleaning and sanitizing chemicals, medicinal agents and any other extraneous materials.
- Application of tests for acceptability of milk.

Fresh raw milk should possess a sweet bland flavor, be free of feed flavors and contain low number of somatic cells and bacteria.

Mixed milk from several cows (herd milk) is expected to contain approximately 3.5% milk fat, 3.1% protein and 4.8% lactose, the main characterizing constituents. Milk is the most important source of calcium in the diet of the average American, supplying approximately 70% of the dietary calcium.

Students considering a career related to the subject matter in this CDE may wish to consider that persons of the following groups contribute to the successful production of high quality milk and milk products:

- Dairy farmers and herd managers manage and milk cows and prepare milk for dealers
- Field representatives of the buying and/or selling organizations provide advice to producers and promote milk quality for buyers
- Milk sanitarians enforce public health regulations
- Food technologists apply chemical, physical, microbiological and sensory tests to determine the quality and safety of milk and milk products

- Manufacturers and dealers of dairy equipment supply and service equipment
- Suppliers of chemicals used in cleaning and sanitizing provide chemicals and advice on proper use
- Veterinarians treat diseased animals and advise producers on disease prevention
- Milk plant operators process milk into finished product for consumers
- U. S. Food and Drug Administration manages the regulation of grade A milk
- U. S. Department of Agriculture manages the regulation of manufacturing grade milk and provides grading services to manufacturers of butter, cheese and nonfat dry milk
- Officials and technicians of the USDA Federal Milk Marketing Orders sample, test and account for milk marketed under federal orders. They also apply regulations to marketing raw milk
- State departments of agriculture and/or public health manage the public health regulations applied to milk at the state level
- State dairy extension agents provide advice to dairymen regarding production and sale of milk
- Accountants and financial advisors with knowledge of the milk industry
- Dairy food scientist
- Ag economist – knowledge of milking pricing exporting milking procedures of dairy cattle
- Dairy food nutritionist international marketing specialist with bilingual abilities
- Feed nutritionist
- Information technologist
- Milk hauler



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# Communications Team Activity Rubric

50 points

INDICATOR	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 1-0 points	Points Earned	Weight	Total Points
<b>Oral Communication</b>						
<b>Speaking without hesitation</b>	<ul style="list-style-type: none"> <li>Speaks very articulately without hesitation.</li> <li>Never has the need for unnecessary pauses or hesitation when speaking.</li> </ul>	<ul style="list-style-type: none"> <li>Speaks articulately but sometimes hesitates.</li> <li>Occasionally has the need for a long pause or moderate hesitation when speaking.</li> </ul>	<ul style="list-style-type: none"> <li>Speaks articulately but frequently hesitates.</li> <li>Frequently hesitates or has long, awkward pauses while speaking.</li> </ul>		X 1	
<b>Tone</b>	<ul style="list-style-type: none"> <li>Appropriate tone is consistent.</li> <li>Speaks at the right pace to be clear.</li> <li>Pronunciation of words is very clear and intent is apparent.</li> </ul>	<ul style="list-style-type: none"> <li>Appropriate tone is usually consistent.</li> <li>Speaks at the right pace most of the time but shows some nervousness.</li> <li>Pronunciation of words is usually clear, sometimes vague.</li> </ul>	<ul style="list-style-type: none"> <li>Has difficulty using an appropriate tone.</li> <li>Pace is too fast; nervous.</li> <li>Pronunciation of words is difficult to understand; unclear.</li> </ul>		X 1	
<b>Being detail-oriented</b>	<ul style="list-style-type: none"> <li>Is able to stay fully detail-oriented.</li> <li>Always provides details which support the issue; is well organized.</li> </ul>	<ul style="list-style-type: none"> <li>Is mostly good at being detail-oriented.</li> <li>Usually provides details which are supportive of the issue; displays good organizational skills.</li> </ul>	<ul style="list-style-type: none"> <li>Has difficulty being detail-oriented.</li> <li>Sometimes overlooks details that could be very beneficial to the issue; lacks organization.</li> </ul>		X 1	
<b>Speaking unrehearsed</b>	<ul style="list-style-type: none"> <li>Speaks unrehearsed with comfort and ease.</li> <li>Is able to speak quickly with organized thoughts and concise answers.</li> </ul>	<ul style="list-style-type: none"> <li>Speaks unrehearsed mostly with comfort and ease but sometimes seems nervous or unsure.</li> <li>Is able to speak effectively, has to stop and think and sometimes gets off focus.</li> </ul>	<ul style="list-style-type: none"> <li>Shows nervousness or seems unprepared when speaking unrehearsed.</li> <li>Seems to ramble or speaks before thinking.</li> </ul>		X 1	

## Communications Team Activity Rubric continued

INDICATOR	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 1-0 points	Points Earned	Weight	Total Points
<b>Connecting and articulating facts and issues</b>	<ul style="list-style-type: none"> <li>Exemplary in connecting facts and issues and articulating how they impact the issue locally and globally.</li> <li>Possesses a strong knowledge base and is able to effectively articulate information regarding related facts and current issues.</li> </ul>	<ul style="list-style-type: none"> <li>Sufficient in connecting facts and issues and articulating how they impact the issue locally and globally.</li> <li>Possesses a good knowledge base and is able to, for the most part, articulate information regarding related facts and current issues.</li> </ul>	<ul style="list-style-type: none"> <li>Has difficulty with connecting facts and issues and articulating how they impact the issue locally and globally.</li> <li>Possesses some knowledge base but is unable to articulate information regarding related facts and current issues.</li> </ul>		X 1	
<b>All team members participated</b>	<ul style="list-style-type: none"> <li>All team members took an active role in the presentation.</li> </ul>	<ul style="list-style-type: none"> <li>Three team members took an active role in the presentation.</li> </ul>	<ul style="list-style-type: none"> <li>Two or less team members took an active role in the presentation.</li> </ul>		X 1	
<b>Non-Verbal Communication</b>						
<b>Attention (eye contact)</b>	<ul style="list-style-type: none"> <li>Eye contact constantly used as an effective connection.</li> <li>Constantly looks at the entire audience (90-100% of the time).</li> </ul>	<ul style="list-style-type: none"> <li>Eye contact is mostly effective and consistent.</li> <li>Mostly looks around the audience (60-80% of the time).</li> </ul>	<ul style="list-style-type: none"> <li>Eye contact does not always allow connection with the speaker.</li> <li>Occasionally looks at someone or some groups (less than 50% of the time).</li> </ul>		X 1	
<b>Mannerisms</b>	<ul style="list-style-type: none"> <li>Does not have distracting mannerisms that affect effectiveness.</li> <li>No nervous habits.</li> </ul>	<ul style="list-style-type: none"> <li>Sometimes has distracting mannerisms that pull from the presentation.</li> <li>Sometimes exhibits nervous habits or ticks.</li> </ul>	<ul style="list-style-type: none"> <li>Has mannerisms that pull from the effectiveness of the presentation.</li> <li>Displays some nervous habits; fidgets or anxious ticks.</li> </ul>		X 0.5	
<b>Gestures</b>	<ul style="list-style-type: none"> <li>Gestures are purposeful and effective.</li> <li>Hand motions are expressive and used to emphasize talking points.</li> <li>Great posture (confident) with positive body language.</li> </ul>	<ul style="list-style-type: none"> <li>Usually uses purposeful gestures.</li> <li>Hands are sometimes used to express or emphasize.</li> <li>Occasionally slumps; sometimes negative body language.</li> </ul>	<ul style="list-style-type: none"> <li>Occasionally gestures are used effectively.</li> <li>Hands are not used to emphasize talking points; hand motions are sometimes distracting.</li> <li>Lacks positive body language; slumps.</li> </ul>		X 0.5	
<b>Well poised</b>	<ul style="list-style-type: none"> <li>Is extremely well poised.</li> <li>Poised and in control at all times.</li> </ul>	<ul style="list-style-type: none"> <li>Usually is well poised.</li> <li>Poised and in control most of the time; rarely loses composure.</li> </ul>	<ul style="list-style-type: none"> <li>Isn't always well poised.</li> <li>Sometimes seems to lose composure.</li> </ul>		X 1	
<b>TOTAL POINTS</b>						



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## Teamwork Activity Rubric

50 points

INDICATOR	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 1-0 points	Points Earned	Weight	Total Points
<b>Managing team dynamics</b>	<ul style="list-style-type: none"> <li>Completely committed to team dynamics, maturity and professionalism is always present.</li> <li>In team conflicts, problem-solving and decision-making methods and skills are used to produce a positive compromise.</li> </ul>	<ul style="list-style-type: none"> <li>Somewhat committed to team dynamics, maturity and professionalism is seldom present.</li> <li>In team conflicts, problem-solving and decision-making methods and skills are sometimes used to produce a compromise. Sometimes involvement in this process is limited.</li> </ul>	<ul style="list-style-type: none"> <li>Lacking team dynamics, maturity and professionalism.</li> <li>When team conflict arises minimal or no attempt at a resolution is made by team members.</li> </ul>		X 3	
<b>Awareness of personality styles of others</b>	<ul style="list-style-type: none"> <li>Totally conscious and respectful of differing attitudes, personalities and behaviors.</li> <li>Language is free of bias, and completely shows an understanding and respect for others' differences in learning and personality.</li> </ul>	<ul style="list-style-type: none"> <li>Is, for the most part, respectful of others' differences in personality and behavior.</li> <li>For the most part, language conveys an understanding of others' differences in learning and personality.</li> </ul>	<ul style="list-style-type: none"> <li>Shows little tolerance for differing personalities and behaviors.</li> <li>Language used may be expressed as not understanding others' differences in personality and learning styles.</li> </ul>		X 1	
<b>Uses positive and mature language and mannerisms</b>	<ul style="list-style-type: none"> <li>Always uses mature language and mannerisms.</li> <li>Never uses immature verbal and/or nonverbal communication.</li> <li>Always has positive communications.</li> </ul>	<ul style="list-style-type: none"> <li>Usually uses mature language and mannerisms.</li> <li>Rarely uses immature verbal and/or nonverbal communication.</li> <li>Usually has positive communications.</li> </ul>	<ul style="list-style-type: none"> <li>Seldom or never uses mature language and mannerisms.</li> <li>Frequently uses immature verbal and/or nonverbal communication.</li> <li>Seldom has positive communications.</li> </ul>		X 2	
<b>Reacting to changes</b>	<ul style="list-style-type: none"> <li>Has ability to react and transition effortlessly to change.</li> <li>Shows excellent ability to adapt with unexpected change; thinks quickly; shows no sign of stress.</li> </ul>	<ul style="list-style-type: none"> <li>Typically reacts well to changes.</li> <li>Seems able to adapt to unexpected change most of the time; occasionally stresses.</li> </ul>	<ul style="list-style-type: none"> <li>Has difficulty reacting well to changes.</li> <li>Seems stressed by change.</li> </ul>		X 1	
<b>Handling tasks</b>	<ul style="list-style-type: none"> <li>Handles tasks with ease, including task assignment.</li> <li>Efficient in planning, managing and completing all tasks in a timely and organized fashion.</li> <li>All project parts are assigned equally.</li> </ul>	<ul style="list-style-type: none"> <li>Does a good job handling tasks with some ease, including task assignment.</li> <li>Is thoughtful about the planning and sequencing of tasks, but occasional priority mistakes are made.</li> <li>Some project parts are assigned equally.</li> </ul>	<ul style="list-style-type: none"> <li>Has difficulty handling tasks, including task assignment.</li> <li>Seems to have trouble deciding the order to do several tasks and struggles with completion in a timely manner.</li> <li>No project parts are assigned equally.</li> </ul>		X 3	
<b>TOTAL POINTS</b>						



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# Agriculture, Food and Natural Resources Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.01.01. Performance Indicator: Evaluate the development and implications of animal origin, domestication and distribution on production practices and the environment.</b>		
AS.01.01.01.c. Evaluate the implications of animal adaptations on production practices and the environment.	Exam	HS-LS4-3
AS.01.02.02.c. Devise and evaluate marketing plans for an animal agriculture product or service.	Exam Problem solving	HS-LS4-3
<b>AS.02.02. Performance Indicator: Analyze procedures to ensure that animal products are safe for consumption.</b>		
AS.02.02.02.c. Research and evaluate programs to assure the safety of animal products for consumption.	Exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
<b>AS.03.02 Performance Indicator: Analyze feed rations and assess if they meet the nutritional needs of animals.</b>		
AS.03.02.01.c. Select appropriate feedstuffs for animals based on a variety of factors (e.g., economics, digestive system and nutritional needs, etc.).	Exam	
AS.03.02.02.c. Select and utilize animal feeds based on nutritional requirements, using rations for maximum nutrition and optimal economic production.	Exam	
<b>BS.02.02. Performance Indicator: Implement standard operating procedures for the proper maintenance, use and sterilization of equipment in a laboratory.</b>		
BS.02.02.02.b. Manipulate basic laboratory equipment and measurement devices (e.g., water bath, electrophoresis equipment, micropipettes, laminar flow hood, etc.).	California Mastitis Test Team activity Exam	
BS.02.02.03.b. Create a plan for sterilizing equipment in a laboratory according to standard operating procedures.	Exam Problem solving	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>FPP.01.01. Performance Indicator: Analyze and manage operational and safety procedures in food products and processing facilities.</b>		
<b>FPP.01.01.01.b.</b> Analyze and document attributes and procedures of current safety programs in food products and processing facilities.	Team activity Exam Problem solving	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3
<b>FPP.01.01.02.c.</b> Devise strategies to maintain equipment and facilities for food products and processing systems.	Team activity Exam	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3
<b>FPP.01.02. Performance Indicator: Apply food safety and sanitation procedures in the handling and processing of food products to ensure food quality.</b>		
<b>FPP.01.02.01.c.</b> Identify sources of contamination in food products and/or processing facilities and develop ways to eliminate contamination.	Team activity Exam Milk flavor	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.02.c.</b> Examine, interpret and report outcomes from safe handling procedures and results from quality assurance tests.	California Mastitis Test Team activity Milk flavor	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.03.c.</b> Interpret and evaluate results of quality assurance tests on food products and examine steps to implement corrective procedures.	California Mastitis Test Team activity Milk flavor Problem solving Exam	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.04.c.</b> Conduct and interpret microbiological tests for food -borne pathogens.	California Mastitis Test Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2



## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>FPP.01.03. Performance Indicator: Apply food safety procedures when storing food products to ensure food quality.</b>		
FPP.01.03.01.c. Prepare plans that ensure implementation of proper food storage procedures.	Team activity Exam	
FPP.01.03.02.c. Evaluate the effectiveness of a current documentation procedure used within a food products and processing facility and recommend improvements.	Team activity Problem solving	
<b>FPP.02.01. Performance Indicator: Apply principles of nutrition and biology to develop food products that provide a safe, wholesome and nutritious food supply for local and global food systems.</b>		
FPP.02.01.01.c. Analyze the properties of food products to identify food constituents and evaluate nutritional value.	Milk flavor Exam Problem solving Cheese type identification	
FPP.02.01.02.b. Compare and contrast the nutritional needs of different human diets.	Exam	
<b>FPP.02.02. Performance Indicator: Apply principles of microbiology and chemistry to develop food products to provide a safe, wholesome and nutritious food supply for local and global food systems.</b>		
FPP.02.02.01.c. Design and conduct experiments to determine the chemical and physical properties of food products.	California Mastitis Test Team activity	
<b>FPP.02.03. Performance Indicator: Apply principles of human behavior to develop food products to provide a safe, wholesome and nutritious food supply for local and global food systems.</b>		
FPP.02.03.01.b. Examine, interpret and explain the meaning of required components on a food label.	Problem solving Product identification	
FPP.02.03.02.b. Determine consumer preference and market potential for a new food product.	Problem solving Exam	
<b>FPP.03.01. Performance Indicator: Implement selection, evaluation and inspection techniques to ensure safe and quality food products.</b>		
FPP.03.01.01.c. Outline procedures to assign quality and yield grades to food products according to industry standards.	Product identification Exam	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
FPP.03.01.02.c. Develop care and handling procedures to maintain original food quality and yield.	Team activity Problem solving Exam	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>FPP.03.01.04.c.</b> Evaluate and grade food products from different classifications of food products.	Milk flavor Product identification Cheese identification	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.02. Performance Indicator: Design and apply techniques of food processing, preservation, packaging and presentation for distribution and consumption of food products.</b>		
<b>FPP.03.02.01.b.</b> Compare weights and measurements of products and perform conversions between units of measure.	Problem solving Exam Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.02.c.</b> Evaluate food quality factors on foods prepared for different markets (e.g., shelf life, shrinkage, appearance, weight, etc.).	Product identification Cheese identification Milk flavor Exam	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.04.b.</b> Analyze the degree of desirable food qualities of foods stored in various packaging.	Problem solving Product identification Cheese identification Milk flavor	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.03. Performance Indicator: Create food distribution plans and procedures to ensure safe delivery of food products.</b>		
<b>FPP.03.03.01.c.</b> Devise a strategy to determine ways for food distribution to reduce environmental impacts. PI, Exam and PS	Product identification Exam Problem solving	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 HS-ETS1-2
<b>FPP.03.03.02.c.</b> Make recommendations to improve safety procedures used in food distribution scenarios to ensure a safe product is being delivered to consumers.	Exam Team activity Problem solving	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 HS-ETS1-2

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>FPP.03.03.03.b.</b> Assess how market demand for food products influences the distribution of food products.	Exam Problem solving	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9–10.2 CCSS.ELA-Literacy.W.11–12.2 HS-ETS1-2
<b>FPP.04.01. Performance Indicator: Examine the scope of the food industry by evaluating local and global policies, trends and customs for food production.</b>		
<b>FPP.04.01.01.b.</b> Analyze the similarities and differences amongst policies and legislation that affect the food products and processing system in the U.S. or around the world.	Team activity Exam	HS-ETS1-3 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 2
<b>FPP.04.01.02.a.</b> Examine the impact of consumer trends on food products and processing practices (e.g., health and nutrition, organic, information about food products, local food movements, etc.).	Exam	HS-ETS1-3 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 2
<b>FPP.04.02. Performance Indicator: Evaluate the significance and implications of changes and trends in the food products and processing industry in the local and global food systems.</b>		
<b>FPP.04.02.01.b.</b> Analyze and document significant changes and trends in the food products and processing industry.	Problem solving Team activity Exam	Buying Goods and Services, Benchmarks: Grade 12, Statement 1
<b>FPP.04.02.02.b.</b> Assess the issues of safety and environmental concerns about foods and food processing (e.g., GMOs, irradiation, microorganisms, contamination, etc.).	Problem solving Team activity Exam	Buying Goods and Services, Benchmarks: Grade 12, Statement 1
<b>FPP.04.02.03.b.</b> Evaluate desirable and undesirable outcomes of emerging technologies used in the food products and processing systems.	Team activity Problem solving	Buying Goods and Services, Benchmarks: Grade 12, Statement 1
<b>FPP.04.03. Performance Indicator: Identify and explain the purpose of industry organizations, groups and regulatory agencies that influence the local and global food systems.</b>		
<b>FPP.04.03.01.b.</b> Evaluate the changes in the food products and processing industry brought about by industry organizations or regulatory agencies.	Exam Problem solving	Transportation, Distribution and Logistics Career Cluster – Transportation Systems/Infrastructure Planning, Management and Regulation Pathway, Statement 4 Buying Goods and Services, Benchmarks: Grade 12, Statement 7

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
FPP.04.03.02.c. Construct plans that ensure implementation of industry standards for food products and processing facilities.	Team activity	Transportation, Distribution and Logistics Career Cluster – Transportation Systems/Infrastructure Planning, Management and Regulation Pathway, Statement 4 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>CS.01.01. Performance Indicator: Examine issues and trends that impact AFNR systems on local, state, national and global levels.</b>		
CS.01.01.02.c. Evaluate emerging trends and the opportunities they may create within the AFNR systems.	Exam Problem solving	
CS.02.01.01.c. Evaluate geographic data and select necessary data sets to solve problems within AFNR systems.	Exam Problem solving	
<b>CS.02.02. Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy.</b>		
CS.02.02.03.c. Evaluate how positive or negative changes in the local, state, national or global economy impacts AFNR systems.	Exam	
<b>CS.03.01. Performance Indicator: Identify required regulations to maintain and improve safety, health and environmental management systems.</b>		
CS.03.01.01.c. Evaluate how AFNR organizations/businesses promote improved health, safety and environmental management.	Exam	
<b>CS.03.04. Performance Indicator: Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.</b>		
CS.03.04.03.b. Assess and demonstrate appropriate operation, storage and maintenance techniques for AFNR tools and equipment.	Exam	
<b>CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.</b>		
CRP.01.01.01.b. Analyze and predict how personal responsibility impacts the workplace and community.	Team activity	
CRP.01.01.02.b. Assess personal level of responsibility and examine opportunities for improvement.	Team activity	
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
CRP.02.01.01.a. Distinguish opportunities to apply academic learning to solve problems in the workplace (e.g., identify how to: increase productivity, reduce costs, lower inputs, etc.).	Team activity	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
CRP.02.01.01.b. Assess workplace problems and identify the most appropriate academic knowledge and skills to apply.	Team activity	
CRP.02.01.01.c. Apply academic knowledge and skills to solve problems in the workplace and reflect upon the results achieved.	Team activity	
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
CRP.02.02.01.c. Apply technical concepts to solve problems in the workplace and reflect upon the results achieved.	Team activity	
CRP.02.02.02.c. Apply technical concepts to solve problems in the community and reflect upon results achieved.	Team activity	
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.01.a. Identify and categorize strategies for ensuring clarity, logic, purpose and professionalism in verbal and non-verbal communication (e.g., vocal tone, organization of thoughts, eye contact, preparation, etc.).	Team activity	
CRP.04.01.01.c. Evaluate other's verbal and non-verbal communications (e.g., speeches, presentations, oral reports, etc.) and propose recommendations for improvement in clarity, logic, purpose and professionalism.	Team activity	
CRP.04.01.02.a. Examine and assess personal ability to speak with clarity, logic, purpose and professionalism in formal and informal settings (e.g., speeches, interviews, presentations, oral reports, etc.).	Team activity	
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Team activity	
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
CRP.05.01.01.c. Evaluate workplace and community decision-making processes and devise strategies for improvement.	Team activity	
CRP.05.01.02.c. Evaluate workplace and community situations and recommend the information and resources needed to support good decisions.	Team activity	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
CRP.05.01.03.a. Classify the types of information (e.g., data, research, procedures, regulations, etc.) and resources (e.g., human, financial, technology, time, etc.) that may be used to make workplace and community decisions.	Team activity	
CRP.05.01.03.b. Analyze workplace and community decisions and assess the information and resources used to make those decisions.	Team activity	
CRP.05.01.03.c. Synthesize information and resources and apply to workplace and community situations to make positive decisions.	Team activity	
<b>CRP.05.02. Performance Indicator: Make, defend and evaluate decisions at work and in the community using information about the potential environmental, social and economic impacts.</b>		
CRP.05.02.01.c. Evaluate and defend decisions applied in the workplace and community situations.	Team activity	
CRP.05.02.02.c. Evaluate workplace and community situations and propose decisions to be made based upon the positive impact made on environment, social and economic areas.	Team activity	
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
CRP.06.01.02.c. Devise strategies (e.g., ask questions, brainstorm ideas, present facts and information etc.) to challenge common assumptions in workplace and community situations.	Team activity	
<b>CRP.06.02. Performance Indicator: Assess a variety of workplace and community situations to identify ways to add value and improve the efficiency of processes and procedures.</b>		
CRP.06.02.01.c. Evaluate past workplace and community situations and determine how processes and procedures impacted outcomes.	Team activity	
<b>CRP.07.02. Performance Indicator: Evaluate the validity of sources and data used when considering the adoption of new technologies, practices and ideas in the workplace and community.</b>		
CRP.07.02.01.c. Propose valid and reliable data sources to use when considering the adoption of new technologies, practices and ideas.	Team activity	
CRP.07.02.02.c. Create and defend proposals for new technologies, practices and ideas using valid and reliable data sources.	Team activity	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.c. Evaluate how applying critical thinking skills can impact workplace and community situations.	Team activity	
CRP.08.01.02.c. Devise strategies to apply reason, logic and input from multiple perspectives to solve workplace and community problems.	Team activity	
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.01.c. Devise strategies to evaluate the effectiveness of solutions for resolving workplace and community problems.	Team activity	
CRP.08.02.02.c. Evaluate and select solutions with greatest potential for success to solve workplace and community problems.	Team activity	
<b>CRP.11.01. Performance Indicator: Research, select and use new technologies, tools and applications to maximize productivity in the workplace and community.</b>		
CRP.11.01.02.c. Evaluate effectiveness and make recommendations for using new technologies, tools and applications in the workplace and community.		
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
CRP.12.01.02.a. Identify and summarize techniques to build consensus in a team situation.	Team activity	
CRP.12.01.02.b. Apply consensus building techniques to accomplish results in team-oriented situations.	Team activity	
CRP.12.01.02.c. Devise and implement methods to obtain feedback from team members on their experiences after completing workplace and community projects.	Exam	
CRP.12.01.03.c. Evaluate personal level of cultural and global competence and implement plans for growth and improvement in workplace and community situations.	Problem solving	
CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).	Exam	

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.12.02.02.a.</b> Examine and summarize workplace and community situations where it is important to engage team members to meet team and organizational goals (e.g., meetings, presentations, etc.).	Team activity	
<b>CRP.12.02.02.b.</b> Select strategies to engage team members and apply in a variety of situations.	Team activity	
<b>CRP.12.02.02.c.</b> Evaluate the effectiveness of strategies to engage team members in a variety of workplace and community situations.	Team activity	





# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

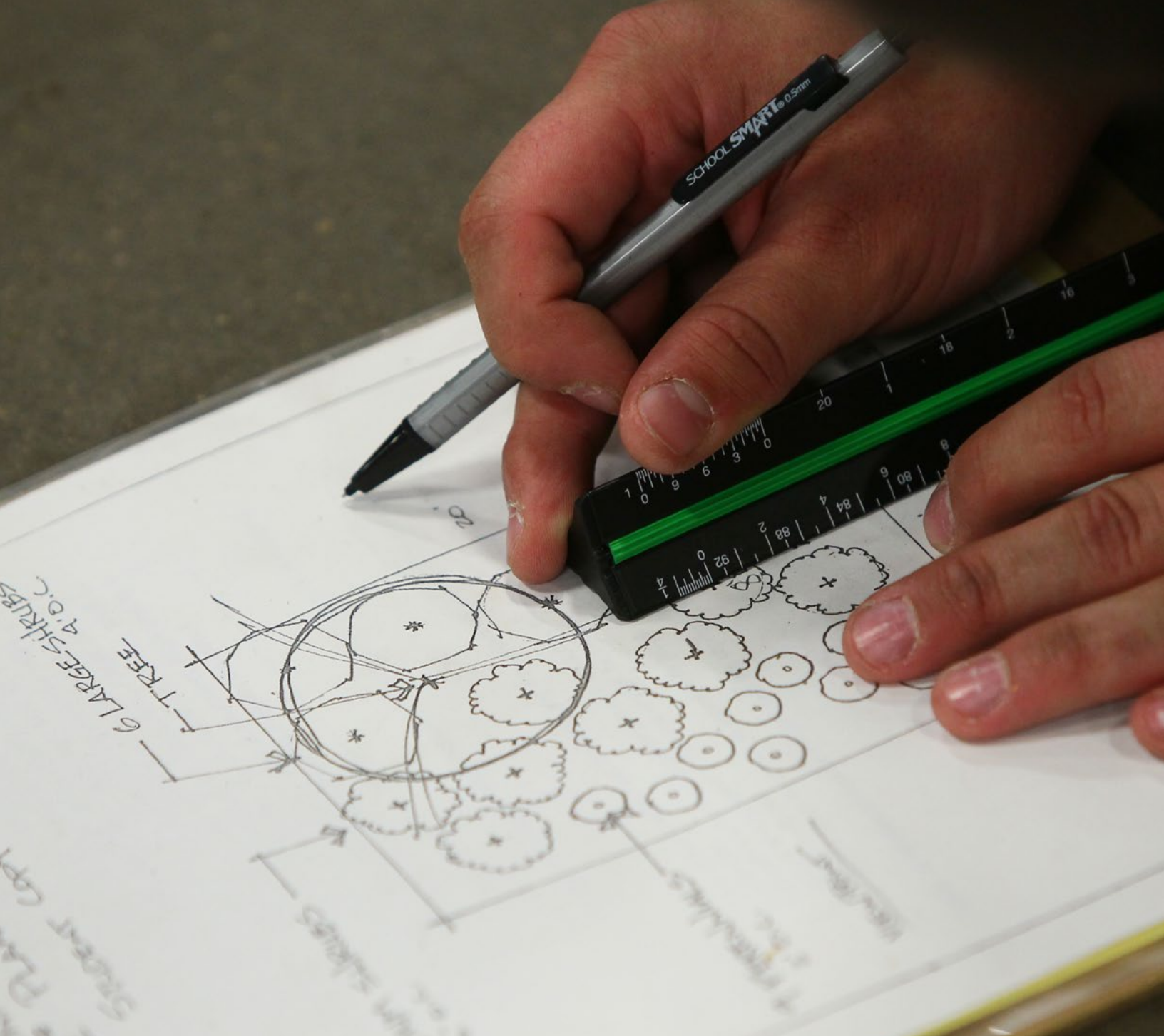
## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# NURSERY/ LANDSCAPE

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Event Purpose

*The purpose of the National FFA Nursery/Landscape Career Development Event is to promote career interest, encourage proficiency development and recognize excellence in participants of the event which includes all aspects of the industry to produce, market, utilize and maintain landscape plants (woody and herbaceous plants and turf grasses), as well as related production and landscaping products, equipment and services including design.*

## Objectives

- **Nursery/Landscape Principles:** To apply nursery and landscape principles and practices as they impact residential, commercial, public and recreational applications.
- **Plant Materials:** To demonstrate the ability to identify, select and utilize nursery and landscape plants (interior/exterior), landscape materials and turf grasses commonly used in the United States.
- **Plant Disorders:** To demonstrate the ability to identify unhealthy plant conditions due to pests, nutritional/physiological disorders and mechanical/chemical injury.
- **Cultural Practices:** To demonstrate knowledge of the principles and skills involved in propagation, growth requirements, growing techniques, harvesting, sustainability, marketing and maintenance of interior and exterior landscape plants and turf grasses.
- **Design and Construction:** To demonstrate knowledge of the principles and techniques of landscape design, estimating and construction.
- **Supplies and Equipment:** To demonstrate the ability to identify, select, use and maintain appropriate supplies and equipment for nursery and landscape operations, including equipment and procedures in mechanization and automation.
- **Safety:** To demonstrate knowledge of safety practices in nursery and landscape operations.
- **Interpersonal Relations:** To demonstrate skills in oral and written business communications.
- **Business Management:** To demonstrate an understanding of marketing principles and business management as well as proper sales and service skills.
- **Records and Reports:** To demonstrate the ability to prepare estimates and complete financial statements.





## Event Rules

- Each team will be comprised of four team members. The four individual scores and the team activity and skills challenge scores will be used to determine the final team score.
- It is highly recommended that participants wear FFA Official Dress for the team photo. After the photo session, the team should change clothing and dress in appropriate “work clothing” for all remaining activities for the day. It is highly recommended that the team be in official dress for the second day of competition.
- Coaches may accompany participants to the event site, but must leave the area at the start of the event. At the conclusion of all event components, the superintendent will announce when participants, visitors and coaches may enter the competition area to review the materials and organization.
- Under no circumstances will any participant be allowed to touch or handle plant materials or other specimens during the event except as expressly permitted in certain practicums.
- Any participant in possession of an electronic device other than a calculator and electronic speller, in the event area is subject to disqualification.

## Event Format

Each participant must have the following individual tools for both days of competition:

- A clean clipboard
- At least two No. 2 pencils
- A ball-point or felt-tip pen
- A calculator
  - Calculators used in this event should be battery operated, nonprogrammable and silent with large keys and large displays. Calculators may have only these functions: addition, subtraction, multiplication, division, equals, percent, square root, +/- key and one memory register. No other calculators are allowed to be used during the event.
- An architect's scale
- An engineer's scale

Additional items allowed but not required, include the following:

- A pocket-size dictionary or electronic speller and a hand pruner or knife.
- Teams may also be requested to supply one or more laptop computers. Coaches will be notified if laptops are needed in the coaches letter.

## TEAM INTERACTIVE EVENTS

### PHASE 1: TEAM ACTIVITY (50 POINTS PER CONTESTANT PLUS 100 TEAM POINTS)

This practicum involves team members working together to accomplish an assignment. It is designed to evaluate individual and group contributions in coordination and cooperation of knowledge, evaluation and decision-making. The team activity has two parts, described below.

#### Team Preparation

- The team members work as a group in evaluating a landscape or nursery business situations (production, service, personnel, business operations/relations) or educational programming, as in the following general themes: promotions, startup business plan, consulting, customer service, service-learning or community involvement. The team will have 30 minutes for preparation. Notepaper and other supplies, including computer resources that may be appropriate for the situation, will be available. References will not be needed beyond what is provided for this preparation section. Judge(s) will be observing and scoring teamwork during this time but will not interact with the team. If needed, the team may ask the judge(s) basic questions about the assignment or materials provided.

#### Team Presentation

- Each of the team members will participate in the verbal presentation to a judge(s) based on decisions made during the preparation. The team will have 15 minutes for the presentation and interaction with the judge(s). The presentation format is informal and the conversation will be as if at a conference table, not a speech prepared with visual aids. Division of the time and organization of the presentations is at the team's discretion. The judge(s) may ask questions of the team members during this time. Information will be provided to the team on the judge's role as a business client, supervisor or other appropriate party to facilitate the dialogue.
- Scoring criteria for the team preparation and presentation portions are given on the "Team Activity" scorecards. Individual components from each phase have a value of 50 points added to the individual's

score, while the team components of both phases have a value of 100 points added to the composite team score.

## **PHASE 2: TEAM SKILLS CHALLENGE (400 TEAM POINTS)**

This phase is designed to evaluate the team's ability to apply nursery/landscape knowledge and skills by completing a variety of hands-on and problem solving activities. No equipment will be started during the event. Teams will be given a list of tasks which may be accomplished individually, in pairs or more as determined by the team members according to the skills, experience and preferences of each team member. After completing their tasks, team members may then assist other team members as time allows. The number and type of activities will vary from year to year. General topic areas (not actual tasks) will be communicated in the team orientation packet. Both objective questions and qualitative evaluations may be included in the task scoring. Some examples of activities include the following:

- Determine equipment specifications, demonstrate pre-check operations.
- Demonstrate and/or explain lawn care procedures and equipment operation.
- Demonstrate and/or explain hardscape procedures, e.g., pavers or retaining wall installation, irrigation pipe assembly.
- Demonstrate and/or explain chemical handling procedures, e.g., fertilizer or pesticide equipment calibration and application.
- Demonstrate and/or explain preparing service receipts.
- Demonstrate and/or explain plant material quality assessment.
- Demonstrate and/or explain pruning maintenance.
- Demonstrate and/or explain safety practices.

Scoring of the separate tasks will be based on correct answers for objective questions or on criteria appropriate for the task recorded by a judge. All task scores will be converted to percentage scores recorded on the "Team Skills Challenge" scorecard with team points earned as the average percentage of all tasks assigned.



## INDIVIDUAL EVENTS

### PHASE 3: GENERAL KNOWLEDGE EXAMINATION (150 POINTS PER CONTESTANT)

Objective questions will be prepared on topics reflecting subject areas in the objectives. This phase will evaluate the participant's knowledge and understanding of basic horticultural principles in producing, marketing, using and maintaining landscape plants and turf. Participants will record their answers on a scan form.

### PHASE 4: IDENTIFICATION OF PLANTS, PESTS, DISORDERS, BENEFICIAL INSECTS, EQUIPMENT AND SUPPLIES (150 POINTS PER CONTESTANT)

Participants will identify items selected from the provided list covering the following categories:

- Plant materials will be presented as intact, live specimens, photos, plant parts or any combination.
- Pests and disorders will be presented as a damaged specimen, photograph or preserved specimen, herbarium sheet, insect mount, etc. A “disorder” label will be with an item to designate identification of a problem rather than the plant.
- Beneficial insects and other organisms that benefit the landscape by feeding on harmful organisms.
- Equipment and supplies will be either an intact item or photograph.
- Each specimen will be designated by a station number. When the participant identifies the item, its name is then located on the identification list. The participant then records the number by that name on a scan form at the respective station number.
- Each participant will be provided a copy of the list at the event site. No specimens or items may be touched or handled in any way.

**PHASE 5: LANDSCAPE ESTIMATING (100 POINTS PER CONTESTANT)**

This practicum is designed to evaluate participant knowledge of and ability in:

- Evaluating a landscape design.
- Reading a landscape drawing.
- Determining materials needed to execute a landscape plan.
- Maintenance estimating and bidding.
- Evaluating factors that affect profitability of a landscape business.

A landscape drawing and scratch paper will be provided to the participants. There will be objective questions about the landscape plan. Participants will record their answers using a scan form.

**PHASE 6: VERBAL CUSTOMER ASSISTANCE (50 POINTS PER CONTESTANT)**

This interpersonal relations practicum is designed to evaluate participant knowledge of and ability in:

- Verbal communication.
- Sales and customer assistance skills.
- Plant materials, plant culture and problems.
- Nursery and landscape supplies and equipment.

The participant will assume the role of a business customer service representative (garden center or other related business or an educational agency) responding to an assistance need of the customer or client (the judge). General themes might include, but are not limited to, the following: clinical diagnosis or recommendations; care advice; sales of plants, equipment, treatments; deal with complaints.

Each participant will be located at a separate station with one minute allotted to review the materials and information provided prior to arrival of the judge. These materials may be handled and referred to as appropriate for the conversation with the judge. Plants, disorders, supplies not listed on the material and plant resource lists will be communicated prior to the event. Scoring criteria are listed on the respective scorecard.

**PHASE 7: WRITTEN CUSTOMER ASSISTANCE (50 POINTS PER CONTESTANT)**

This interpersonal relations practicum has the same objectives as in Phase 6: Verbal Customer Assistance applied to written communication.

- Written communication
- Sales and customer assistance skills
- Plant material, plant culture and problems
- Nursery and landscape supplies and equipment

The participant will assume the role of a customer service representative or the representative of an education agency, such as the extension service. A copy of correspondence about a plant, landscape or business question will be provided, along with the appropriate response information. Each participant will compose an appropriate response in handwritten or electronic format. Thirty minutes will be allowed for this practicum. Scoring criteria are presented on the “Written Customer Assistance Scorecard”.

**PHASE 8: NURSERY PROPAGATION OR POTTING (50 POINTS)**

This practicum is designed to evaluate participant knowledge of and ability in performing fundamental nursery production practices. All participants will perform one of the following exercises. The selected exercise will not be announced prior to the start of the event. Judges will ask clarifying questions of the students.

- **Propagating Nursery Stock:** Each participant will be furnished a stock plant, or stock plant material, rooting flat and media, rooting hormone, a hand pruner, a label and marking pen. Personal propagating knives or pruners are allowed, if desired. Participants are to prepare the cuttings and place them in the media with a single label.
- **Potting Nursery Stock:** Each participant will be furnished a supply of plants, nursery containers of appropriate size and growing media. Hand pruners, a label and a marking pen will also be provided. Personal pruners are allowed, if desired. The participants will pot the plants, one

per container, using standard nursery practices. Plant division or grading of liners may be involved. One finished container will be labeled.

An official will observe and score each participant during the practicum. Following completion of the assigned practicum the official will ask questions regarding the propagation or potting activity. Scoring criteria are listed on the respective scorecards.

## Scoring

*Participant scores are the sum of the seven individual phases of the event.*

Team scores are the sum of all members scores plus the group portion of the team activity and team challenge. Possible points are as follows:

PHASE	Member	Team
1A. Team Activity – Individual	50	200
1B. Team Activity – Group		100
2. Team Skills Challenge		400
3. General Knowledge Exam	150	600
4. Identification	150	600
5. Landscape Estimating	100	400
6. Verbal Customer Assistance	50	200
7. Written Customer Assistance	50	200
8. Nursery Propagation/Potting	50	200
<b>INDIVIDUAL TOTAL</b>	<b>600</b>	
<b>TEAM TOTAL</b>		<b>2,900</b>

## TIEBREAKERS

If needed in the case of tied individuals, final placings will be determined by comparing, in order, scores for the following:

1. General Knowledge Exam
2. Identification
3. Landscape Estimating

If needed in the case of tied team total scores, final placings will be determined by comparing, in order, scores for the following:

1. Team Skills Challenge
2. Team Preparation and Presentation scores
3. Team General Knowledge Exam score



## Awards

*Awards will be presented at an awards ceremony to individuals and/or teams based upon their rankings.*

### SPECIAL AWARDS

Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/ or by the general fund of the National FFA Foundation.

In addition to the general awards of the career development events, the top three participants in the following two areas will be specially recognized:

- **Nursery/Landscape Knowledge and Principles:** based on the composite score from the Written Exam and Identification section.
- **Nursery/Landscape Applications:** based on the composite score from the five practicums from the following sections: Team Activity – Individual; Landscape Estimating; Verbal Customer Assistance; Written Customer Assistance; Production Practices.
- **Team Recognition:** The top three teams in the team skills — based on the composite score, will be specially recognized.

## References

*The following list of references is a guide to team training.*

Some content areas have more than one title listed. This reflects the wide array of quality references available for this event. No single reference is recommended as superior over others in that area. Multiple references are desirable as no single source is comprehensive for the entire nursery/landscape event. References other than those listed may be equally valuable resources, along with the many video and computer-based training aids available.

### NATIONAL FFA CORE CATALOG

- Nursery/Landscape CDE materials: <http://shop.ffa.org>
- CDE Q&A's: [FFA.org](http://ffa.org)

### GENERAL REFERENCES

- Introduction to Horticulture. Current edition. Charles B. Schroeder, Eddie Dean Seagle, Lorrie M. Felton, John M. Ruter, William Terry Kell, and Gerard Krewer. Prentice-Hall, Inc., Englewood Cliffs, NJ. ISBN 0130364134
- Introductory Horticulture. Current edition. H. Edward Reiley and Carroll L. Shry, Jr. Clifton Park, NY: Delmar Cengage Learning. ISBN 9781435480391
- Ornamental Horticulture. Current edition. Jack Ingels. Delmar Publishers Inc., Albany, NY. ISBN-13: 9781435498167
- Introduction to Plant and Soil Science and Technology. Current edition. Ronald J. Biondo and Jasper S. Lee. Prentice-Hall, Inc., Englewood Cliffs, NJ. ISBN 0813432162

## LANDSCAPE

- Landscaping Principles and Practices. Current edition. Jack Ingels. Delmar Publishers Inc., Albany, NY. ISBN 13: 9781428376410
- Landscaping Construction. Current edition. David Sauter. Delmar Publishers Inc., Albany, NY. ISBN 143549718X
- Introduction to Landscaping: Design, Construction, and Maintenance. Current edition. Ronald J. Biondo and Charles B. Schroeder. Prentice-Hall, Inc., Englewood Cliffs, NJ. ISBN 0133626385
- Landscape Training Manuals for Installation, Irrigation, and Maintenance Technicians. Current edition. National Association of Landscape Professionals, 950 Herndon Pkwy, Suite 450, Herndon, VA 20170 <http://www.landscapetechnician.net>

## TURF

- Turfgrass Science and Management. Current edition. Robert D. Emmons. Delmar Publishers Inc., Albany, NY. ISBN 10: 1418013307
- Turfgrass Management. Current edition. A.J. Turgeon. Prentice-Hall, Inc. Boston. ISBN 0137074352

## NURSERY

- Plant Propagation: Principles and Practices. Current edition. Hudson T. Hartmann, Fred T. Davies, Jr., Dale E. Kester, and Robert L. Genieve. Prentice Hall, Boston. ISBN 0135014492
- American Standard for Nursery Stock. Current edition. American Association of Nurserymen, Inc., 1250 I St., NE, Suite 500, Washington, DC. (available as a pdf file free to nonmembers at [http://americanhort.org/documents/ANSI\\_Nursery\\_Stock\\_Standards\\_AmericanHort\\_2014.pdf](http://americanhort.org/documents/ANSI_Nursery_Stock_Standards_AmericanHort_2014.pdf))



## SECONDARY REFERENCES

- Practical Horticulture. Current edition. Laura W. Rice and Robert P. Rice. Prentice-Hall, Inc., Englewood Cliffs, NJ. ISBN 0135038669
- Landscape Design: A Practical Approach. Current edition. Leroy G. Hannebaum. PrenticeHall, Inc., Upper Saddle River, NJ. ISBN 0130105813
- Manual of Woody Landscape Plants. Current edition. Michael A. Dirr. Stipes Publishing Co., Champaign, IL. ISBN 978-1-58874-868-3
- A Field Guide to Woody Landscape Plants of the Southeast. Current edition. Rex Bishop. Tea Olive Productions. Marietta, GA. ISBN 097253430X
- Nursery Management: Administration and Culture. Current edition. Harold Davidson, Roy Mecklenburg, and Curtis Peterson. Prentice-Hall, Upper Saddle River, NJ. ISBN 0138579962
- Landscape Plants, Their Identification, Culture, and Use. Current edition. Ferrell M. Bridwell. Delmar Thomson Learning, Albany, NY. ISBN 0766836347
- Know It and Grow It III: A Guide to the Identification and Use of Landscape Plants. Current edition. Carl E. Whitcomb. Lacebark, Inc. Stillwater, OK. ISBN 0961310910
- Manual of Herbaceous Ornamental Plants. Current edition. Steven M. Still. Stipes Publishing Co., Champaign, IL. ISBN 0-87563-433-8.
- Herbaceous Perennial Plants: A Treatise on Their Identification, Culture, and Garden Attributes. Current edition. Allan M. Armitage, Stipes Publishing Co., Champaign, IL. ISBN 978-1-58874-868-3.
- Landscape Construction Procedures, Techniques, and Design. Current edition. Floyd Giles. Stipes Publishing Co., Champaign, IL. ISBN 0875638848
- The Turf Problem Solver: Case Studies and Solutions for Environmental, Cultural, and Pest Problems. Current edition. A.J. Turgeon and J.M. Vargas, Jr. J. Wiley, Hoboken, NJ. ISBN 9780471736196.

## TRADE PERIODICALS

- American Nurseryman. American Nurserymen Publishing Co., Chicago, IL. <http://www.amerinursery.com/>
- Grounds Maintenance. Primedia, Overland Park, KS., [www.grounds-mag.com/](http://www.grounds-mag.com/)
- Turf Magazine, plus several other on-line titles. Moose River Media LLC. [www.turfmagazine.com/](http://www.turfmagazine.com/)
- Interiorscape.com: A Forum for Interior Plantscape Professionals. [www.interiorscape.com/](http://www.interiorscape.com/)

## INDUSTRY CATALOGS

Many horticultural supply company catalogs can be utilized for reference support on tools, equipment and supplies that may not be illustrated in other sources.

- A.M. Leonard, Inc., 665 Spiker Road, Piqua, OH 45356 (513/773-2697 or <http://www.amleo.com/index1.html>)
- Hummert International, 4500 Earth City Expressway, Earth City, Mo. 63045, 800-325-3055 /phone <https://www.hummert.com>

## WEBSITES AND PROBLEM SAMPLES

Visit the National FFA website at <http://www.ffa.org> for information on career development events, access to prior-year event materials and links to additional study aids. Additional links and resources will be included as they are developed or identified, along with the following links of the CDE sponsors:

- <http://www.stihlusa.com/information/>
- <http://www.kubota.com>
- <http://www.arysta-na.com>
- <http://www.treefund.org>
- <https://www.landscapeprofessionals.org/>



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Nursery/Landscape Plant Identification

NAME

MEMBER NUMBER

CHAPTER

STATE

No.	Botanical Name	Common Name
101	<i>Abelia x grandiflora</i>	Glossy Abelia
102	<i>Abies concolor</i>	White Fir
103	<i>Acer palmatum</i> cv.	Japanese Maple
104	<i>Acer platanoides</i> cv.	Norway Maple
105	<i>Acer rubrum</i> cv.	Red Maple
106	<i>Acer saccharum</i> cv.	Sugar Maple
107	<i>Ajuga reptans</i> cv.	Carpet Bugle
108	<i>Antirrhinum majus</i> cv.	Snapdragon
109	<i>Aquilegia x hybrida</i> cv.	Columbine
110	<i>Amelanchier arborea</i>	Downy Serviceberry
111	<i>Astilbe hybrid</i> cv.	Astilbe
112	<i>Begonia semperflorens-cultorum</i>	Wax Begonia
113	<i>Berberis x mentorensis</i>	Mentor Barberry
114	<i>Betula nigra</i>	River Birch
115	<i>Brassaia actinophylla</i>	Schefflera, Octopus Tree
116	<i>Buxus microphylla</i> cv.	Littleleaf Boxwood
117	<i>Camellia japonica</i> cv.	Common Camellia
118	<i>Cedrus atlantica</i> 'Glaucua'	Blue Atlas Cedar
119	<i>Cercis canadensis</i>	Redbud
120	<i>Chaenomeles speciosa</i> cv.	Japanese (Flowering) Quince
121	<i>Clematis hybrid</i>	Clematis
122	<i>Cornus florida</i> cv.	Flowering Dogwood
123	<i>Cotoneaster dammeri</i>	Bearberry Cotoneaster
124	<i>Cotoneaster divaricatus</i>	Spreading Cotoneaster
125	<i>Crataegus phaenopyrum</i>	Washington Hawthorn
126	<i>Cynodon dactylon</i> cv.	Bermudagrass

No.	Botanical Name	Common Name
127	<i>Dieffenbachia maculata</i> cv.	Spotted Dumb Cane
128	<i>Dracaena deremensis</i> 'Warneckii'	Striped Dracaena
129	<i>Dracaena fragens</i> 'Massangeana'	Corn Plant
130	<i>Echinacea purpurea</i>	Purple Coneflower
131	<i>Epipremnum</i> spp.	Pothos
132	<i>Euonymus alatus</i>	Winged Euonymus
133	<i>Euonymus fortunei</i> cv.	Wintercreeper
134	<i>Fagus sylvatica</i> cv.	European Beech
135	<i>Festuca</i> spp. and cv.	Fescue
136	<i>Ficus benjamina</i>	Benjamin Fig
137	<i>Ficus elastica</i> 'Decora'	Decora Rubber Plant
138	<i>Forsythia x intermedia</i> cv.	Border Forsythia
139	<i>Fraxinus americana</i> cv.	White Ash
140	<i>Gaillardia aristata</i> cv.	Common Blanketflower
141	<i>Gardenia jasminoides</i> 'Fortuniana'	Common Gardenia
142	<i>Ginkgo biloba</i>	Ginkgo, Maidenhair Tree
143	<i>Gleditsia triacanthos inermis</i> cv.	Thornless Honeylocust
144	<i>Hedera helix</i> cv.	English Ivy
145	<i>Heemerocallis</i> spp. and cv.	Day lily
146	<i>Hosta x hybrida</i> cv.	Plaintain Lily
147	<i>Hydrangea quercifolia</i>	Oakleaf Hydrangea
148	<i>Hydrangea macrophylla</i>	Bigleaf Hydrangea
149	<i>Ilex cornuta</i> cv.	Chinese Holly
150	<i>Ilex crenata</i> cv.	Japanese Holly
151	<i>Ilex x meserveae</i> cv.	Meserve Holly

## Nursery/Landscape

## Nursery/Landscape Plant Identification continued

No.	Botanical Name	Common Name
152	<i>Impatiens hybrid cv.</i>	Impatiens
153	<i>Iris x germanica florentina cv.</i>	Bearded Iris
154	<i>Juniperus chinensis cv.</i>	Chinese Juniper
155	<i>Juniperus horizontalis cv.</i>	Creeping Juniper
156	<i>Lagerstroemia indica cv.</i>	Crape Myrtle
157	<i>Leucanthemum x superbum cv.</i>	Shasta Daisy
158	<i>Liquidambar styraciflua</i>	Sweet Gum
159	<i>Liriodendron tulipifera</i>	Tuliptree
160	<i>Liriope spp. cv.</i>	Lilyturf
161	<i>Lonicera japonica 'Halliana'</i>	Hall's Japanese Honeysuckle
162	<i>Magnolia grandiflora cv.</i>	Southern Magnolia
163	<i>Magnolia x soulangiana cv.</i>	Chinese (Saucer) Magnolia
164	<i>Mahonia aquifolia cv.</i>	Oregon Grape
165	<i>Malus spp. and cv.</i>	Flowering Crabapple
166	<i>Myrica pensylvanica</i>	Bayberry
167	<i>Nandina domestica</i>	Heavenly Bamboo
168	<i>Narcissus pseudonarcissus cv.</i>	Daffodil
169	<i>Nyssa sylvatica</i>	Sour (Black) Gum
170	<i>Pachysandra terminalis</i>	Japanese Spurge
171	<i>Paeonia hybrid cv.</i>	Peony
172	<i>Parthenocissus tricuspidata</i>	Boston Ivy
173	<i>Pelargonium x hortorum cv.</i>	Zonal Geranium
174	<i>Pennisetum ruppelia</i>	Fountain Grass
175	<i>Petunia x hybrida cv.</i>	Petunia
176	<i>Philodendron scandens oxycardium</i>	Heartleaf Philodendron
177	<i>Picea abies</i>	Norway Spruce
178	<i>Picea pungens cv.</i>	Colorado (Blue ) Spruce
179	<i>Pieris japonica</i>	Lily-of-the-Valley Bush
180	<i>Pinus mugo</i>	Mugo Pine
181	<i>Pinus strobus</i>	Eastern White Pine
182	<i>Pinus sylvestris</i>	Scotch Pine
183	<i>Pinus thunbergiana</i>	Japanese Black Pine
184	<i>Platanus x acerifolia</i>	London Planetree

No.	Botanical Name	Common Name
185	<i>Poa pratensis cv.</i>	Kentucky Bluegrass
186	<i>Podocarpus macrophyllus</i>	Southern Yew
187	<i>Potentilla fruticosa cv.</i>	Shrubby Cinquefoil
188	<i>Prunus laurocerasus cv.</i>	Cherry Laurel
189	<i>Prunus serrulata 'Kwanzan'</i>	Kwanzan Japanese Flowering Cherry
190	<i>Pyracantha coccinea cv.</i>	Firethorn
191	<i>Quercus alba</i>	White Oak
192	<i>Quercus palustris</i>	Pin Oak
193	<i>Quercus rubra</i>	Red Oak
194	<i>Rhododendron x catawbiense</i>	Catawba Hybrid Rhododendron
195	<i>Rhododendron Hybrid</i>	Exbury Hybrid Azalea
196	<i>Rosa spp.</i>	Landscape/Shrub Rose cv.
197	<i>Salvia nemorosa cv.</i>	Meadow Sage
198	<i>Sedum spp.</i>	Sedum
199	<i>Solenostemon scutellarioides</i>	Coleus
200	<i>Sorbus aucuparia</i>	European Mountain Ash
201	<i>Spiraea x bumalda</i>	Bumalda Spirea
202	<i>Syringa vulgaris cv.</i>	Common Lilac
203	<i>Tagetes spp. cv.</i>	Marigold
204	<i>Taxodium distichum</i>	Bald Cypress
205	<i>Taxus spp. and cv.</i>	Yew
206	<i>Thuja occidentalis cv.</i>	American Arborvitae
207	<i>Tilia cordata</i>	Littleleaf Linden
208	<i>Tsuga canadensis</i>	Canadian Hemlock
209	<i>Tulipa spp. cv.</i>	Tulip
210	<i>Verbena x hybrida cv.</i>	Garden Verbena
211	<i>Viburnum x burkwoodii</i>	Burkwood Viburnum
212	<i>Viburnum trilobum</i>	American Cranberrybush Viburnum
213	<i>Vinca minor cv.</i>	Periwinkle
214	<i>Viola x wittrockiana cv.</i>	Pansy
215	<i>Wisteria sinensis cv.</i>	Chinese Wisteria
216	<i>Yucca filamentosa</i>	Adam's Needle



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Pests, Disorders and Beneficial Insects Identification

No.	Item Name
<b>Pests</b>	
217	Aphid
218	Bagworm
219	Borer
220	Leafhopper
221	Leaf Miner
222	Scale
223	Spider Mite
224	Snail/Slug
225	Whitefly
226	White Grub
<b>Diseases</b>	
227	Anthraxnose
228	Apple Scab
229	Black Spot
230	Botrytis
231	Canker
232	Cedar-Apple Rust
233	Crown Gall
234	Fireblight
235	Powdery Mildew
236	Root Rot

No.	Item Name
<b>Weeds</b>	
237	Annual Bluegrass
238	Broadleaf Plantain
239	Buckhorn Plantain
240	Chickweed
241	Crabgrass
242	Dandelion
243	Henbit
244	Nutsedge
245	Oxalis
246	Purslane
247	Clovers
<b>Physiological Problems</b>	
248	Frost/Freeze Injury
249	Iron Deficiency
250	Leaf Scorch (drought/winter burn)
251	Nitrogen Deficiency
252	Pot-Bound roots
253	String Trimmer Injury
254	2,4-D Injury
<b>Beneficial Insects</b>	
255	Praying Mantis
256	Lady Beetle
257	Paper Wasp
258	Lacewing
259	Spider



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Equipment and Supplies Identification

No.	Item Name
260	anvil-and-blade pruner
261	ball cart (B&B truck)
262	bark mulch
263	bow saw
264	broadcast (cyclone) spreader
265	bubbler head, irrigation
266	bulb planter
267	bunker rake
268	burlap
269	compressed air sprayer
270	core aerifier
271	chain saw
272	cut-off machine
273	drip emitter, irrigation
274	dry-lock wall block
275	edger (power or hand)
276	edging
277	erosion netting
278	fertilizer injector
279	fertilizer tablet
280	garden (spading) fork
281	garden (bow) rake
282	grafting band
283	grafting knife
284	granular fertilizer
285	gravity (drop) spreader
286	ground/pelleted limestone
287	hedge shears

No.	Item Name
288	hoe
289	hook-and-blade pruners
290	hose-end repair fitting
291	hose-end sprayer
292	hose-end washer
293	hose repair coupling
294	impact sprinkler
295	irrigation ring tool
296	landscape fabric
297	leaf rake
298	loppers
299	mattock
300	measuring wheel
301	mist nozzle (mist bed)
302	mower blade balancer
303	nursery container
304	oscillating sprinkler
305	peat moss
306	pick axe
307	planting/earth/soil auger
308	pole pruner
309	polyethylene pipe
310	pop-up irrigation head
311	post-hole digger
312	power blower
313	power hedge trimmer
314	pot-in-pot units
315	pump sprayer

No.	Item Name
316	propagation mat
317	pruning saw
318	quick coupler
319	quick coupler head adapter
320	reel mower
321	resin-coated fertilizer
322	rotary mower
323	rototiller
324	round point shovel
325	scoop shovel
326	shade fabric
327	sharpening stone
328	siphon proportioner
329	soaker hose
330	soil sampling tube
331	solenoid valve
332	spade
333	sphagnum moss
334	square point (flat) shovel
335	string trimmer
336	thatch rake
337	tree caliper
338	tree wrap
339	trowel
340	vertical mower
341	water breaker
342	wire tree basket



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Potting Nursery Stock Practicum Scorecard

50 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

	Possible Points	Points Earned
<b>Potting Process (34 points)</b>		
<b>Preparation of Plants</b> <ul style="list-style-type: none"> <li>Plants selected for quality and uniformity</li> <li>Inspects/prunes/grooms damaged parts</li> <li>Prunes excess root length</li> <li>Handles plants properly</li> </ul>	10	
<b>Placement of Plants in Containers</b> <ul style="list-style-type: none"> <li>Plant centered and vertical</li> <li>Roots carefully and properly spread</li> <li>Plant at proper depth</li> <li>Plant roots covered</li> </ul>	10	
<b>Media Filling and Settling</b> <ul style="list-style-type: none"> <li>Sufficient media added</li> <li>Media settled by bumping or hand firming</li> <li>Plant remains stable</li> </ul>	10	
<b>Labeling of Completed Units</b> <ul style="list-style-type: none"> <li>Plant (variety) name and date</li> <li>Legible</li> </ul>	2	
<b>Safety Practices Applied</b> <ul style="list-style-type: none"> <li>Proper cutting technique</li> <li>Tool closed when finished</li> <li>Minimal clutter/good organization in work area</li> </ul>	2	
<b>Potting Productivity and Response to Questions (16 points)</b>		
<b>Number of Units Completed</b>	5	
<b>Quality of Units Completed</b> <ul style="list-style-type: none"> <li>Overall quality and uniformity of lot</li> </ul>	5	
<b>Response to Questions</b>	6	
<b>TOTAL POINTS</b>	<b>50</b>	

JUDGE'S NAME \_\_\_\_\_

JUDGE'S SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Propagating Nursery Stock Practicum Scorecard

50 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

	Possible Points	Points Earned
<b>Propagation Process (34 points)</b>		
<b>Removal of Cuttings</b> <ul style="list-style-type: none"> <li>Selects best quality uniform stock</li> <li>Cuts at appropriate lengths</li> <li>Makes clean cuts</li> </ul>	5	
<b>Preparation of Cuttings</b> <ul style="list-style-type: none"> <li>Leaves stripped/trimmed/groomed as needed</li> <li>Proximity of cuts to nodes</li> <li>Angled or wounded basal cut</li> <li>Cutting/buds not damaged</li> </ul>	10	
<b>Application of Proper Hormone</b> <ul style="list-style-type: none"> <li>Sufficient applied and excess removed</li> <li>Hormone kept clean</li> </ul>	7	
<b>Placement of Cuttings in Media</b> <ul style="list-style-type: none"> <li>Proper medium depth, as applicable</li> <li>Media furrow cut and closed</li> <li>Proper sticking depth</li> <li>Efficient row and cutting spacing</li> </ul>	8	
<b>Labeling of Completed Units</b> <ul style="list-style-type: none"> <li>Plant (variety) name, date, treatment</li> <li>Legible</li> </ul>	2	
<b>Safety Practices Applied</b> <ul style="list-style-type: none"> <li>Proper cutting technique</li> <li>Tool closed when finished</li> <li>Minimal clutter in work area</li> </ul>	2	
<b>Propagation Productivity and Response to Questions (16 points)</b>		
<b>Number of Units Completed</b>	5	
<b>Quality of Units Completed</b> <ul style="list-style-type: none"> <li>Uniform size and placement</li> <li>Cutting stable in media</li> </ul>	5	
<b>Judge's Questions</b> <ul style="list-style-type: none"> <li>Response to questions</li> </ul>	6	
<b>TOTAL POINTS</b>	<b>50</b>	

JUDGE'S NAME \_\_\_\_\_ JUDGE'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

Judges please award points as whole numbers only, no fractions





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CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Team Activity Preparation Rubric

50 points

CHAPTER	STATE			TEAM NUMBER	
INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Strong evidence of skill is not present 1–0 points	Weight	Points Earned
Understanding of project goal	Clearly all members show understanding of the project goal.	Two to three members show understanding of the project goal.	One or less members show understanding of project goal.	X 2	
Member responsibilities outlined and defined	All members have activity responsibilities outlined and defined.	Two to three members have activity responsibilities outlined	One member or less has responsibilities outlined and defined.	X 2	
Participation in the team project goal	Clearly all team members completing task, sharing written and oral solutions.	Task primarily completed by two or three members, other members assist sparingly.	Task primarily completed by one team member, other members contribute only slightly.	X 2	
Agreement reached among team members on recommended solution to the goal	Clearly all members reach agreement on solution and are supportive.	Two to three members reach agreement on solution.	Two members or less reach agreement on solution.	X 2	
Plan is made on how to present the proposal to the client	Clearly defined plan developed: who does what during presentation.	Vaguely defined plan developed: who does what during presentation.	Little or no defined plan for presentation.	X 2	
TOTAL POINTS EARNED OUT OF 50 POSSIBLE					

JUDGE'S NAME

JUDGE'S SIGNATURE

DATE



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Team Activity Presentation Rubric

50 points

CHAPTER	STATE			TEAM NUMBER	
INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Strong evidence of skill is not present 1–0 points	Weight	Points Earned
Effective team interaction during presentation	Clearly evident that all team members are listening to presenter and add to presentation.	Listening occurs but no interaction with other team member ideas.	Not listening to each other, passive.	X 2	
Oral communication	Clearly evident that all team members are discussing the topic and are enthusiastic.	Communication occurs but lacks enthusiasm and two to three members dominates.	One member dominates the conversation.	X 2	
Demonstrated cooperation	Clearly all team members completing tasks, sharing written and oral solutions.	Tasks primarily completed by two or three members, other members assist occasionally.	Tasks primarily completed by one member, other members contributing only slightly.	X 2	
Technical value, correct information	Ideas are creative, technically correct and feasible.	Idea lacks creative thinking but is feasible and correct.	Glaring error in technical presentation or idea is not feasible.	X 2	
Overall results of presentation	All team members enthusiastic, convincing and positive about proposed solution.	Members make a knowledgeable but less than enthusiastic presentation of solution.	Presentation is not convincing, lacking in knowledge and salesmanship.	X 2	
TOTAL POINTS EARNED OUT OF 50 POSSIBLE					

JUDGE'S NAME

JUDGE'S SIGNATURE

DATE



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## Team Activity Preparation Rubric - Individuals

CHAPTER

STATE

TEAM NUMBER

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Strong evidence of skill is not present 1–0 points	Weight	Student's name: _____	Student's name: _____	Student's name: _____	Student's name: _____
Member effective with individual task.	Member effective in completing individual task, taking notes, making calculations, etc.	Member somewhat effective in completing individual task, making notes, making calculations, etc.	Member ineffective in completing their individual task. Does not prepare notes or do calculations.	X 2				
Member is supportive of others.	Member clearly supports each team member and makes suggestions to other team members.	Member does assigned task but does not offer suggestions.	Member really not involved or is argumentative.	X 2				
Member interacts in positive/constructive manner.	Member completes task, sharing written and oral solutions.	Member disagrees with proposed solution but does not present an alternative.	Member shows no interest in solution proposed.	X 2				
TOTAL POINTS EARNED OUT OF 30 POSSIBLE PER TEAM MEMBER								

JUDGE'S NAME

JUDGE'S SIGNATURE

DATE



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## Team Activity Presentation Rubric - Individuals

CHAPTER

STATE

TEAM NUMBER

INDICATOR	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Weak evidence of skill is present 1-0 points	Student's name _____	Student's name _____	Student's name _____	Student's name _____
<b>Voice, tone, eye contact</b>	Speaks very articulately, with passion, with constantly effective eye contact (90-100% of the time).	Speaks articulately but occasionally speaks too fast or has long unnecessary hesitations, somewhat upbeat, with mostly effective eye contact (60-80 percent of the time).	Speaks too slow or too fast, lacks passion, occasionally effective eye contact (less than 50 percent of the time).				
<b>Organization of Information</b>	Content is very organized and easy to understand.	Content is somewhat organized and somewhat easy to understand.	Content is poorly organized and challenging to understand.				
<b>Organization of Time</b>	Team members share equal in presentation time.	Two members dominate the presentation time.	One member dominates the majority of time.				
<b>Subject Knowledge</b>	Possesses a strong knowledge-base and is able to effectively articulate information regarding situation.	Possesses a good knowledge-base and is able to, for the most part, articulate information regarding situation.	Possesses some knowledge-base but is unable to articulate information regarding situation.				
<b>TOTAL POINTS EARNED OUT OF 20 POSSIBLE PER TEAM MEMBER</b>							

JUDGE'S NAME

JUDGE'S SIGNATURE

DATE



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Verbal Customer Assistance Rubric

50 points

NAME _____		MEMBER NUMBER _____	
CHAPTER _____		TEAM NUMBER _____	

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 2–3 points	Weak evidence of skill is present 0–1 points	Points Possible	Points Earned
First impression	Individual identifies themselves with a good first impression.	Individual mostly identifies themselves with a good first impression.	Individual poorly identifies themselves with a good first impression.	5	
Personal rapport	Individual asks questions and utilizes information from answers in an attempt to build personal rapport.	Individual mostly asks questions and utilizes information from answers in an attempt to build personal rapport.	Individual poorly asks questions and utilizes information from answers in an attempt to build personal rapport.	5	
Clarifying questions	Individual asks questions to learn about the customer's situation and to confirm preliminary customer information.	Individual asks mostly questions to learn about the customer's situation and to confirm preliminary customer information.	Individual poorly asks questions to learn about the customer's situation and to confirm preliminary customer information.	5	
Needs and wants	Individual confirmed and discovered customer needs and wants.	Individual mostly confirmed and discovered customer needs and wants.	Individual poorly confirmed and discovered customer needs and wants.	5	
Features and benefits	Individual applied features and benefits of their product to the customer's needs/wants to their product feature.	Individual mostly applied features and benefits of their product to the customer's needs/wants to their product features.	Individual poorly applied features and benefits of their product to the customer's needs/wants to their product features.	5	
Matching needs and wants	Individual allows customer to participate in matching their wants/needs to the product features.	Individual mostly allows customer to participate in matching their wants/needs to the product features.	Individual poorly allows customer to participate in matching their wants/needs to the product features.	5	
Trial close	Individual uses appropriate technique to confirm customer understanding.	Individual mostly uses appropriate technique to confirm customer understanding.	Individual poorly uses appropriate technique to confirm customer understanding.	5	

## Verbal Customer Assistance Rubriccontinued

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 2–3 points	Weak evidence of skill is present 0–1 points	Points Possible	Points Earned
<b>Objections</b>	Student listens and clarifies customers objections and discusses the features/benefits of the product information to address the customers objections.	Student mostly listens and clarifies customers objections and discusses the features/benefits of the product information to address the customers objections.	Student poorly listens and clarifies customers objections and discusses the features/benefits of the product information to address the customers objections.	5	
<b>Close transaction</b>	Student closes or attempts to close the transaction.	Student mostly closes or attempts to close the transaction.	Student poorly closes or attempts to close the transaction.	5	
<b>Active listening</b>	Individual actively listens to comments and answers from the customer.	Individual mostly listens to comments and answers from the customer.	Individual poorly listens to comments and answers from the customer.	5	
<b>TOTAL SCORE</b>					

JUDGE'S NAME

JUDGE'S SIGNATURE

DATE



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Written Customer Assistance Practicum Scorecard

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_ TEAM NUMBER \_\_\_\_\_

	Possible Points	Points Earned
<b>Customer Relations</b>		
<ul style="list-style-type: none"> <li>Does the communication create/maintain goodwill (is it free of negative words that create an unpleasant tinge)?</li> <li>Is the tone appropriate for the communications purpose?</li> <li>Does the communication emphasize reader (you) rather than writer (I)?</li> <li>Is the tone and reading level appropriate for reader?</li> </ul>	15	
<b>Organization</b>		
<ul style="list-style-type: none"> <li>Is the content organized in logical, coherent order accepted business format?</li> <li>Is the communication properly divided into paragraphs with topic sentences?</li> <li>Is the communication divided into sentences which clearly convey key points?</li> <li>Does the communication use short conversational words?</li> </ul>	15	
<b>Technical Information</b>		
<ul style="list-style-type: none"> <li>Is the technical information provided in letter correct?</li> <li>Is the information provided in simple, clear, concise manner?</li> <li>Does the letter relate directly to the inquiry?</li> </ul>	10	
<b>Grammar/Punctuation</b>		
<ul style="list-style-type: none"> <li>Is the letter free of grammatical errors and misspelled words?</li> </ul>	10	
<b>Total Score:</b>	50	
<b>Deductions (i.e., rules infractions, missing content)</b>		( )
<b>TOTAL POINTS</b>		

JUDGE'S NAME \_\_\_\_\_ JUDGE'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_



NATIONAL FFA  
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DEVELOPMENT EVENTS

# Nursery/Landscape Team Skills Challenge Scorecard

400 points

CHAPTER \_\_\_\_\_

STATE \_\_\_\_\_

TEAM NUMBER \_\_\_\_\_

Complete lines for number and type of events included. Record percentages as whole numbers only.

A. _____	Score = _____	points of _____	possible = _____	% _____
B. _____	Score = _____	points of _____	possible = _____	% _____
C. _____	Score = _____	points of _____	possible = _____	% _____
D. _____	Score = _____	points of _____	possible = _____	% _____
E. _____	Score = _____	points of _____	possible = _____	% _____
F. _____	Score = _____	points of _____	possible = _____	% _____
G. _____	Score = _____	points of _____	possible = _____	% _____
H. _____	Score = _____	points of _____	possible = _____	% _____
I. _____	Score = _____	points of _____	possible = _____	% _____

TEAM SCORE (AVERAGE) =

JUDGE'S NAME \_\_\_\_\_

JUDGE'S SIGNATURE \_\_\_\_\_

DATE \_\_\_\_\_





NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Agriculture, Food and Natural Resources Content Standards

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
<b>ABS.01.03. Performance Indicator: Devise and apply management skills to organize and run an AFNR business in an efficient, legal and ethical manner.</b>		
ABS.01.03.01.a. Define and provide examples of management skills used to organize an AFNR business (e.g., management types, organizational structures, time management techniques, conducting business agreements, etc.).	Exam	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.02.02. Performance Indicator: Assemble, interpret and analyze financial information and reports to monitor AFNR business performance and support decision-making (e.g., income statements, balance sheets, cash-flow analysis, inventory reports, break-even analysis, return on investment, taxes, etc.).</b>		
ABS.02.02.02.a. Identify and examine strategies for tracking, reporting and managing inventory in AFNR businesses (e.g., spreadsheets, databases, word processing, networked systems and the Internet, etc.).	Exam	CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2
<b>ABS.03.01. Performance Indicator: Develop, assess and manage cash budgets to achieve AFNR business goals.</b>		
ABS.03.01.01.a. Compare and contrast components of cash budgets used in AFNR businesses (e.g., anticipated revenue, production costs, overhead costs, profit, etc.).	Exam	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6
ABS.03.01.02.a. Research and summarize factors that impact management of cash budgets in AFNR businesses (e.g., changes in price of inputs/outputs, financial investment performance, capital purchases, human resources, etc.).	Exam	CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.IC.B.6

## Agriculture, Food and Natural Resources Content Standards continued

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
<b>ABS.04.01. Performance Indicator: Analyze characteristics and planning requirements associated with developing business plans for different types of AFNR businesses.</b>		
<b>ABS.04.01.02.a.</b> Categorize the characteristics of the types of ownership structures used in AFNR businesses (e.g., sole proprietorships, cooperatives, partnerships and corporations).	Exam	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9
<b>ABS.04.03. Performance Indicator: Identify and apply strategies to manage or mitigate risk.</b>		
<b>ABS.04.03.01.a.</b> Research and classify sources of risk for an AFNR business.	Exam	CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9
<b>ABS.05.02. Performance Indicator: Assess and apply sales principles and skills to accomplish AFNR business objectives.</b>		
<b>ABS.05.02.01.a.</b> Identify and explain components of the sales process for AFNR businesses (e.g., understanding needs, develop solutions, close sale, etc.).	Verbal, Team Activity	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 5

## Agriculture, Food and Natural Resources Content Standards continued

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
<b>ABS.05.03. Performance Indicator: Assess marketing principles and develop marketing plans to accomplish AFNR business objectives.</b>		
<b>ABS.05.03.01.a.</b> Identify and explain marketing principles used in AFNR businesses (4 P's-product, place, price, promotion; attention, interest, desire, action, etc.).	Verbal, Team Activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>ABS.05.03.01.b.</b> Assess alternative marketing strategies as related to marketing principles for AFNR businesses (e.g. value-adding, branding, niche marketing, etc.).	Team Activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7

*Agriculture, Food and Natural Resources Content Standards continued*

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
<b>ABS.05.03.02.a.</b> Examine and categorize strategies used in marketing programs for AFNR businesses (e.g., Internet, direct to customer, social media, etc.).	Team Activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>ABS.05.03.02.b.</b> Compare and contrast the strategies of marketing for products and services used in AFNR businesses (e.g., direct marketing, commodities, etc.).	Team Activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7

## Agriculture, Food and Natural Resources Content Standards continued

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
<b>ABS.05.03.02.c.</b> Devise plans to implement and evaluate marketing strategies for products and services used in AFNR businesses.	Team Activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>ABS.05.03.03.a.</b> Research and define the purpose, components and developmental processes of marketing plans for AFNR businesses.	Team Activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>CS.03.01. Performance Indicator: Identify required regulations to maintain and improve safety, health and environmental management systems.</b>		
<b>CS.03.01.02.a.</b> Summarize the importance of safety, health and environmental management in the workplace.	Skills	AFNR Career Cluster, Statement 6
<b>CS.03.03. Performance Indicator: Apply health and safety practices to AFNR worksites.</b>		
<b>CS.03.03.03.a.</b> Examine and categorize examples of how to avoid health or safety risks in AFNR worksites.	Skills	

## Agriculture, Food and Natural Resources Content Standards continued

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
<b>CS.03.04. Performance Indicator: Use appropriate protective equipment and demonstrate safe and proper use of AFNR tools and equipment.</b>		
CS.03.04.01.a. Identify and differentiate the appropriate protective equipment for the safe use and operation of specific tools and equipment.	Skills	
CS.03.04.02.a. Identify standard tools, equipment and safety procedures related to AFNR tasks.	Skills, ID	
CS.03.04.03.a. Read and interpret operating instructions related to operation, storage and maintenance of tools and equipment related AFNR tasks.	Skills	
CS.03.04.03.b. Assess and demonstrate appropriate operation, storage and maintenance techniques for AFNR tools and equipment.	Skills	
<b>CS.04.01. Performance Indicator: Identify and implement practices to steward natural resources in different AFNR systems.</b>		
CS.04.01.01.a. Define stewardship of natural resources and distinguish how it connects to AFNR systems.	Exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
CS.04.01.01.b. Analyze available practices to steward natural resources in AFNR systems (e.g., wildlife and land conservation, soil and water practices, ecosystem management, etc.).	Exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
CRP.02.01.01.a. Distinguish opportunities to apply academic learning to solve problems in the workplace (e.g., identify how to: increase productivity, reduce costs, lower inputs, etc.).	Team Activity	
CRP.02.01.01.b. Assess workplace problems and identify the most appropriate academic knowledge and skills to apply.	Team Activity	
CRP.02.01.02.a. Distinguish opportunities to apply academic learning to solve problems in the community (e.g., identify how to: stop businesses from closing, increase access to emergency services, eliminate hunger, reduce unemployment, etc.).	Team Activity	
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
CRP.02.02.01.a. Identify opportunities to apply technical concepts to solve problems in the workplace (e.g., identify how to: increase sales, better customer service, reduce inputs, reduce waste, ensure sustainability, etc.).	Team Activity, Written Customer Assistance	
CRP.02.02.01.b. Assess workplace problems and distinguish the most appropriate technical concepts to apply.	Written Customer Assistance, Team Activity	
CRP.02.02.02.a. Identify opportunities to apply technical concepts to solve problems in the community (e.g., identify how to: ensure safe routes to schools, reduce vandalism, reduce air pollution, etc.).	Team Activity, Written Customer Assistance	

## Agriculture, Food and Natural Resources Content Standards continued

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
CRP.02.02.02.b. Assess community problems and identify the most appropriate technical concepts to apply.	Team Activity, Written Customer Assistance	
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.01.a. Identify and categorize strategies for ensuring clarity, logic, purpose and professionalism in verbal and non-verbal communication (e.g., vocal tone, organization of thoughts, eye contact, preparation, etc.).	Sales, Written Customer Assistance	
CRP.04.01.02.a. Examine and assess personal ability to speak with clarity, logic, purpose and professionalism in formal and informal settings (e.g., speeches, interviews, presentations, oral reports, etc.).	Sales	
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Sales	
<b>CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.</b>		
CRP.04.02.02.b. Apply techniques for ensuring clarity, logic and coherence to edit written communications (e.g., emails, reports, presentations, technical documents, etc.).	Written Customer Assistance	
CRP.04.02.02.c. Compose clear and coherent written documents (e.g., agendas, audio-visuals, drafts, forms, etc.) for formal and informal settings.	Written Customer Assistance	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.a. Research and summarize components of active listening (e.g., eye contact, have an open mind, restate, etc.).	Exam	
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Sales, Team Activity	
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	Sales, Team Activity	
<b>CRP.05.02. Performance Indicator: Make, defend and evaluate decisions at work and in the community using information about the potential environmental, social and economic impacts.</b>		
CRP.05.02.01.a. Examine areas in the workplace and community where decisions will make a positive impact.	Team Activity	
CRP.05.02.01.b. Apply a structured decision-making process to improve workplace and community situations.	Team Activity	
CRP.05.02.01.c. Evaluate and defend decisions applied in the workplace and community situations.	Team Activity	
CRP.05.02.02.a. Examine information about environmental, social and economic impacts when making decisions in the workplace and community.	Team Activity	
CRP.05.02.02.b. Assess past decisions made in workplace and community and analyze their effects on environmental, social and economic situations.	Team Activity	

*Agriculture, Food and Natural Resources Content Standards continued*

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
CRP.05.02.02.c. Evaluate workplace and community situations and propose decisions to be made based upon the positive impact made on environment, social and economic areas.	Team Activity	
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
CRP.06.01.01.a. Identify and summarize steps for generating ideas used in the workplace and community.	Team Activity	
CRP.06.01.01.b. Synthesize information, knowledge and experiences to generate ideas for workplace and community situations.	Team Activity	
CRP.06.01.01.c. Evaluate workplace and community situations and devise strategies to apply original ideas.	Team Activity	
CRP.06.01.02.a. Define “assumption” and identify different types and sources of assumptions that could impact effectiveness in workplace and community situations.	Team Activity	
CRP.06.01.02.b. Analyze how assumptions can impact outcomes in a variety of workplace and community situations.	Team Activity	
CRP.06.01.02.c. Devise strategies (e.g., ask questions, brainstorm ideas, present facts and information etc.) to challenge common assumptions in workplace and community situations.	Team Activity	
<b>CRP.06.03. Performance Indicator: Create and execute a plan of action to act upon new ideas and introduce innovations to workplace and community organizations.</b>		
CRP.06.03.01.a. Examine workplace and community situations to identify opportunities for improvement through the introduction of new ideas and innovations.	Team Activity	
CRP.06.03.01.b. Assess and communicate the risks and benefits of applying new ideas and innovations to the workplace and community.	Team Activity	
CRP.06.03.01.c. Design a plan of action to introduce a new idea or innovation into the workplace and community.	Team Activity	
CRP.06.03.02.a. Identify individuals and organizations (i.e., stakeholders) that need to provide input and feedback on new ideas or innovation prior to implementation in the workplace or community.	Team Activity	
CRP.06.03.02.b. Elicit and assimilate input and feedback from individuals and organizations about new ideas or innovations for the workplace or community.	Team Activity	
CRP.06.03.02.c. Evaluate and execute strategies for using stakeholder input and feedback to improve a plan of action for introducing a new idea or innovation into the workplace or community.	Team Activity	



## Agriculture, Food and Natural Resources Content Standards continued

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
<b>CRP.07.02. Performance Indicator: Evaluate the validity of sources and data used when considering the adoption of new technologies, practices and ideas in the workplace and community.</b>		
CRP.07.02.02.a. Categorize potential technologies, practices and ideas that could be adopted by workplaces and community organizations.	Team Activity	
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Team Activity, Skills	
CRP.08.01.02.b. Assess solutions to workplace and community problems for evidence of reason, logic and consideration of multiple perspectives.	Team Activity	
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.01.a. Investigate and summarize potential tools and resources used to solve problems in the workplace and community.	Team Activity	
CRP.08.02.01.b. Assimilate and prioritize potential solutions to solve problems in the workplace and community.	Team Activity, Written Customer Assistance	
CRP.08.02.02.a. Identify and summarize steps in the decision-making process to solve workplace and community problems.	Team Activity, Written Customer Assistance	
CRP.08.02.02.b. Apply decision-making processes to generate possible solutions to solve workplace and community problems.	Team Activity, Written Customer Assistance	
<b>CRP.08.03. Performance Indicator: Establish plans to solve workplace and community problems and execute them with resiliency.</b>		
CRP.08.03.02.a. Identify and analyze the elements of a plan for solving workplace and community problems (e.g., budget, timeline, etc.).	Team Activity	
CRP.08.03.02.b. Create plans to solve workplace and community problems.	Team Activity	
<b>CRP.09.03. Performance Indicator: Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community (e.g., positively influencing others, effectively communicating, etc.).</b>		
CRP.09.03.02.c. Model respectful and purposeful behaviors that contribute to positive morale and culture in the workplace and community (e.g., effectively communicating, recognizing accomplishments of others, etc.).	Team Activity, Written Customer Assistance, Sales	

## Agriculture, Food and Natural Resources Content Standards continued

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
CRP.12.01.01.a. Differentiate the strengths and talents of all team members needed to complete projects in the workplace and community.	Team Activity, Skills	
CRP.12.01.01.b. Formulate action plans to complete team-oriented projects in the workplace and community, including plans for personal contributions.	Team Activity, Skills	
CRP.12.01.02.b. Apply consensus building techniques to accomplish results in team-oriented situations.	Team Activity	
<b>CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).</b>		
CRP.12.02.01.b. Assess team dynamics and match strategies to increase team member engagement.	Team Activity, Skills	
CRP.12.02.02.b. Select strategies to engage team members and apply in a variety of situations.	Team Activity, Skills	
<b>NRS.01.02. Performance Indicator: Classify different types of natural resources in order to enable protection, conservation, enhancement and management in a particular geographical region.</b>		
NRS.01.02.01.a. Research and examine the characteristics used to identify trees and woody plants.ID,	Exam	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
NRS.01.02.01.b. Apply identification techniques to determine the species of a tree or woody plant.	Exam	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2

*Agriculture, Food and Natural Resources Content Standards continued*

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
NRS.01.02.02.a. Research and examine the characteristics used to identify herbaceous plants. ID,	Exam	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
NRS.01.02.02.b. Apply identification techniques to determine the species of an herbaceous plant.	ID	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
NRS.01.02.03.a. Research and examine the characteristics used to identify wildlife and insects.	ID	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2

*Agriculture, Food and Natural Resources Content Standards continued*

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
NRS.01.02.03.b. Apply identification techniques to determine the species of wildlife or insect.	ID	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 HS-ESS3-2
<b>NRS.01.05. Performance Indicator: Apply ecological concepts and principles to terrestrial natural resource systems.</b>		
NRS.01.05.04.a. Compare and contrast techniques associated with soil management (e.g., soil survey and interpretation, erosion control, etc.).	Exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-ESS3-4 HS-ESS3-2

## Agriculture, Food and Natural Resources Content Standards continued

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
<b>NRS.01.06. Performance Indicator: Apply ecological concepts and principles to living organisms in natural resource systems.</b>		
NRS.01.06.02.a. Research and summarize examples of invasive species.	Exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 HS-LS4-4 HS-LS4-6 HS-ESS3-4
<b>NRS.02.05. Performance Indicator: Communicate information to the public regarding topics related to the management, protection, enhancement, and improvement of natural resources.</b>		
NRS.02.05.01.a. Examine ways in which a message regarding natural resources may be communicated to the public through standard media sources (e.g., press, radio, TV, public appearances, etc.).	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
NRS.02.05.01.b. Assess the effectiveness of different methods for communicating natural resource messages.	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
NRS.02.05.01.c. Devise a strategy for communicating a natural resources message through media.	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
NRS.02.05.02.a. Research how social media and the Internet have changed how people perceive and utilize natural resources (e.g., greater awareness of conservation issues, calls to action, etc.).	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
NRS.02.05.02.b. Assess how to most effectively communicate a message about the conservation, management, enhancement and improvement of natural resources via social media and the Internet.	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3

*Agriculture, Food and Natural Resources Content Standards continued*

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
<b>NRS.02.05.02.c.</b> Anticipate and predict how messages about the conservation, management, enhancement and improvement of natural resources will change because of social media and the Internet.	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
<b>NRS.02.05.03.a.</b> Examine how communication can be used to influence behavior, call people to action and instill a sense of civic behavior related to the conservation, management, enhancement and improvement of natural resources.	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
<b>NRS.02.05.03.b.</b> Analyze and summarize examples of how communication can be used to influence behavior, call people to action and instill a sense of civic behavior related to the conservation, management, enhancement and improvement of natural resources.	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
<b>NRS.02.05.03.c.</b> Create a communication plan to influence the behavior of people, call people to action and instill a sense of civic behavior related to the conservation, management, enhancement and improvement of natural resources.	Team Activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster, Statement 3 STEM Career Cluster, Statement 2 STEM Career Cluster, Statement 3
<b>NRS.04.02. Performance Indicator: Diagnose plant and wildlife diseases and follow protocols to prevent their spread.</b>		
<b>NRS.04.02.01.b.</b> Analyze a plant disease based on its symptoms, identify if the disease needs to be reported to authorities and determine which authorities it should be reported to.	ID	CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.ELA-LITERACY.WHST.11-12.8 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-LS2-7
<b>NRS.04.03.01.a.</b> Categorize harmful and beneficial insects, as well as signs of insect damage to natural resources.	ID	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-LS2-7 HS-LS4-6

## Agriculture, Food and Natural Resources Content Standards continued

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
NRS.04.03.01.b. Analyze signs of insect infestation, identify if it needs to be reported to authorities and determine which authorities it should be reported to.	ID	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.RST.11-12.8 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 CCSS.MATH.CONTENT.HSS-ID.A.1 CCSS.MATH.CONTENT.HSS-IC.A.1 CCSS.MATH.CONTENT.HSS-IC.B.6 HS-LS2-7 HS-LS4-6
<b>PS.01.01. Performance Indicator: Determine the influence of environmental factors on plant growth.</b>		
PS.01.01.02.a. Identify and summarize the effects of air and temperature on plant metabolism and growth.	Exam	
PS.01.01.03.a. Identify and summarize the effects of water quality on plant growth, (e.g., pH, dissolved solids, etc.).	Exam	
PS.01.01.03.b. Analyze and describe plant responses to water conditions.	Exam	
<b>PS.01.02. Performance Indicator: Prepare and manage growing media for use in plant systems</b>		
PS.01.02.01.a. Identify the major components of growing media and describe how growing media support plant growth.	Exam, Prop/Pot	
PS.01.02.01.b. Describe the physical and chemical characteristics of growing media and explain the influence they have on plant growth.	Exam, Prop/Pot	
<b>PS.01.02.02.a. Identify the categories of soil water.</b>	Exam	
PS.01.02.02.b. Discuss how soil drainage and water-holding capacity can be improved.	Exam	
<b>PS.01.03. Performance Indicator: Develop and implement a fertilization plan for specific plants or crops.</b>		
PS.01.03.01.a. Identify the essential nutrients for plant growth and development and their major functions (e.g., nitrogen, phosphorous, potassium, etc.).	Exam, Prop, Skills	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.01.b. Analyze the effects of nutrient deficiencies and symptoms and recognize environmental causes of nutrient deficiencies.	Exam, ID	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.02.a. Discuss the influence of pH and cation exchange capacity on the availability of nutrients.	Exam	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.04.a. Identify fertilizer sources of essential plant nutrients; explain fertilizer formulations, including organic and inorganic; and describe different methods of fertilizer application.	Exam	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3

## Agriculture, Food and Natural Resources Content Standards continued

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
PS.01.03.04.b. Calculate the amount of fertilizer to be applied based on nutrient recommendation and fertilizer analysis.	Skills	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.04.c. Calibrate application equipment to meet plant nutrient needs.	Skills	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
PS.01.03.06.a. Summarize the impact of environmental factors on nutrient availability (e.g., moisture, temperature, pH, etc.).	Exam	CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>PS.02.01. Performance Indicator: Classify plants according to taxonomic systems.</b>		
PS.02.01.01.a. Identify and summarize systems used to classify plants based on specific characteristics.	Exam	
<b>PS.02.02. Performance Indicator: Apply knowledge of plant anatomy and the functions of plant structures to activities associated with plant systems.</b>		
PS.02.02.01.a. Identify structures in a typical plant cell and summarize the function of plant cell organelles.	Exam	HS-LS1-4
PS.02.02.02.a. Identify and summarize the components, the types and the functions of plant roots.	Exam, Prop	HS-LS1-4
PS.02.02.03.a. Identify and summarize the components and the functions of plant stems.	Exam	HS-LS1-4
PS.02.02.04.a. Research and summarize leaf morphology and the functions of leaves.	Exam	HS-LS1-4
PS.02.02.04.b. Analyze how leaves capture light energy and summarize the exchange of gases.	Exam	HS-LS1-4
<b>PS.02.03. Performance Indicator: Apply knowledge of plant physiology and energy conversion to plant systems.</b>		
PS.02.03.01.a. Summarize the importance of photosynthesis to plant life on earth and the process of photosynthesis, including the types (c3, c4, Cam), its stages (e.g., light-dependent and light independent reactions), and its products and byproducts.	Exam	HS-LS1-5
<b>PS.03.01. Performance Indicator: Demonstrate plant propagation techniques in plant system activities.</b>		
PS.03.01.01.a. Identify examples of and summarize pollination, cross-pollination and self-pollination of flowering plants.	Exam	
PS.03.01.03.a. Summarize optimal conditions for asexual propagation and demonstrate techniques used to propagate plants by cuttings, division, separation, layering, budding and grafting.	Exam, Prop	
<b>PS.03.02. Performance Indicator: Develop and implement a management plan for plant production</b>		
PS.03.02.01.a. Research and summarize the importance of starting with pest- and disease-free propagation material.	Prop	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9



## Agriculture, Food and Natural Resources Content Standards continued

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
PS.03.02.01.b. Inspect propagation material for evidence of pests or disease.	Prop	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
PS.03.02.02.a. List and summarize the reasons for preparing growing media before planting.	Exam	CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
PS.03.02.05.a. Summarize the stages of plant growth and the reasons for controlling plant growth. Exam		CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
PS.03.02.06.a. Identify and categorize structures and technologies used for controlled atmosphere production of plants. Exam		CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.9-10.8 CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.WHST.9-10.2 CCSS.ELA-Literacy.WHST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.9
<b>PS.03.03. Performance Indicator: Develop and implement a plan for integrated pest management for plant production.</b>		
PS.03.03.01.a. Identify and categorize plant pests, diseases and disorders.	ID	
PS.03.03.01.b. Identify and analyze major local weeds, insect pests and infectious and noninfectious plant diseases.	ID	
PS.03.03.03.a. Identify and summarize pest control strategies associated with integrated pest management and the importance of determining economic threshold.	Exam	
PS.03.03.04.a. Distinguish between risks and benefits associated with the materials and methods used in plant pest management.	Exam (Nursery/ Turf), Skills	
<b>PS.03.05. Performance Indicator: Harvest, handle and store crops according to current industry standards.</b>		
PS.03.05.04.a. Identify and categorize plant preparation methods for storing and shipping plants and plant products.	Exam	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
PS.03.05.05.a. Summarize the reasons for preparing plants and plant products for distribution.	Exam	CCSS.ELA-Literacy.RST.9-10.3 CCSS.ELA-Literacy.RST.9-10.4 CCSS.ELA-Literacy.WHST.9-10.2a
<b>PS.04.01. Performance Indicator: Evaluating, identifying and preparing plants to enhance an environment.</b>		
PS.04.01.01.a. Identify and categorize plants by their purpose (e.g., floral plants, landscape plants, house plants, etc.).	Exam, ID	

## Agriculture, Food and Natural Resources Content Standards continued

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
PS.04.01.02.a. Summarize the applications of design in agriculture and ornamental plant systems.	Exam	
<b>PS.04.02. Performance Indicator: Create designs using plants.</b>		
PS.04.02.02.a. Identify and categorize tools used for design (e.g., computer landscape software, drawing tools, florist tools, etc.).	Exam	AFNR Career Cluster – Natural Resources Systems Pathway, Statement 3 AFNR Career Cluster – Plant Systems Pathway, Statement 2 STEM Career Cluster, Statement 4
PS.04.02.02.a. Identify and categorize tools used for design (e.g., computer landscape software, drawing tools, florist tools, etc.).	Exam	
<b>PST.01.02. Performance Indicator: Apply physical science and engineering principles to design, implement and improve safe and efficient mechanical systems in AFNR situations.</b>		
PST.01.02.02.a. Identify the tools, machines and equipment needed to construct and/or fabricate a project in AFNR.	Exam, Skills, ID	HS-PS3-1 HS-PS3-3
PST.01.02.02.b. Calculate the maintenance and purchase cost of tools, machines and equipment used in AFNR.	Skills	HS-PS3-1 HS-PS3-3
PST.01.02.03.a. Examine owner's manuals to classify the types of safety hazards associated with different mechanical systems used in AFNR (e.g., caution, warning, danger, etc.).	Skills	HS-PS3-1 HS-PS3-3
PST.01.02.03.b. Select, maintain and demonstrate the proper use of tools, machines and equipment used in different AFNR related mechanical systems.	Skills	HS-PS3-1 HS-PS3-3
PST.01.02.03.c. Conduct a safety inspection of tools, machines and equipment used in different AFNR related mechanical systems.	Skills	HS-PS3-1 HS-PS3-3
<b>PST.02.01. Performance Indicator: Perform preventative maintenance and scheduled service to maintain equipment, machinery and power units used in AFNR settings.</b>		
PST.02.01.01.a. Maintain the cleanliness and appearance of equipment, machinery and power units used in AFNR power, structural and technical systems to assure proper functionality.	Skills	
PST.02.01.02.a. Examine operator's manuals to determine recommendations for servicing filtration systems and maintaining fluid levels on equipment, machinery and power units used in AFNR power, structural and technical systems.	Skills	
<b>PST.02.02. Performance Indicator: Operate machinery and equipment while observing all safety precautions in AFNR settings.</b>		
PST.02.02.02.a. Examine and identify safety hazards associated with equipment, machinery and power units used in AFNR power, structural, and technical systems (e.g., caution, warning, danger, etc.).	Skills	
PST.02.02.02.b. Apply safety principles and applicable regulations to operate equipment, machinery and power units used in AFNR power, structural and technical systems.	Skills	
PST.02.02.02.c. Adjust equipment, machinery and power units for safe and efficient operation in AFNR power, structural and technical systems.	Skills	

*Agriculture, Food and Natural Resources Content Standards continued*

MEASUREMENT ASSESSED	Where measured in event	Academic Content Standards Addressed
<b>PST.04.01. Performance Indicator: Create sketches and plans for AFNR structures.</b>		
PST.04.01.01.a. Interpret and explain the meaning of symbols used in sketches of agricultural structures.	Exam, Estimate	
PST.04.01.01.b. Apply scale measurement and dimension to develop sketches of agricultural structures.	Exam, Estimate	
PST.04.01.02.a. Read and interpret the parts and/or views of plans for agricultural structures.	Exam, Estimate	
PST.04.04.02.b. Construct plans for agricultural structures using current technology (e.g., drafting software, computer-aided design, etc.).	Estimate	
<b>PST.04.02. Performance Indicator: Determine structural requirements, specifications and estimate costs for AFNR structures</b>		
PST.04.02.01.a. Summarize and categorize the information needed to complete a bill of materials and cost estimate for an AFNR structure.	Estimate	
PST.04.02.01.b. Analyze a project plan to prepare a bill of materials and an estimate of material costs.	Estimate	
PST.04.02.01.c. Create a project cost estimate, including materials, labor and management for an AFNR structure.	Estimate	



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# PARLIAMENTARY PROCEDURE

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://FFA.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The purpose of the parliamentary procedure leadership development event is to encourage students to learn to effectively participate in a business meeting and to assist in the development of their leadership, research, problem solving skills and critical thinking skills.*

## Objectives

Upon completion of participation in the event, students will be able to:

- Use parliamentary procedure to conduct an orderly and efficient meeting.
- Demonstrate knowledge of parliamentary law.
- Present a logical, realistic and convincing debate on motions.
- Evaluate minutes and organizational documents.
- Utilize parliamentary resources to solve problems of organizational management and operations.

### **National Association of Parliamentarians Body of Knowledge:**

In consultation with the National Association of Parliamentarians and the American Institute of Parliamentarians this event has been aligned with the National Association of Parliamentarians Bodies of Knowledge for members and leaders of organizations

**Partnership for 21st Century Learning:** This skills, knowledge and disposition cultivated in this event are aligned with the P21 Framework.

## Event Rules

A team representing a state will consist of six members from the same chapter. All practicums will involve all six team members.

- It is highly recommended that participants wear FFA Official Dress for each event.
- The advisor will not consult with the team after entering the holding room prior to each round of the event.
- Any participant in possession of an electronic device in the event area is subject to disqualification.

## EQUIPMENT

Materials the student needs to provide:

- Each participant must bring a minimum of two sharpened No. 2 pencils for each team member
- A copy of the current edition of *Robert's Rules of Order Newly Revised*

Materials provided by the event committee:

- A gavel will be supplied for the chair.
- Teams may choose to use their own gavel if they so desire.
- Paper and pencils will be provided to chair and secretary stations.
- A searchable current edition of the *Robert's Rules of Order Newly Revised* may be provided. Please see team orientation on [FFA.org](https://www.ffa.org)

## THE EVENT WILL HAVE FIVE PHASES

- Written examination
- An 11 minute team presentation of parliamentary procedure
- Oral questions following the presentation
- Team problem solving practicum
- Individual practicum focused on minutes and other records.



## Event Format

### WRITTEN TEST (200 POINTS)

#### Part I

Five open book parliamentary procedure research questions using the current edition of *Robert's Rules of Order Newly Revised*. Participants will be allowed 30 minutes to complete Part I of the exam. All team members are required to provide their own copy of the most current edition of *Robert's Rules of Order Newly Revised*.

An example of one research question is outlined below:

- “The term rules of order refers to written rules of parliamentary procedure formally adopted by an assembly or an organization.”

**Answer:** *Robert's Rules of Order Newly Revised*, beginning of page 15

#### Part II

Forty-five multiple choice questions taken from *Robert's Rules of Order Newly Revised*. Participants will have one hour to complete Part II of the exam. **NOTE:** References and materials cannot be used for this part.

Exam content will be guided by National Association of Parliamentarians Members and Leaders Body of Knowledge and the Society for Agricultural Education Parliamentarians (SAEP) accreditation processes.

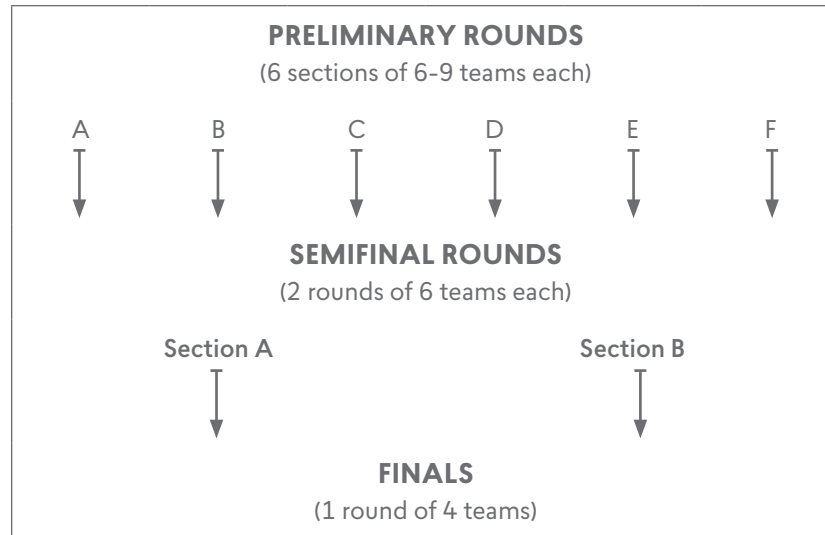
Participants receiving a cumulative score of 80 percent or greater on the exam will be recognized as an Accredited Parliamentarian (AP) by the Society of Agricultural Education Parliamentarians (SAEP) and will be eligible for membership in the National Association of Parliamentarians (NAP) and American Institute of Parliamentarians (AIP). The average score of the six team members will be used to compute the total team score that will be utilized for each round.

**PRESENTATION (500 POINTS)**

The national event will have three rounds:

- **Preliminary round**
  - The preliminary round will have six sections. A section shall be made up of six to nine teams.
- **Semifinal round**
  - Two teams from each of the sections, for a total of twelve teams, will advance to the semifinal round.
- **Final round**
  - Two teams in each semifinal section will advance to the final round of four teams.

## TEAM PROGRESSION CHART



## SEEDING PROCESS

Teams will be placed into preliminary and semifinal rounds based on the teams' exam scores, which is the average score of the six team members.

## ITEM OF BUSINESS

Each team will address a local chapter item of business, which would normally be a part of a chapter's program of activities (consult [FFA.org](https://www.ffa.org), the *Official FFA Manual and Student Handbook* for specific activities and current programs.) The motion will be specific and must be moved as an original main motion as it is written on the event card.

Motions not on the chart of permissible motions, or secondary motions and debate applied to them, will not be scored.

## EVENT CARD

The event officials will select two subsidiary, two incidental and one privileged or a motion that brings a question again before the assembly from the list of permissible motions. These motions will be on an index card and one will be randomly assigned to each team member. All teams in each section will be assigned the same motions.

There are 25 permissible motions in the national FFA event. Team members will have one minute to review the main motion, the motions to be demonstrated and to identify his/her motion (which may be noted by bolding, underlining or highlighting). Members may not confer, use nonverbal communications during the one-minute time period or during the demonstration.

### SAMPLE CARD

**Main Motion:**

I move that our chapter send two delegates to WLC.

**Required Motions:**

Lay on the Table

**Amend**

Suspend the Rules

Appeal

Recess

## OPENING AND CLOSING THE DEMONSTRATION

The team demonstrating shall assume that a regular chapter meeting is in progress and new business is being handled on the agenda. The chair shall start the presentation by saying, “Is there any new business?” Time will stop when the chair declares the meeting adjourned.

- Original Main Motion: The event official will assign the main motion on an index card, no other original main motions may be used. Making other original main motions that are not on the event card will result in a 50 point deduction from overall team presentation score.

- The assigned original main motion is to be the first item of business presented, unless, take from the table, reconsider or rescind are required on the event card. If this is the case, an alternative main motion for take from the table, reconsider or rescind will be provided.
- The person who makes the assigned main motion will be given credit for an additional motion.

## SECONDARY MOTIONS

- No limit to the number of subsidiary, incidental and privileged motions that a team may demonstrate.
- A member's required motion will not be counted as an additional motion for another member. No motion may count for an additional motion for more than one member.
- Incidental and privileged motions cannot be demonstrated as incidental main motions.

## INDIVIDUAL MEMBER RECOGNITION

A member may speak in debate on the main motion and conclude by offering a secondary motion. Judges will award points accordingly for both the debate and the secondary motion.

Omission of the assigned motion by the assigned member on the event card will result in a 50 point deduction from overall team presentation score.

## MOTIONS THAT BRING A QUESTION AGAIN BEFORE THE ASSEMBLY

If the officials in charge designate take from the table, rescind or reconsider as a motion to be demonstrated, scenario will be included on the event card. These motions shall **not** be used unless listed on the event card as a required motion.

## **CALL FOR THE ORDERS OF THE DAY**

If the event officials designate call for the orders of the day as a motion to be demonstrated, a scenario will be provided on the event card. Participants are to assume that a motion was postponed at the last meeting and made a special order for a time during the current demonstration.

## **DEBATE**

The top four debates per member will be tabulated in the presentation score. No more than two debates per member per motion will be tabulated, even if the subsidiary motion to extend the limits of debate has been passed.

## **TIME LIMIT AND DEDUCTIONS**

A team shall be allowed eleven minutes in which to demonstrate knowledge of parliamentary law. A deduction of two points/second for every second over 11 minutes will be assessed. Example: 11:05 = 10 point deduction. A timekeeper will furnish the time used by each team at the close of the event.

## ORAL QUESTIONS (100 POINTS)

### Individual Questions (100 points)

The team members (not including the chair) will be asked a planned question, which may include one to three parts, relating to their assigned motion. No one may step forward to help another member answer their individual question. The chair will be asked a question relating to presiding, debate, assigning the floor or other general parliamentary procedures. Each member will be scored a maximum of 16 points for responses to questions. Chair will be scored at a maximum of 20 points.

**Clarifying Questions:** The judges will have three minutes to ask clarifying questions related to the team's demonstration that may impact other aspects of team demonstration scores. Questions may be directed to the team or an individual member. Team members may volunteer to answer the question for the team or to help another member. This round of questions are not scored separately.

## TEAM PROBLEM SOLVING PRACTICUM (150 POINTS)

In the preliminary and semifinal rounds all teams will complete a team problem solving practicum. Teams advancing to the finals will carry with them an average of their scores in the first two rounds. Teams will be provided a short parliamentary procedure scenario outlining a practical problem. Working as a team, they will have 30 minutes to research the problem and write a short solution with reference to specific page and line numbers in *Robert's Rules of Order Newly Revised*. All team members are required to provide their own copy of the most current edition of *Robert's Rules of Order Newly Revised*. See example problem solving activity and answers in the handbook. National Association of Parliamentarians and the American Institutions of Parliamentarians will be invited to review and participation in this portion of the event.

Teams may be provided access to a computer to type their responses and access to a searchable database of the most current edition

of *Robert's Rules of Order Newly Revised*. The searchable database will be secured from the National Association of Parliamentarians online store: <https://www.parliamentarians.org>

### **INDIVIDUAL PRACTICUM, MINUTES AND OTHER RECORDS (50 POINTS)**

Each team member will participate in a 30 minute practicum that addresses organizational minutes and other records. Participants will be provided materials and responses will be captured using a scantron form. Reference materials will not be allowed during this practicum. The practicum will assess NAP Body of Knowledge for Leaders of Organizations Domain 2: Minutes and Other Records; and *Robert's Rules of Order Newly Revised*, pages 354–355, 468 – 480.



## Scoring

### **GUIDELINES FOR SCORING DISCUSSION (60 POINTS PER MEMBER)**

- It is essential that each judge observes and maintains consistent criteria in scoring debate for the duration of the event.
- Judges must overlook personal opinions and beliefs and score debate in an unbiased manner. All debate should be scored at the time it is delivered.

Each time a participant in the presentation discusses any motion, they may earn a score. However, an individual may never earn more than 60 points in a given presentation. The top four debates per member will be tabulated in the presentation score. No more than two debates per member per motion will be tabulated even if an extension of debate is passed.

### **CHARACTERISTICS OF EFFECTIVE DEBATE**

Characteristics of effective debate include the member's ability to state their position, provides reason(s) supporting their position and tells or encourages the delegation how to vote. The delivery of the debate will include:

- Completeness of thought
- Logical reasoning
- Clear statement of speaker's position
- Conviction of delivery
- Concise and effective statement of debate

### **GOOD DEBATE**

- A good debate would be characterized by a presentation that includes the components of a good debate as well as the quality of delivery in which the debate is delivered. Those components are:
  - States position
  - Provides more than one reason supporting their position
  - Tells delegation how to vote

**AVERAGE DEBATE**

- An average debate would be characterized by a presentation that includes only one supporting reason or lacks in the quality of delivery.
  - States position
  - Provides one reason supporting their position
  - Tells delegation how to vote

**POOR DEBATE**

- A poor debate would be characterized by a lack of effective delivery, poor grammar, reasoning and substance. As well as, the omission of one or more components of an effective debate.

**Suggested grading scale for debates:**

- Good: 15-20 points
- Average: 8-14 points
- Poor: 0-7 points

## **GUIDELINES FOR SCORING THE CHAIR (80 POINTS)**

The chair is evaluated by his/her ability to preside and his/her leadership.

### **ABILITY TO PRESIDE (65 POINTS)**

Ability to preside state motions correctly, follow rules of debate, keep members informed, put motions to a vote, announce results of vote, use of gavel and awareness of business on the floor.

**A suggested grading scale is as follows:**

- **Excellent:** 51-60 points
- **Good:** 26-50 points
- **Poor:** 0-25 points

### **LEADERSHIP (15 POINTS)**

Leadership is stage presence, poise, self-confidence, politeness and voice.

**A suggested grading scale is as follows:**

- **Excellent:** 1-15 points
- **Good:** 6-10 points
- **Poor:** 0-5 points

## **GUIDELINES FOR SCORING TEAM EFFECT (20 POINTS)**

- **Conclusions reached by the team:** Main motion was well analyzed which may include: Who, what, when, where, why and how.
- **Team use of debate:** degree to which debate was convincing, logical, realistic, orderly and efficient, germane and free from repetition.
- **Team presence:** voice, poise, expression, grammar, gestures and professionalism.

## Scoring

### WRITTEN EXAM (200 POINTS, 20%)

- Society for Agricultural Education Parliamentarians Accreditation Exam
- 45 multiple-choice questions x 4 points each = 180 points
- 5 research questions x 4 points each = 20 points

### PRESENTATION (500 POINTS, 50%)

- **Required motion:** 10 points x 5 members = 50 points (10%)
- **Additional motion:** 10 points x 5 members = 50 points (5%)
- **Debates:** 300 points (30%)
  - 20 points maximum per debate
  - Four debates/member included
  - Five members
- **Chair:** 80 points (10%)
  - Ability to preside: 65 points
  - Leadership: 15 points
- **Team effect:** 20 points (12%)
  - Conclusions reached by team
  - Team use of debate
  - Team presence

## **ORAL QUESTIONS (100 POINTS, 10%)**

### **INDIVIDUAL QUESTIONS (90 POINTS)**

- Five team members 16 points maximum per question
- Chair 20 points maximum

### **MINUTES AND OTHER RECORDS PRACTICUM (50 POINTS, 10%)**

### **TEAM PROBLEM SOLVING – PRELIMINARY AND SEMI-FINAL\* (150 POINTS)**

### **TOTAL POINTS 1,000**

*\*Team problem solving practicum semifinal score will be used for final round.*

## **TIEBREAKERS**

Tiebreakers for teams will be:

- Total final presentation score out of 500 possible points.
- Team average score on the written exam.
- Total team practicum, problem solving score.



## Awards

*Awards will be presented to teams based upon their rankings at the awards ceremony.*

Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

The first place national team will be presented a trophy plaque. Each member of the first place team will be presented an individual team member plaque. A national gold plaque and individual medals will be presented to the top 12 teams competing in the event; silver plaques and individual medals to the middle; and remaining teams and individuals competing will receive bronze. The top four teams will each receive a designated gold plaque.

## SPECIALTY AWARDS

Specialty awards may be given for:

- Outstanding chair
- Outstanding member
- Outstanding critical thinking team
- High average team exam score
- Perfect exam score

## References

*This list of references is not intended to be all-inclusive.*

Other sources may be utilized and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

### NATIONAL FFA CORE CATALOG

- CDE Q&A's: [FFA.org](http://ffa.org)
- Additional parliamentary procedure resources, including those formally offered in the National FFA Education Resources Catalog can now be found on-line at <http://shop.ffa.org/parliamentary-procedure-c1412.aspx>
- The official text will be the most current of *Robert's Rules of Order Newly Revised*.
- Additional references may include FFA New Horizons magazine, the Official FFA Manual and the FFA Student Handbook.

### EXAM

- The most recent edition of *Robert's Rules of Order Newly Revised*
- Dunbar's Manual of Parliamentary Procedure Test Questions (PARL-2) available from the Parliamentary Procedure Instructional Materials Center (<http://pzen.northwest.net/>)
- Study Guide for the National Association of Parliamentarians Registration Exam, found at: [https://netforum.avectra.com/eweb/shopping/shopping.aspx?pager=2&site=nap&webcode=shopping&prd\\_key=30045dd8-ae4c-477b-ac33-7b43665a08af](https://netforum.avectra.com/eweb/shopping/shopping.aspx?pager=2&site=nap&webcode=shopping&prd_key=30045dd8-ae4c-477b-ac33-7b43665a08af)
- American Institute of Parliamentarians –Here is the Answer! What is the question? Cover Roberts Rules of Order Newly Revised, found on Amazon at: <http://astore.amazon.com/americaninsti0a-20/detail/0942736397>

- National Association of Parliamentarians Body of knowledge found at: <http://www.parliamentarians.org/wp-content/uploads/2015/05/BOK-Booklet3-a.pdf>
- Past National FFA Event Exams, Questions and Practicums (available online at no cost)

## PRESENTATION

- The most recent edition of *Robert's Rules of Order Newly Revised*
- Past National FFA Event Finals Recordings (available online at no cost)
- American Institute of Parliamentarians –Presiding: You Can Do It, found on Amazon at: <http://astore.amazon.com/americinsti0a-20/detail/0942736338>
- National FFA Manual
- National FFA Student Handbook

## INDIVIDUAL QUESTIONS

- The most recent edition of *Robert's Rules of Order Newly Revised*
- Past National FFA Event Exams, Questions and Practicums (available online at no cost)
- National Association of Parliamentarians Body of knowledge found at: <http://www.parliamentarians.org/wp-content/uploads/2015/05/BOK-Booklet3-a.pdf>
- Dunbar's Parliamentary Procedure Oral Questions (PARL-24c) available from the Parliamentary Procedure Instructional Materials Center (<http://pzen.northwest.net/>)

## INDIVIDUAL PRACTICUM, MINUTES AND OTHER RECORDS

- The most recent edition of *Robert's Rules of Order Newly Revised*
- Past National FFA Event Exams, Questions and Practicums (available online at no cost)



- National Association of Parliamentarians Body of knowledge found at: <http://www.parliamentarians.org/wp-content/uploads/2015/05/BOK-Booklet3-a.pdf>
- National Association of Parliamentarians Pathways to Proficiency – What Was Done at the Meeting, found at: [https://netforum.avectra.com/eweb/shopping/shopping.aspx?site=nap&webcode=shopping&shopsearch=minutes&prd\\_key=a3ff167f-bd10-49a3-a243-5f458656f727](https://netforum.avectra.com/eweb/shopping/shopping.aspx?site=nap&webcode=shopping&shopsearch=minutes&prd_key=a3ff167f-bd10-49a3-a243-5f458656f727)
- American Institute of Parliamentarians – Complete Minutes Manual, found on Amazon at: <http://astore.amazon.com/americinsti0a-20/detail/0942736370>
- National FFA Manual
- National FFA Student Handbook

## TEAM PRACTICUM, PROBLEM SOLVING

- The most recent edition of *Robert's Rules of Order Newly Revised*
- Searchable *Robert's Rules of Order Newly Revised* online database from the National Association of Parliamentarians, found at: [https://netforum.avectra.com/eweb/shopping/shopping.aspx?site=nap&webcode=shopping&prd\\_key=725ff724-0fa6-446d-8197-0d060e04a889](https://netforum.avectra.com/eweb/shopping/shopping.aspx?site=nap&webcode=shopping&prd_key=725ff724-0fa6-446d-8197-0d060e04a889)
- National Association of Parliamentarians Body of knowledge found at: <http://www.parliamentarians.org/wp-content/uploads/2015/05/BOK-Booklet3-a.pdf>
- Dunbar's Parliamentary Procedure Oral Questions (PARL-32) available from the Parliamentary Procedure Instructional Materials Center (<http://pzen.northwest.net/>)
- Past National FFA Event Exams, Questions and Practicums (available online at no cost)



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Chart of Permissible Motions

MOTION	Second Required	Debatable	Amendable	Vote Required	Reconsider
<b>PRIVILEGED MOTIONS</b>					
Fix the Time to Which to Adjourn	Yes	No	Yes	Majority	Yes
Adjourn	Yes	No	No	Majority	No
Recess	Yes	No	Yes	Majority	No
Raise a Question of Privilege	No	No	No	Chair Grants	No
Call for the Orders of the Day	No	No	No	No vote, Demand	No
<b>SUBSIDIARY MOTIONS</b>					
Lay on the Table	Yes	No	No	Majority	Neg only (3)
Previous Question	Yes	No	No	2/3	Yes
Limit or Extend Limits of Debate	Yes	No	Yes	2/3	Yes
Postpone to a Certain Time (or Definitely)	Yes	Yes	Yes	Majority	Yes
Commit or Refer	Yes	Yes	Yes	Majority	Yes
Amend	Yes	Yes (1)	Yes	Majority	Yes
Postpone Indefinitely	Yes	Yes	No	Majority	Affirm only
Main Motion	Yes	Yes	Yes	Majority	Yes
<b>INCIDENTAL MOTIONS</b>					
Appeal	Yes	Yes (1)	No	Majority	Yes
Division of the Assembly	No	No	No	No vote, demand	No
Division of a Question	Yes	No	Yes	Majority	No
Objection to the Consideration of a Question	No	No	No	2/3	Neg only
Parliamentary Inquiry	No	No	No	Chair answers	No
Point Of Order	No	No	No	Normally no vote Chair rules	No
Request for Information	No	No	No	No Vote. Chair responds	No
Suspend the Rules	Yes	No	No	(2)	No
Withdraw a Motion	No (3)	No	No	Majority (3)	Neg. Only
<b>MOTIONS THAT BRING A QUESTION AGAIN BEFORE THE ASSEMBLY</b>					
Reconsider (4)	Yes	Yes (1)	No	Majority	No
Rescind (4)	Yes	Yes	Yes	Majority with notice 2/3, or majority of entire membership (3)	Neg. Only
Take From The Table (4)	Yes	No	No	Majority	No

(1) If applied to a debatable motion

(2) Rules of Order 2/3 vote, standing rules – majority vote

(3) Refer to *Robert's Rules of Order Newly Revised*, current edition for rule(s)

(4) Refer to LDE Parliamentary Procedure event rules before using these motions in the demonstration

National FFA Parliamentary Procedure Career Development Event

Form 2 Team Score Sheet

FFA Chapter:													
Participant	Required Motion 10 points/person	Discussion (60 points max./member, 20 points max./item)					Additional Motion	10 points / person	Individual Questions 16 pts/person 96 pts/person	Total			
		Excellent 15-20 points, Good 10-14 points, Average 5-9 points, Poor 0-4 points	Main	PP Indef	Amend	Refer					PP Def	Bring Back	Total
1													
2													
3													
4													
5													
Chair		<b>Ability to Preside (65 points)</b> State motions correctly, follow rules of debate, keep members informed, put motions to a vote, announce results of vote, use of gavel, awareness of business on the floor.  Excellent = 51-65 points, Good = 26-50 points, Poor = 0-25 points											
Team Effect		<b>Team Effect (20 pts)</b> Discussion Convincing, logical, realistic, orderly and efficient, germane and free from repetition  Points Tacful, sensitive, firm, understanding, good voice, proper pace Excellent = 10-15 points, Good = 6-10 points, Poor = 0-5 points											
Exam		<b>Conclusions</b> Main motion was well analyzed. What, When, Where, Who, How was answered  Average of all six individual exam scores (200 points)											
Minutes		Minutes taken from Individual Minutes and Other Records Practicum (50 points)											
Research		Team Problem Solving Research (150 points) (Preliminaries and Semis)											
Deductions (List mistakes) 5-20 pts per mistake													
Time		Omitting assigned motion - 50 points Deduction for overtime. -2pts/second after 10:30											
Notes:		<b>Total Deductions</b> <b>Team Score</b>											



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Team Problem Solving Activity Scorecard

(Semi-Final and Final Rounds)

CHAPTER

STATE

TEAM NUMBER

SCORING CRITERIA	Possible Points	Points Earned
<b>Reference</b> <ul style="list-style-type: none"> <li>Team accurately identified the correct page(s) and line number(s) in <i>Robert's Rules of Order Newly, Revised</i> (11th ed.)</li> </ul>	60	
<b>Solution to the Problem</b> <ul style="list-style-type: none"> <li>Team provided logical justification and reasoning to develop, using citations listed from above to solve the parliamentary procedure problem/issue.</li> </ul>	75	
<b>Grammar, Style and Legibility</b> <ul style="list-style-type: none"> <li>Complete sentences</li> <li>Correct spelling (deduction of 1 point/error)</li> <li>Correct punctuation (deduction of 1 point/error)</li> <li>Legibility and clarity</li> </ul>	15	
<b>TOTAL POINTS</b>	150	

Comments:

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## Sample Team Problem Solving Activity

*The following is a sample team problem similar to what a team might be asked to solve during the team portion of the National FFA Parliamentary Procedure LDE.*

The Lakeville FFA Chapter is facing a parliamentary problem and needs advice. At its last meeting of the school year, the chapter planned to hold officer elections. The chapter president, Jason, was presiding at the elections meeting. The chapter vice president, Elizabeth, chose not to run for office again and served as chair of the nominating committee. Elizabeth will be a senior next year and decided to devote more of her time to career and leadership development events than to serving as a chapter officer. Elizabeth gave the nominating committee's report at the meeting. The nominating committee nominated Lisa for chapter president. No other nominees were offered and Lisa was elected by a voice vote. The nominating committee nominated David for vice president. Another member nominated Claire for vice president from the floor. Jason, the president, asked both David and Claire if they objected to taking the vote by voice. Neither objected and Jason took the vote by voice. Claire was the clear winner of the election and Jason declared Claire elected vice president. All other nominees suggested by the nominating committee were unopposed and were each elected by voice vote. At the conclusion of the election, Jason passed the gavel to Lisa, who declared the meeting adjourned. The next chapter meeting will take place when school resumes in the fall.

One week after the election, Lisa held the first meeting of the new officer team. She arrived at the meeting noticeably upset, and as soon as the meeting began Lisa announced that her father had taken a new job in a neighboring state, and she and her family would be moving away from Lakeville immediately. Lisa handed each officer a copy of her resignation as president and then handed a copy to the chapter advisor. To make matters worse, each officer had been instructed to bring copies of their last two report cards to the meeting so that the chapter advisor could verify the grade point average for each officer. All the officers had grade point averages above 3.0 except Claire, whose last two grade cards indicated a grade point average of 2.35.

The new officer team was clearly disappointed that Lisa would be leaving, and the remainder of the meeting became more of a farewell party for Lisa than an actual meeting. When the group left the meeting later that afternoon, the chapter advisor wished all the officers well and indicated that she would call another meeting for later in the summer. Several questions were lingering on her mind, however, and she has called your team for help.

- Who is president of the Lakeville FFA Chapter?
- What must be done now to complete the Lakeville FFA chapter officer team?
- Was the election for vice president conducted properly?

The chapter bylaws only discuss chapter officers in Article IV. That article from the chapter bylaws appears below. The chapter's parliamentary authority is *Robert's Rules of Order Newly Revised* (11th Edition). Please provide the Lakeville FFA chapter advisor with an answer to her questions, including appropriate citations, based on the chapter bylaws and the chapter's parliamentary authority.

## ARTICLE IV – OFFICERS

**Section 1:** The officers of the chapter shall be a president, vice president, secretary, treasurer, reporter and sergeant-at-arms. All officers shall serve for a term of one year or until their successors are elected.

**Section 2:** The president shall be a senior and must have been a chapter member for at least two full years prior to election. All other officers must have been a chapter member for at least one full year prior to election.

**Section 3:** Any vacancy in any office other than that of president shall be filled by the other officers for the remainder of the unexpired term.

**Section 4:** All elections shall be held by ballot, except in cases where only one nominee has been made, in which case a voice vote may be taken.

**Section 5:** All officers shall have a minimum grade point average of 2.5 at the time of their election and shall maintain at least a 2.5 grade point average throughout their term of office.

## Sample Team Problem Solving Answers

- Who is president of the Lakeville FFA Chapter?

Elizabeth is president of the chapter. When Lisa was elected chapter president, Jason's term as president ended and Lisa became the duly elected president. Lisa's resignation means that the office of president would immediately be filled by the vice president. (Article IV, Section 3. *Robert's Rules of Order Newly Revised* p. 442, In. 2-7.) Claire was apparently elected vice president, but review of her grade point average after the election revealed that she was ineligible to be elected. (Article IV, Section 5.) The election for vice president actually never happened since Claire was ineligible at the time of the vote, so the election for vice president remains incomplete. (*Robert's Rules of Order Newly Revised* p. 430, In. 11-13 and p. 543, In. 19-22.) Because Elizabeth was serving as vice president at the time of the election, and because her term of office does not expire until her successor is elected (Article IV, Section 1.), Elizabeth remained the actual vice president at the conclusion of the elections meeting. Elizabeth was also the actual sitting vice president at the time of Lisa's resignation from the office of president, meaning that Elizabeth became president of the Lakeville FFA Chapter upon Lisa's resignation.

- What must be done now to complete the Lakeville FFA chapter officer team?

The chapter officers must select a new vice president to serve until the chapter meets again in the fall. (Article IV, Section 3.) When Elizabeth became president of the chapter following Lisa's resignation, a vacancy was created in the office of vice president. The chapter bylaws require the remaining officers to fill the vacancy for the remainder of the unexpired term. The person appointed by the chapter officers will fill the position of vice president until the chapter can meet to hold another election for vice president. (*Robert's Rules of Order Newly Revised* p. 429-30.) The new election is necessary because the new vice president chosen by the officers will only be completing Elizabeth's term of office as vice president, which should have ended at the elections meeting, but

because no election was completed, the newly chosen vice president will continue in office until his or her successor is elected by the chapter. Since there are no prohibitions against reelection, the person chosen by the officers can be elected to the office of vice president by the chapter for a complete term.

- Was the election for vice president conducted properly?

No. The election for vice president should have been conducted by ballot. (Article IV, Section 4.) A requirement that a vote be taken by ballot cannot be suspended, even by unanimous consent. (*Robert's Rules of Order Newly Revised* p. 398, ln. 28 – p. 399, ln. 1.) Claire should also not have been a candidate since she was ineligible for election to the office. (*Robert's Rules of Order Newly Revised*, p. 543, ln. 19-22.)





NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Agriculture, Food and Natural Resources Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.</b>		
CRP.01.01.01.c. Evaluate past workplace and community situations and determine how personal responsibility positively or negatively impacted outcomes.	Event Exam Presentation Individual Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving Entire Event – Total Team Score	
<b>CRP.01.02 Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.</b>		
CRP.01.02.01.b. Assess the pros and cons of personal decisions based on their anticipated impact on self and others.	Presentation	
CRP.01.02.02.b. Analyze the pros and cons of professional decisions based upon impact on employers and community.	Presentation	
<b>CRP.02.01. Performance Indicator: Use strategic thinking to connect and apply academic learning, knowledge and skills to solve problems in the workplace and community.</b>		
CRP.02.01.01.b. Assess workplace problems and identify the most appropriate academic knowledge and skills to apply.	Event Exam Presentation Individual Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving	
CRP.02.01.02.b. Assess community problems and identify the most appropriate academic knowledge and skills to apply.	Event Exam Presentation Individual Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving	
<b>CRP.02.02. Performance Indicator: Use strategic thinking to connect and apply technical concepts to solve problems in the workplace and community.</b>		
CRP.02.02.01.b. Assess workplace problems and distinguish the most appropriate technical concepts to apply.	Event Exam Presentations Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving	
CRP.02.02.02.b. Assess community problems and identify the most appropriate technical concepts to apply.	Event Exam Presentation Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving Entire Event – Total Team Score	

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.01.c. Evaluate other's verbal and non-verbal communications (e.g., speeches, presentations, oral reports, etc.) and propose recommendations for improvement in clarity, logic, purpose and professionalism.	Presentation	
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Presentation	
<b>CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.</b>		
CRP.04.02.01.c. Evaluate the effectiveness of different forms of written communication for achieving their intended purpose.	Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving	
CRP.04.02.02.b. Apply techniques for ensuring clarity, logic and coherence to edit written communications (e.g., emails, reports, presentations, technical documents, etc.).	Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Presentation	
CRP.04.03.02.b. Assess active listening strategies by observing others in formal and informal settings.	Presentation	
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	Presentation	
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
CRP.05.01.01.c. Evaluate workplace and community decision-making processes and devise strategies for improvement.	Presentation Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving	
CRP.05.01.02.c. Evaluate workplace and community situations and recommend the information and resources needed to support good decisions.	Presentation	
CRP.05.01.03.c. Synthesize information and resources and apply to workplace and community situations to make positive decisions.	Presentation	
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
CRP.06.01.01.c. Evaluate workplace and community situations and devise strategies to apply original ideas.	Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving	

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
CRP.06.01.02.c. Devise strategies (e.g., ask questions, brainstorm ideas, present facts and information etc.) to challenge common assumptions in workplace and community situations.	Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving	
<b>CRP.06.02. Performance Indicator: Assess a variety of workplace and community situations to identify ways to add value and improve the efficiency of processes and procedures.</b>		
CRP.06.02.01.c. Evaluate past workplace and community situations and determine how processes and procedures impacted outcomes.	Individual Practicum, Minutes and Other Records	
<b>CRP.06.03. Performance Indicator: Create and execute a plan of action to act upon new ideas and introduce innovations to workplace and community organizations.</b>		
CRP.06.03.01.c. Design a plan of action to introduce a new idea or innovation into the workplace and community.	Presentation	
CRP.06.03.02.c. Evaluate and execute strategies for using stakeholder input and feedback to improve a plan of action for introducing a new idea or innovation into the workplace or community.	Presentation	
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.c. Evaluate how applying critical thinking skills can impact workplace and community situations.	Presentation Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving	
CRP.08.01.02.c. Devise strategies to apply reason, logic and input from multiple perspectives to solve workplace and community problems.	Presentation Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving	
<b>CRP.08.02. Performance Indicator: Investigate, prioritize and select solutions to solve problems in the workplace and community.</b>		
CRP.08.02.01.b. Assimilate and prioritize potential solutions to solve problems in the workplace and community.	Presentation	
CRP.08.02.02.c. Evaluate and select solutions with greatest potential for success to solve workplace and community problems.	Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving	
<b>CRP.08.03. Performance Indicator: Establish plans to solve workplace and community problems and execute them with resiliency.</b>		
CRP.08.03.01.b. Analyze and determine the best problem-solving model to apply to workplace and community problems.	Presentation	
<b>CRP.09.01. Performance Indicator: Model characteristics of ethical and effective leaders in the workplace and community (e.g. integrity, self-awareness, self-regulation, etc.).</b>		
CRP.09.01.02.c. Model characteristics and actions of ethical and effective leaders in workplace and community situations (e.g., integrity, self-awareness, etc.).	Presentation	

*Agriculture, Food and Natural Resources Content Standards continued*

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.09.03. Performance Indicator: Demonstrate behaviors that contribute to a positive morale and culture in the workplace and community (e.g., positively influencing others, effectively communicating, etc.).</b>		
CRP.09.03.01.a. Identify and summarize respectful and purposeful behaviors that contribute to positive morale and culture in workplace and community settings (e.g., positively influencing others, effectively communicating, etc.).	Presentation	
CRP.09.03.02.c. Model respectful and purposeful behaviors that contribute to positive morale and culture in the workplace and community (e.g., effectively communicating, recognizing accomplishments of others, etc.).	Presentation	
<b>CRP.10.02. Performance Indicator: Examine career advancement requirements (e.g., education, certification, training, etc.) and create goals for continuous growth in a chosen career.</b>		
CRP.10.02.01.a. Categorize career advancement requirements for potential careers (e.g., degrees, certification, training, etc.).	Event Exam	
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
CRP.12.01.01.c. Evaluate the effectiveness of team-oriented projects at work and in the community and make recommendations for future improvements.	Presentation	
CRP.12.01.02.b. Apply consensus building techniques to accomplish results in team-oriented situations.	Presentation Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving	
<b>CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).</b>		
CRP.12.02.01.c. Create novel strategies to engage team members based on the situation.	Event Exam Presentation Individual Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving Total Event Score	
CRP.12.02.02.b. Select strategies to engage team members and apply in a variety of situations.	Event Exam Presentation Individual Individual Practicum, Minutes and Other Records Team Practicum, Problem Solving Total Event Score	



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# POULTRY EVALUATION

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS



### IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



### **Purpose**

*The National FFA Poultry Evaluation Career Development Event stimulates learning activities relative to production and management, processing, marketing and food safety and quality of poultry products.*

## Objectives

The National FFA Poultry Evaluation Career Development Event provides opportunities for the participant to:

- Make accurate observations and logical decisions.
- Discuss and justify decisions (orally and written).
- Communicate industry and product terminology.
- Identify USDA standards of product quality.
- Identify consumer acceptance criteria of products.
- Recognize economic importance of value-added products.
- Collaborate with others to analyze industry scenarios.
- Demonstrate the use of appropriate information technology used in the poultry industry.

Specifically, participants will:

- Evaluate and place live meat-type chickens and orally defend the selection.
- Evaluate and place live egg-type hens and orally defend the selection.
- Evaluate, grade and place ready-to-cook carcasses of chickens or turkeys and orally defend the placing.
- Evaluate and grade ready-to-cook carcasses and parts of chickens and turkeys.
- Evaluate and grade individual shell eggs for interior quality.
- Evaluate and grade individual shell eggs for exterior quality and indicate factors governing the grading.
- Evaluate pre-cooked or par-cooked further processed poultry meat products and indicate factors governing the evaluation.
- Identify poultry carcass parts.
- Complete a written examination on poultry production, management and science.
- Contribute to a team practicum and oral presentation related to poultry science.



## Event Rules

### TEAMS

- Teams will consist of four members. Team ranking is determined by combining the scores of all team members.
- It is highly recommended that participants wear FFA Official Dress for this event.
- Each team will report to the team orientation meeting for instructions at the specified time and place listed in the current year's team orientation packet. No participant, coach or advisor may enter the event area before the specified time.
- Each team will receive computer scan sheets during the National FFA Poultry Evaluation Career Development Event team orientation meeting.

### PARTICIPANTS

- Participants will have ten minutes per class to complete Classes. An appropriate amount of time, as determined by the event officials, will be provided for the exam. A warning signal will inform the participants when time expires for each class. Participants will have approximately one minute to move from class to class.
- Any participant in possession of any electronic device not required by event rules is subject to disqualification.

### HUMANE TREATMENT OF LIVE ANIMALS

- All live animals must be treated with the utmost care and respect. Violation of this rule will automatically disqualify an offending team member from the event. The supervision, interpretation and enforcement of this rule will be the responsibility of the event superintendent and/or his/her designee.

## Event Format

### EQUIPMENT

#### MATERIALS PROVIDED BY THE PARTICIPANT

- Each participant must have two clean, sharpened No. 2 pencils.
- Teams may be required to furnish one laptop computer for the team activity. Teams will be notified if a computer is needed through the team orientation packet. Operating systems and/or software requirements will also be specified at that time.

#### MATERIALS PROVIDED BY THE EVENT OFFICIALS

- Participants will be provided a clipboard for the purpose of providing a “backing” and protection while completing the event scan sheet and for storage of the scan sheet during the event as well as an electronic calculator. No other containers or devices (e.g., student provided clipboards, folders or envelopes) will be permitted for participant use during the event. In addition, participants will be provided clean sheets of paper for recording decisions made during the event. This document will serve as a participant’s personal record of decisions made during the event. Teams may also be provided with additional materials to be utilized for oral presentations in the team activity portion of the event.
- No other materials will be permitted. Participants attempting to use unauthorized materials will be disqualified.

## INDIVIDUAL ACTIVITY PLACING CLASSES

Each class has a value of 50 points per participant. The event superintendent obtains the “official placing” of the class and the “basis of grading” from the judge. The “basis of grading” is the numerical difference or “cut” between each of the three pairs—top, middle and bottom—in the placing class. The three “cuts” are totaled; the total cannot exceed 15 points. From the judge’s information and the directions printed on the Hormel Computing Slide, the correct scores are obtained for all (24) possible placings (refer to references section for the source of the computing slide). The computer scoring system uses the Hormel Scoring format when calculating a participant’s score for each placing class.

## LIVE POULTRY

### MARKET BROILER PLACING (50 POINTS)

Each participant will place a class of four market broilers. Each participant will be permitted to “handle” the birds, as long as the birds are inspected in a professional and humane manner. Participants may not remove the broilers from the holding unit.

### EGG-TYPE HEN PLACING (50 POINTS)

Each participant will place a class of four egg-type hens. The birds will be Single-Comb White Leghorns, or commercial strains of Leghorn-type (inbred cross). The birds may have trimmed beaks. Each participant will be permitted to “handle” the birds, as long as the birds are inspected in a professional and humane manner.

### ORAL REASONS (50 POINTS)

Each participant may present oral reasons for either the placing class of market broilers or for the class of egg-type hens. The class for which participants should develop oral reasons for presentation will be clearly identified during the event. Participants will have ten minutes to prepare and two minutes to present their oral reasons. Reasons should include current USDA and poultry industry terminology and standards.

The oral reasons scorecard can be used a guideline for preparing (refer to the “Presenting Oral Reasons” section of the Poultry Science Manual for National FFA Career Development Events, current edition).

## LIVE POULTRY SCORING

CRITERIA	Points
Market broilers placing	50
Egg-type hens placing	50
Oral reasons	50

## READY-TO-COOK POULTRY

### CARCASS GRADING (50 POINTS)

Each participant will grade a class of ten ready-to-cook chicken and/or turkey carcasses and/or parts. Criteria for grading will be derived from USDA standards for chicken carcasses weighing two pounds to six pounds and for turkey carcasses weighing six to sixteen pounds or carcasses weighing greater than sixteen pounds. Four categories may be used, including the USDA quality grades A, B, C and the category NG (nongradable). Participants may not touch any carcass or part; doing so will result in disqualification. If used, the shackle holding a carcass may be rotated to show the entire carcass.

Scoring for parts and carcass grading:

Participant's Grade	OFFICIAL GRADE			
	A	B	C	NG
A	5	3	1	0
B	3	5	3	0
C	1	3	5	0
NG	0	0	0	5

As shown above, carcass grading is scored based on the USDA quality grades A, B, C and the category NG. Each correct grade receives a score of five points. If the item is graded one quality grade below or above the correct grade, two points will be deducted to obtain a score of three points. If the item is graded two quality grades below or above the correct grade, four points are deducted to obtain a score of one point. However, if the "NG" line is "crossed" (i.e., an incorrect judgment), all five points are deducted to obtain a score of zero points. (Adapted from information provided by Don Sheets, Retired, Kansas Board of Agriculture, Topeka, Kansas.)

**CARCASS PLACING (50 POINTS)**

Each participant will place a class of four ready-to-cook chicken or turkey carcasses. Criteria for placing will be derived from USDA standards relative poultry weight classes. Participants may not touch any carcass; doing so will result in disqualification. If used, the shackle holding a carcass may be rotated to show the entire carcass.

**ORAL REASONS (50 POINTS)**

Each participant may present oral reasons for this class as determined by event officials. Participants will have ten minutes to prepare and two minutes to present their reasons. Reasons should include current USDA and poultry industry terminology and standards.

**READY-TO-COOK POULTRY SCORING**

CRITERIA	Points
Carcass grading	50
Carcasses placing	50
Oral reasons	50

## SHELL EGGS

### INTERIOR GRADING (50 POINTS)

Each participant will grade a class of ten white (or white-tint) shell eggs. Criteria for grading will be derived from USDA standards for interior quality of market eggs. The USDA quality grades will be AA, A, B and Loss. Participants must candle the eggs to determine the appropriate USDA quality grade, but improper handling of eggs will result in disqualification.

Scoring for interior egg quality grading:

Participant's Grade	OFFICIAL GRADE			
	AA	A	B	Loss
AA	5	3	1	0
A	3	5	3	0
B	1	3	5	0
Loss	0	0	0	5

As shown above, interior egg quality grading is scored based on the USDA quality grades AA, A, B and Loss. In the case of Class 76, each correct grade receives a score of five points. If the item is graded one quality grade below or above the correct grade, two points will be deducted to obtain a score of three points. If the item is graded two quality grades below or above the correct grade, four points are deducted to obtain a score of one point. However, if the “Loss” line is “crossed” (i.e., an incorrect judgment), all five points are deducted to obtain a score of zero points.

**EXTERIOR GRADING (50 POINTS)**

Each participant will grade a class of ten shell eggs (white, brown or other). Criteria for grading will be derived from USDA standards for exterior quality of market eggs. The USDA quality grades will be AA/A, B and NG (nongradable). Criteria for grading may include decisions related to the following quality factors: Soundness (unbroken, check, dented check or leaker); stains (slight/moderate stain or prominent stain); adhering dirt or foreign material; egg shape (approximately normal shape, unusual or decidedly misshapen); shell texture (large calcium deposits, body check or pronounced ridges); shell thickness (pronounced thin spots); no defect.

Each participant will determine written factors for the grading of the exterior chicken eggs. The written factors will relate to the criteria used for grading exterior quality of eggs.

Scoring for exterior egg quality grading:

Participant's Grade	OFFICIAL GRADE		
	AA/A	B	NG
AA/A	5	2	0
B	2	5	0
NG	0	0	5
Loss	0	0	0

As shown above exterior egg quality grading is scored based on the USDA quality grades AA/A, B and NG (nongradable). Each correct grade receives a score of five points. If the item is graded one quality grade below or above the correct grade, three point will be deducted to obtain a score of two points. However, if the "Loss" line is "crossed" (i.e., an incorrect judgment), all five points are deducted to obtain a score of zero points.



### WRITTEN FACTORS CLASS (50 POINTS)

Written factors for exterior egg quality grading and has a value of 50 points per participant.

Exterior egg quality grading is evaluated for twelve different quality factors. Further processed poultry meat products are evaluated for seven different quality factors. Each item may be determined to have “no defect” or to have one or more defects.

- For each correct match with the judge, zero points are deducted.
- For each “defect” or “no defect” missed or added, two points are deducted.
- No score will be less than zero.

### SHELL EGGS SCORING

CLASS	Points
Interior grading	50
Exterior grading	50
Written factor for Class	50

## FURTHER PROCESSED POULTRY

### BONELESS FURTHER PROCESSED (50 POINTS)

Each participant will determine written quality factors for a class of ten boneless further processed poultry meat products (e.g., precooked, poultry meat patties, tenders, nuggets or other boneless products). Criteria for evaluation will include coating defects, color defects, consistency of shape/size, broken and/or incomplete products, cluster/marriages and evidence of foreign material. Participants may not touch any product; doing so will result in disqualification.

Boneless Further Processed Poultry Meat Products:

DEFECT	PRODUCT NUMBER									
	1	2	3	4	5	6	7	8	9	10
Coating Void										
Inconsistent Color										
Inconsistent Shape/Size										
Broken/Incomplete										
Cluster/Marriages										
Foreign Material										
No Defect										

### BONE-IN FURTHER PROCESSED (50 POINTS)

Each participant will determine written quality factors for a class of ten bone-in further processed poultry meat products (e.g., precooked, bone-in wings or other bone-in poultry meat products). Criteria for evaluation will include coating defects if applicable, color defects, consistency of size, broken products, miscut products, and evidence of foreign material. Participants may not touch any product; doing so will result in disqualification.

**CARCASS PARTS IDENTIFICATION (50 POINTS)**

Each participant will identify ten poultry parts. Poultry parts to be identified will be randomly selected and consistent with those used in the chicken processing and merchandising industries. The participant may not touch any part; doing so will result in disqualification.

The identification class consisting of ten poultry carcass parts. The class has a value of 50 points per participant. Each correct answer receives a score of five points.

**FURTHER PROCESSED POULTRY SCORING**

CLASS	Points
Boneless Further Processed	50
Bone-In Further Processed	50
Carcass Parts Identification	50

## TEAM ACTIVITY

### PREPARATION (50 POINTS)

Teams will also receive a score of up to 50 points based on observations of event judges evaluating team members' ability to work cooperatively as a team.

### ORAL PRESENTATION (200 POINTS)

Team members will also be scored on a final oral and or written presentation. This presentation will have a value of 200 points.

- Thirty minutes will be allowed to complete the team practicum(s)
- Thirty minutes will be allowed for team to prepare a final written and or oral presentation
- Five minutes will be allowed for team to present their presentation
- Up to five minutes will allotted for questions

Specific information regarding practicum and the type of presentation may be outlined in the team orientation packet, located on [FFA.org](https://www.ffa.org).

## Scoring

	Individual	Team
Eleven Classes	600	2,400
Written Exam	100	400
<b>Total Individual Points Possible</b>	<b>700</b>	<b>2,800</b>
Team Activity	250	
<b>Total Team Points Possible</b>		<b>3,050</b>

## TIEBREAKERS

If ties occur, the following classes will be used in order to determine the ranking of award recipients:

### INDIVIDUALS

1. Total scores of placing classes
2. Written management exam

### TEAM

1. Score of team activity practicums
2. Presentation score from team activity



## Awards

*Awards will be presented to individuals and/or teams based upon their rankings at an awards ceremony.*

Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

### SPECIALTY AWARDS

Specialty awards may be presented by sponsors for teams in specific event areas as well as for individuals excelling in specific areas of the event. Those award categories may include:

- Poultry management
- Shell eggs
- Further processed productions
- Live poultry
- Ready to cook poultry products

## References

*This list of references is not intended to be all-inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. The following list contains references that may prove helpful during event preparation.

- Available from Instructional Materials Service (IMS), Texas A&M University, 2588 TAMUS, College Station, TX 77843-2588 (Phone: 979-845-6601; FAX: 979-845-6608; [ims@tamu.edu](mailto:ims@tamu.edu); <http://www-ims.tamu.edu/>).
- Poultry Grading Manual - Agriculture Handbook Number 31 (latest USDA edition) (IMS Catalog #0414)
- Egg-Grading Manual - Agriculture Handbook Number 75 (latest USDA edition) (IMS Catalog #0417)
- National FFA Core Catalog
- Poultry Science Manual for National FFA Career Development Events. (sixth edition) (IMS Catalog #0418-5) (or from the National FFA Core Catalog product number PSM, 06 on online at <http://shop.ffa.org/poultry-science-manual-p38844.aspx>). All examination items will be derived from this reference.
- The Hormel Computing Slide is available through the National FFA Core Catalog, Item #HCSS, 888-332-2668 or online at <http://shop.ffa.org>
- CDE Q & A – [FFA.org](http://ffa.org)
- One Less Thing
  - Poultry Judging Handbook Lessons – [www.onelessthing.net](http://www.onelessthing.net)



NATIONAL FFA  
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# Exterior Egg Quality Scorecard

EGG NUMBER	EXTERIOR QUALITY GRADES		
	AA/A	B	NG
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			



## Sample Scorecard

[illegible][illegible]





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DEVELOPMENT EVENTS

## Sample Scorecard for Oral Reasons: Broilers, Egg-Type Hens or Ready to Cook Turkey Poultry Carcasses\*

	Possible Points	Total Points
<b>IMPORTANCE OF POINTS COVERED</b>		
Did the participant actually tell why one bird/carcass was selected/placed over another, or did the participant only vaguely describe the birds/carcasses?	5	
Did the participant stress the crucial differences, or did he/she make stereotypic ("canned") comparisons of various factors?	8	
Did the participant tell all there was to tell of importance, or were there other significant reasons that should have been given for the selection/placing?	5	
<b>SUB TOTAL POINTS</b>	<b>18</b>	
<b>APPEARANCE AND DELIVERY</b>		
Did the participant stand still on two feet and face the judge?	2	
Did the participant speak clearly, distinctly and loud enough to be heard?	2	
Did the participant have an appropriate opening and closing statement?	2	
Did the participant speak smoothly without long pauses?	2	
Was the participant confident? Was the participant convincing?	4	
<b>SUB TOTAL POINTS</b>	<b>12</b>	
<b>PROPER USE OF TERMS</b>		
Did the participant use relevant terminology properly?	4	
Did the participant understand the terms used?	3	
Was the participant able to define the terms used? ** (**Participants may be asked to define terms used.)	3	
<b>SUB TOTAL POINTS</b>	<b>10</b>	
<b>ACCURACY OF STATEMENTS</b>		
Did the participant describe the birds/carcasses based on their actual visual appearance?	5	
Did the participant present accurate statements?	5	
<b>SUB TOTAL POINTS</b>	<b>10</b>	
<b>TOTAL OF POINTS</b>	<b>50</b>	

\* To be used as a scoring "guide" by the official judges.

JUDGE'S NAME

JUDGE'S SIGNATURE

DATE



NATIONAL FFA  
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DEVELOPMENT EVENTS

## Team Activity – Preparation Rubric

50 points

CHAPTER

STATE

TEAM NUMBER

INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Weight	Total Points
Effective listening	Clearly evident that all team members are listening.	Listening occurs but distraction is evident.	Not listening to each other and/or talking over each other.	X2	
Oral communication	Clearly evident that all team members are discussing the topic.	Communication occurs but side conversations are occurring or two to three members dominating.	One member dominating conversation.	X2	
Demonstrated cooperation	Clearly all team members are completing tasks, sharing written and oral solutions.	Tasks are primarily completed by two to three members, other members assist occasionally.	Tasks primarily completed by one member, other members contributing only slightly.	X2	
Participated in the team preparation	Clearly all team members are engaged, attentive and making notes for the full term of event.	Members are engaged and attentive with two to three making notes, participation fades over time.	One to two members form the primary team, other members participate occasionally early, fade over time.	X2	
Demonstrated time management skills	Clearly all team members demonstrate efficient use of his/her time in comprising the plan.	Most team members demonstrate efficient use of his/her time in comprising the plan.	One to two team members demonstrate efficient use of his/her time in comprising the plan.	X2	
TOTAL					

JUDGE'S NAME

JUDGE'S SIGNATURE

DATE



NATIONAL FFA  
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## Team Activity – Oral Presentation Rubric

200 points

CHAPTER	STATE			TEAM NUMBER	
INDICATOR	Very strong evidence of skill is present 5–4 points	Moderate evidence of skill is present 3–2 points	Weak evidence of skill is present 1–0 points	Weight	Total Points
<b>Articulating facts and issues and drawing conclusions</b>	Exemplary in connecting facts and issues and articulating how they impact the issue based on their conclusions.  Possesses a strong knowledge-base and is able to effectively articulate information regarding related facts and current issues.	Sufficient in connecting facts and issues and articulating how they impact the issue based on their conclusions.  Possesses a good knowledge-base and is able to, for the most part, articulate information regarding related facts and current issues.	Has difficulty with connecting facts and issues and articulating how they impact the issue based on their conclusions.  Possesses some knowledge-base but is unable to articulate information regarding related facts and current issues.	X8	
<b>Oral communication</b>	Clearly evident that all team members are discussing the topic.	Communication occurs but side conversations are occurring or two to three members dominating.	One member dominating conversation.	X8	
<b>Demonstrated cooperation</b>	Clearly all team members completing tasks, sharing written and oral solutions.	Tasks primarily completed by two to three members, other members assist occasionally.	Tasks primarily completed by one member, other members contributing only slightly.	X8	
<b>Participated in the team preparation</b>	Clearly all team members are engaged, attentive and making notes for the full term of event.	Members are engaged and attentive with two to three making notes, participation fades over time.	One to two members form the primary team, other members participate occasionally early, fade over time.	X8	
<b>Demonstrated time management skills</b>	Clearly all team members demonstrate efficient use of his/her time in comprising the plan.	Most team members demonstrate efficient use of his/her time in comprising the plan.	One to two team members demonstrate efficient use of his/her time in comprising the plan.	X8	
<b>TOTAL POINTS</b>					

JUDGE'S NAME

JUDGE'S SIGNATURE

DATE



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Agriculture, Food and Natural Resources Content Standards

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.01. Performance Element: Apply management planning principles in AFNR businesses.</b>		
<b>ABS.01.01.01.b.</b> Apply microeconomic principles to calculate values associated with different inputs and outputs in AFNR businesses (e.g., price, point of equilibrium, opportunity costs, marginal costs, etc.).	Team activity	CCSS.ELA-Literacy.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 Financial Investing: Benchmarks: Grade 12, Statement 9
<b>ABS.01.02. Performance Indicator: Read, interpret, evaluate and write statements of purpose to guide business goals, objectives and resource allocation.</b>		
<b>ABS.01.02.02.a.</b> Identify the meaning and importance of goals and objectives in AFNR business enterprises.	Team activity	CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RI.9-10.4 CCSS.ELA-LITERACY.RI.11-12.4
<b>ABS.02.02. Performance Indicator: Assemble, interpret and analyze financial information and reports to monitor AFNR business performance and support decision-making (e.g., income statements, balance sheets, cash-flow analysis, inventory reports, break-even analysis, return on investment, taxes, etc.).</b>		
<b>ABS.02.02.02.b.</b> Use accounting information to prepare financial reports associated with inventory in AFNR businesses (e.g., cost of goods sold, margins on goods, etc.).	Team activity	CCSS.ELA-LITERACY.W.9-10.9 CCSS.ELA-LITERACY.W.11-12.9 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.MATH.CONTENT.HSS.ID.C.7 CCSS.MATH.CONTENT.HSS.IC.B.6 CCSS.MATH.CONTENT.HSN.Q.A.1 Savings: Benchmarks: Grade 12, Statements 3 Savings: Benchmarks: Grade 12, Statements 4 Savings: Benchmarks: Grade 12, Statements 6 Savings: Benchmarks: Grade 12, Statements 7 Financial Investing: Benchmarks: Grade 12, Statement 2
<b>ABS.04.02. Performance Indicator: Develop production and operational plans for an AFNR business.</b>		
<b>ABS.04.02.01.c.</b> Make recommendations to improve operational plans for an AFNR business based on best practices.	Team activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>ABS.04.02.02.b.</b> Identify and assess alternative production systems for a specific agricultural product.	Team activity Exam	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 3 CCSS.ELA-LITERACY.ELA-W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.05.03. Performance Indicator: Assess marketing principles and develop marketing plans to accomplish AFNR business objectives.</b>		
<b>ABS.05.03.01.b.</b> Assess alternative marketing strategies as related to marketing principles for AFNR businesses (e.g. value-adding, branding, niche marketing, etc.).	Team activity	AFNR Career Cluster – Agribusiness Systems Pathway, Statement 4 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4 CCSS.ELA-LITERACY.W.9-10.2 CCSS.ELA-LITERACY.W.11-12.2 CCSS.ELA-LITERACY.RH.9-10.7 CCSS.ELA-LITERACY.RH.11-12.7 CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 Buying Goods & Services: Benchmarks: Grade 12, Statements 1 Buying Goods & Services: Benchmarks: Grade 12, Statements 3 Buying Goods & Services: Benchmarks: Grade 12, Statements 4 Buying Goods & Services: Benchmarks: Grade 12, Statements 7
<b>CS.01.01. Performance Indicator: Examine issues and trends that impact AFNR systems on local, state, national and global levels.</b>		
<b>CS.01.01.01.c.</b> Evaluate and explain AFNR issues and their impacts to audiences with limited AFNR knowledge.	Team activity	
<b>CS.01.01.02.c.</b> Evaluate emerging trends and the opportunities they may create within the AFNR systems.	Team activity	
<b>CS.01.02. Performance Indicator: Examine technologies and analyze their impact on AFNR systems.</b>		
<b>CS.01.02.01.c.</b> Solve problems in AFNR workplaces or scenarios using technology.	Team activity Exam	
<b>CS.01.02.02.b.</b> Analyze how technology is used in AFNR systems to maximize productivity.	Team activity Exam	
<b>CS.01.03. Performance Indicator: Identify public policies and their impact on AFNR systems.</b>		
<b>CS.01.03.01.c.</b> Evaluate a public policy within AFNR systems and defend or challenge it.	Team activity	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CS.02.01. Performance Indicator: Research geographic and economic data related to AFNR systems.</b>		
CS.02.01.02.c. Devise a strategy to solve a problem in an AFNR system using a set of economic data.	Team activity	
<b>CS.02.02. Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy.</b>		
CS.02.02.01.c. Devise a strategy for explaining components of AFNR systems to audiences with limited knowledge.	Team activity	
CS.02.02.02.c. Evaluate how society traditions, customs or policies have resulted from practices with AFNR systems.	Team activity Exam	
CS.02.02.03.c. Evaluate how positive or negative changes in the local, state, national or global economy impacts AFNR systems.	Exam	
<b>CS.05.02. Performance Indicator: Examine careers in each of the AFNR pathways.</b>		
CS.05.02.01.a. Categorize careers in each of the AFNR pathways.	Exam	
<b>CS.06.01. Performance Indicator: Explain foundational cycles and systems of AFNR.</b>		
CS.06.01.02.b. Analyze AFNR systems and determine their impact on producing and processing food, fiber and fuel.	Exam	
<b>AS.01.01. Performance Indicator: Evaluate the development and implications of animal origin, domestication and distribution on production practices and the environment.</b>		
AS.01.01.01.c. Evaluate the implications of animal adaptations on production practices and the environment.	Exam	HS-LS4-3
AS.01.01.02.b. Describe the historical and scientific developments of different animal industries and summarize the products, services and careers associated with each.	Exam	HS-LS4-3
AS.01.02.01.c. Evaluate the effectiveness of different production methods and defend the use of selected methods using data and evidence.	Team activity Exam	HS-LS4-3



## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.01.02. Performance Indicator: Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts.</b>		
<b>AS.01.02.02.b.</b> Calculate costs of marketing versus predicted increases in sales.	Team activity Exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
<b>AS.01.02.03.b.</b> Analyze and evaluate the accuracy and effectiveness of records used in an animal system business.	Team activity Exam	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
<b>AS.01.03. Performance Indicator: Analyze and apply laws and sustainable practices to animal agriculture from a global perspective.</b>		
<b>AS.01.03.01.b.</b> Analyze the structure of laws governing animal industries, international trade and animal production policies.	Exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 HS-ETS1-1
<b>AS.01.03.02.b.</b> Analyze the local and global impact of sustainable animal agriculture practices on human and environmental systems.	Team activity Exam	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 HS-ETS1-1
<b>AS.02.01. Performance Indicator: Demonstrate management techniques that ensure animal welfare.</b>		
<b>AS.02.01.01.c.</b> Implement and evaluate quality-assurance programs and procedures for animal production.	Team activity Exam Placing classes	HS-ETS1-2
<b>AS.02.01.03.b.</b> Analyze and document animal husbandry practices and their impact on animal welfare.	Exam	HS-ETS1-2
<b>AS.02.02. Performance Indicator: Analyze procedures to ensure that animal products are safe for consumption.</b>		
<b>AS.02.02.02.c.</b> Research and evaluate programs to assure the safety of animal products for consumption.	Placing and grading classes	HS-ETS1-2
<b>AS.03.01. Performance Indicator: Analyze the nutritional needs of animals.</b>		
<b>AS.03.01.01.c.</b> Assess nutritional needs for an individual animal based on its growth stage and production system. – Exam	Exam	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
AS.03.01.02.b. Correlate a species' nutritional needs to feedstuffs that could meet those needs.	Exam	
<b>AS.03.02 Performance Indicator: Analyze feed rations and assess if they meet the nutritional needs of animals.</b>		
AS.03.02.01.c. Select appropriate feedstuffs for animals based on a variety of factors (e.g., economics, digestive system and nutritional needs, etc.).	Team activity Exam	
AS.03.02.02.c. Select and utilize animal feeds based on nutritional requirements, using rations for maximum nutrition and optimal economic production.	Team activity Exam	
AS.03.02.03.c. Make and defend decisions regarding whether to use feed additives and growth promotants after researching and considering scientific evidence, production system needs and goals, and input from industry professionals.	Team activity Exam	
<b>AS.03.03 Performance Indicator: Utilize industry tools to make animal nutrition decisions.</b>		
AS.03.03.01.c. Select, evaluate and defend the use of specific tools or equipment used to perform animal nutrition tasks.	Exam	
AS.03.03.03.c. Research and recommend technology improvements to provide proper nutrition to animals.	Team activity Exam	
<b>AS.04.01. Performance Indicator: Evaluate animals for breeding readiness and soundness.</b>		
AS.04.01.01.c. Select breeding animals based on characteristics of the reproductive organs.	Placing classes - hens	
AS.04.01.02.c. Evaluate and select animals for reproductive readiness.	Placing classes - hens	
AS.04.01.03.c. Treat or cull animals with reproductive problems.	Team activity	
<b>AS.04.02. Performance Indicator: Apply scientific principles to select and care for breeding animals.</b>		
AS.04.02.01.c. Select and evaluate a breeding system based on the principles of genetics.	Placing classes Exam	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.04.02.02.c.</b> Select and evaluate breeding animals and determine the probability of a given trait in their offspring.	Placing classes	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.04.02.04.c.</b> Create a plan to differentiate care of a species of breeding animals throughout their growth stages.	Team activity Exam	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.04.03 Performance Indicator: Apply scientific principles to breed animals.</b>		
<b>AS.04.03.01.c.</b> Select animal breeding methods based on reproductive and economic efficiency.	Exam	
<b>AS.04.03.02.c.</b> Evaluate the implementation and effectiveness of artificial insemination techniques.	Exam	
<b>AS.04.03.04.c.</b> Select and assess animal performance based on quantitative breeding values for specific characteristics.	Placing classes	
<b>AS.05.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.</b>		
<b>AS.05.01.01.b.</b> Critique designs for an animal facility and prescribe alternative layouts and adjustments for the safe, sustainable and efficient use of the facility.	Exam	AFNR Career Cluster – Animal Systems Pathway, Statement 2 STEM Career Cluster, Statement 4 STEM Career Cluster, Statement 5
<b>AS.05.01.02.c.</b> Select, use and evaluate equipment, technology and handling procedures to enhance sustainability and production efficiency.	Exam	AFNR Career Cluster – Animal Systems Pathway, Statement 2 STEM Career Cluster, Statement 4 STEM Career Cluster, Statement 5
<b>AS.06.01. Performance Indicator: Classify animals according to taxonomic classification systems and use (e.g. agricultural, companion, etc.).</b>		
<b>AS.06.01.01.c.</b> Assess taxonomic characteristics and classify animals according to the taxonomic classification system.	Placing classes Exam	
<b>AS.06.01.03.c.</b> Apply knowledge of classification terms to communicate with others about animal systems in an effective and accurate manner.	Team activity Exam Placing classes	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.06.02. Performance Indicator: Apply principles of comparative anatomy and physiology to uses within various animal systems.</b>		
AS.06.02.01.c. Correlate the functions of animal cell structures to animal growth, development, health and reproduction.	Exam	HS-LS1-2
AS.06.02.02.c. Apply the processes of meiosis and mitosis to solve animal growth, development, health and reproductive problems.	Exam	HS-LS1-2
AS.06.02.03.c. Apply knowledge of anatomical and physiological characteristics of animals to make production and management decisions.	Team activity Placing classes	HS-LS1-2
<b>AS.06.03. Performance Indicator: Select animals for specific purposes and maximum performance based on anatomy and physiology.</b>		
AS.06.03.01.c. Evaluate and select animals to maximize performance based on anatomical and physiological characteristics that affect health, growth and reproduction.	Team activity Exam Placing classes	STEM Career Cluster, Statement 5
AS.06.03.02.c. Choose, implement and evaluate sustainable and efficient procedures (e.g., selection, housing, nutrition and management) to produce consistently high-quality animals that are well suited for their intended purposes.	Team activity Exam	STEM Career Cluster, Statement 5
AS.06.03.03.c. Evaluate and select animals to produce superior animal products based on industry standards.	Team activity Placing and grading classes	STEM Career Cluster, Statement 5
<b>AS.07.01. Performance Indicator: Design programs to prevent animal diseases, parasites and other disorders and ensure animal welfare.</b>		
AS.07.01.01.c. Select and use tools and technology to meet specific animal health management goals.	Team activity Exam	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
AS.07.01.02.c. Determine when an animal health concern needs to be referred to an animal health professional.	Team activity Exam	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>AS.07.01.03.b.</b> Identify and describe common illnesses and disorders of animals based on symptoms and problems caused by wounds, diseases, parasites and physiological disorders.	Team activity Exam	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.01.04.c.</b> Design and implement a health maintenance and a disease and disorder prevention plan for animals in their natural and/or confined environments.	Team activity Exam	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.01.05.c.</b> Identify and describe surgical and nonsurgical veterinary treatments and procedures to meet specific animal health care objectives.	Exam	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.02. Performance Indicator: Analyze biosecurity measures utilized to protect the welfare of animals.</b>		
<b>AS.07.02.01.c.</b> Design and evaluate a biosecurity plan for an animal production operation.	Team activity	
<b>AS.07.02.02.c.</b> Research and evaluate the effectiveness of zoonotic disease prevention methods and procedures to identify those that are best suited to ensure public safety and animal welfare.	Team activity	
<b>AS.08.01. Performance Indicator: Design and implement methods to reduce the effects of animal production on the environment.</b>		
<b>AS.08.01.01.b.</b> Assess methods of reducing the effects of animal agriculture on the environment.	Team activity Exam	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 1 HS-LS2-6 HS-LS2-7
<b>AS.08.02. Performance Indicator: Evaluate the effects of environmental conditions on animals and create plans to ensure favorable environments for animals.</b>		
<b>AS.08.02.01.c.</b> Apply valid and reliable research evidence to predict the potential effects of different environmental conditions for an animal population.	Exam	HS.LS4-6

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
AS.08.02.02.c. Devise and improve plans to establish favorable environmental conditions for animal growth and performance based on a variety of factors (e.g., economic feasibility, environmental sustainability, impact on animals, etc.).	Exam	HS.LS4-6
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Placing classes Oral reasons Team activity	
<b>CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.</b>		
CRP.04.02.01.c. Evaluate the effectiveness of different forms of written communication for achieving their intended purpose.	Team activity	
CRP.04.02.02.c. Compose clear and coherent written documents (e.g., agendas, audio-visuals, drafts, forms, etc.) for formal and informal settings.	Team activity	
<b>CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.</b>		
CRP.04.03.01.c. Evaluate personal effectiveness and devise a plan to improve active listening skills.	Team activity	
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	Team activity	
<b>CRP.06.01. Performance Indicator: Synthesize information, knowledge and experience to generate original ideas and challenge assumptions in the workplace and community.</b>		
CRP.06.01.02.c. Devise strategies (e.g., ask questions, brainstorm ideas, present facts and information etc.) to challenge common assumptions in workplace and community situations.	Team activity	

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>CRP.07.01. Performance Indicator: Select and implement reliable research processes and methods to generate data for decision-making in the workplace and community.</b>		
CRP.07.01.01.a. Identify and summarize reliable research processes and methods used to generate data for decision-making.	Team activity	
<b>CRP.07.02. Performance Indicator: Evaluate the validity of sources and data used when considering the adoption of new technologies, practices and ideas in the workplace and community.</b>		
CRP.07.02.01.b. Assess data sources for reliability and validity.	Team activity	
CRP.07.02.02.b. Assimilate data to assist in making a decision about the adoption of a new technology, practice or idea by workplaces and community organizations.	Team activity	
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
CRP.12.01.01.b. Formulate action plans to complete team-oriented projects in the workplace and community, including plans for personal contributions.	Team activity	
<b>ESS.03.02. Performance Indicator: Apply soil science and hydrology principles to environmental service systems.</b>		
ESS.03.02.04.b. Assess precautions taken to prevent or reduce contamination of groundwater supplies.	Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.RST.11-12.2 CCSS.ELA-LITERACY.RST.11-12.7 CCSS.ELA-LITERACY.WHST.9-10.7 CCSS.ELA-LITERACY.WHST.11-12.7 CCSS.MATH.CONTENT.HSN-Q.A.1 CCSS.MATH.CONTENT.HSN-Q.A.2 CCSS.MATH.CONTENT.HSN-Q.A.3 HS-ESS2-5 HS-ESS2-6
<b>ESS.03.04. Performance Indicator: Apply microbiology principles to environmental service systems.</b>		

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
ESS.03.04.03.a. Examine the role that microbes play in wastewater treatment.	Exam	CCSS.ELA-LITERACY.RST.11-12.1 CCSS.ELA-LITERACY.WHST.9-10.2 CCSS.ELA-LITERACY.WHST.11-12.2 CCSS.ELA-LITERACY.WHST.9-10.5 CCSS.ELA-LITERACY.WHST.11-12.5 CCSS.ELA-LITERACY.WHST.9-10.9 CCSS.ELA-LITERACY.WHST.11-12.9 CCSS.MATH.CONTENT.HSF.BF.A.1 HS-LS2-3 HS-LS3-2 HS-ET1-2
<b>ESS.04.01. Performance Indicator: Use pollution control measures to maintain a safe facility and environment.</b>		
ESS.04.01.01.a. Identify and distinguish types of pollution and distinguish between point source and nonpoint source pollution.	Exam	HS-ETS1-2
<b>ESS.04.02. Performance Indicator: Manage safe disposal of all categories of solid waste in environmental service systems.</b>		
ESS.04.02.01.c. Develop a plan for solid waste disposal for a given situation that considers the environmental hazards, economic realities and social concerns associated with this task.	Exam	HS-ETS1-2
ESS.04.02.03.c. Evaluate the appropriateness of composting methods in different situations.	Exam	HS-ETS1-2
<b>FPP.01.01. Performance Indicator: Analyze and manage operational and safety procedures in food products and processing facilities.</b>		
FPP.01.01.01.b. Analyze and document attributes and procedures of current safety programs in food products and processing facilities.	Exam	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3



## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>FPP.01.01.02.a.</b> Research and categorize types of equipment used in food products and processing systems.	Exam	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 AFNR Career Cluster, Statement 6 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 2 Manufacturing Career Cluster – Maintenance, Installation and Repair Pathway Statement 4 Manufacturing Career Cluster – Production Pathway 2 Manufacturing Career Cluster – Production Pathway 3
<b>FPP.01.02. Performance Indicator: Apply food safety and sanitation procedures in the handling and processing of food products to ensure food quality.</b>		
<b>FPP.01.02.01.c.</b> Identify sources of contamination in food products and/or processing facilities and develop ways to eliminate contamination.	Placing class – further processed	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.02.04.a.</b> Describe the effects food-borne pathogens have on food products and humans.	Exam	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2
<b>FPP.01.03. Performance Indicator: Apply food safety procedures when storing food products to ensure food quality.</b>		
<b>FPP.01.03.01.a.</b> Identify and summarize purposes of food storage procedures (e.g., first in/first out, temperature regulation, monitoring, etc.).	Exam	
<b>FPP.03.01. Performance Indicator: Implement selection, evaluation and inspection techniques to ensure safe and quality food products.</b>		
<b>FPP.03.01.01.c.</b> Outline procedures to assign quality and yield grades to food products according to industry standards.	Placing – grading, further processed, exterior egg classes	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.02.b.</b> Assemble procedures to perform quality-control inspections of raw food products for processing.	Placing and grading classes	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.03.b.</b> Examine and evaluate inspection and harvesting of animals using regulatory agency approved or industry-approved techniques.	Placing and grading classes	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.03.01.04.c.</b> Evaluate and grade food products from different classifications of food products.	Placing, grading, further processed, egg classes	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 1 AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 2 Buying Goods and Services, Benchmarks: Grade 12, Statement 7

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>FPP.03.02. Performance Indicator: Design and apply techniques of food processing, preservation, packaging and presentation for distribution and consumption of food products.</b>		
<b>FPP.03.02.01.b.</b> Compare weights and measurements of products and perform conversions between units of measure.	Team activity	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.02.c.</b> Evaluate food quality factors on foods prepared for different markets (e.g., shelf life, shrinkage, appearance, weight, etc.).	Placing, grading, further processed, egg classes	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.02.03.a.</b> Identify methods of food preservation and give examples of foods preserved by each method.	Exam	AFNR Career Cluster – Food Products and Processing Systems Pathway, Statement 3
<b>FPP.03.03. Performance Indicator: Create food distribution plans and procedures to ensure safe delivery of food products.</b>		
<b>FPP.03.03.03.c.</b> Propose distribution plans for food products that meet specific market demands.	Team activity	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 HS-ETS1-2
<b>FPP.04.01. Performance Indicator: Examine the scope of the food industry by evaluating local and global policies, trends and customs for food production.</b>		
<b>FPP.04.01.03.a.</b> Compare and contrast cultural differences regarding food products and processing practices.	Exam	AFNR Career Cluster, Statement 7 AFNR Career Cluster – Food Products and Processing Pathway, Statement 3 Manufacturing Career Cluster – Logistics and Inventory Control, Pathway 2 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 1 Manufacturing Career Cluster – Manufacturing Product Process Development Pathway, Statement 2 Transportation, Distribution and Logistics Career Cluster, Statement 3 CCSS.ELA-Literacy.W.9-10.2 CCSS.ELA-Literacy.W.11-12.2 HS-ETS1-2

## Agriculture, Food and Natural Resources Content Standards continued

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
<b>FPP.04.02. Performance Indicator: Evaluate the significance and implications of changes and trends in the food products and processing industry in the local and global food systems.</b>		
<b>FPP.04.02.01.b.</b> Analyze and document significant changes and trends in the food products and processing industry.	Exam	Buying Goods and Services, Benchmarks: Grade 12, Statement 1
<b>FPP.04.03. Performance Indicator: Identify and explain the purpose of industry organizations, groups and regulatory agencies that influence the local and global food systems.</b>		
<b>FPP.04.03.01.a.</b> Examine and summarize the purposes of organizations that influence or regulate the food products and processing industry.	Exam	Transportation, Distribution and Logistics Career Cluster – Transportation Systems/Infrastructure Planning, Management and Regulation Pathway, Statement 4 Buying Goods and Services, Benchmarks: Grade 12, Statement 7
<b>FPP.04.03.02.b.</b> Assess the application of industry standards in the food products and processing industry.	Exam	Transportation, Distribution and Logistics Career Cluster – Transportation Systems/Infrastructure Planning, Management and Regulation Pathway, Statement 4 Buying Goods and Services, Benchmarks: Grade 12, Statement 7



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# PREPARED PUBLIC SPEAKING

2017-2021



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



## Purpose

*The National FFA Prepared Public Speaking Leadership Development Event is designed to develop agricultural leadership, communication skills and promote interest in leadership and citizenship by providing member participation in agricultural public speaking activities.*





## Event Rules

- The National FFA Prepared Public Speaking Leadership Development Event will be limited to one participant from each state association.
- It is highly recommended that participants wear FFA Official Dress for this event.
- Each participant's manuscript will be the result of his or her own efforts. It is expected that the participant will take advantage of all available training facilities at his or her local school in developing his or her speaking ability. Facts and working data may be secured from any source but must be appropriately documented.
- Participants will report to the orientation meeting for instructions at the time and place shown in the current year's schedule of events.
- Three to eight competent and impartial persons will be selected to judge the event. At least one judge should have an agricultural background. Each state with a speaker will provide a judge for preliminary round of the national event. Any advisor who has a student competing in a speaking event may not serve as a judge for that respective speaking event.

## Event Format

### MANUSCRIPT

Manuscripts are to be uploaded in PDF format by the designated deadline on [FFA.org](https://ffa.org). Upload instructions are on [FFA.org](https://ffa.org). A penalty of 20 points (10 percent of available manuscript points) will be assessed by the judges scoring the manuscripts for any late submissions. Manuscripts received later than Sept. 22 will not be entered into the event and the speaker may be disqualified from speaking in the event.

Manuscript requirements:

- Formatted to 8 1/2" x 11" double spaced with a 1" margin
- Cover page including the speech title, participant's name, state and year
- Font size must be 12 point using a serif (Times New Roman, Cambria, etc.) or sans serif font (Ariel, Calibri, etc.)
- Follow most current APA style guide for developing reference list and in text citations
- Manuscripts not meeting these guidelines will be penalized.

A complete and accurate reference list should be included in manuscript. All participants in the National FFA Prepared Public Speaking Leadership Development Event should give credit to others where any direct quotes, phrases or special dates are used in the manuscript, in order not to be guilty of plagiarism.

### SUBJECTS

Participants may choose any current subject of an agricultural nature for their speeches.

This may include the areas of agribusiness, animal systems, plant systems, environmental services, food products and processing, natural resource systems and power, structural and technical systems.



Official judges of the National FFA Prepared Public Speaking Leadership Development Event shall disqualify a participant if he or she speaks on a non-agricultural subject.

### **TIME LIMIT**

Each speech will be a minimum of six minutes in length and a maximum of eight minutes. Participants are to be penalized one point per second on each judge's score sheet for being under six minutes or over eight minutes. Each participant will be allowed five additional minutes in which he or she will be asked questions relating to his or her speech and/or manuscript content. No time warnings will be given.

## Scoring

Prior to the event, the content and composition of all manuscripts will be scored by qualified individuals using the manuscript rubric. Manuscript scores will be averaged and supplied to the presentation judges after they have scored the oral presentation. Manuscript comments will be completed by manuscript judges and presented to the participants at the awards function.

Presentation judges will be furnished with copies of the participants' manuscripts, which they will use to formulate questions. Questions shall pertain directly to the speaker's subject. Questions containing two or more parts should be avoided.

Flights will be seeded by manuscript scores. Event officials will randomly determine the speaking order and ensure that prior to giving the speech, each speaker is properly introduced. A participant will be permitted to use notes while speaking, but deductions in scoring may be made for this practice if it detracts from the effectiveness of the presentation. No props are to be used. Applause shall be withheld until all participants have spoken.

A designated timekeeper will record the time used by each participant in delivering his or her speech, noting under time or over time, if any, for which deductions will be made.

At the time of the event, the judges will use the official rubric to score each participant on the delivery of the speech. They will also complete a judge's comment card which will be presented to the participant at the awards function.

Each judge will ask questions at the conclusion of the oral presentation of the speech. Judges will score each participant on the ability to answer all questions asked by judges. The full five minutes for questions should be used.

When all participants have finished speaking, each judge will total the score on composition, delivery and response to questions for

each participant. The timekeeper(s) record will be used in computing the final score for each participant. Participants shall be ranked in numerical order on the basis of the final score to be determined by each judge. The judges' score sheets will then be submitted to event officials to determine final ratings of participants.

A participant will be permitted to use note cards while speaking, but deductions in scoring may be made for this practice if it detracts from the effectiveness of the presentation.

The judges' ranking of each participant then shall be added, and the winner will be that participant whose total ranking is the lowest. Other placing will be determined in the same manner (low rank method of selection).

Manuscript	200
Presentation	500
Response to Questions	300
<b>TOTAL POINTS</b>	<b>1,000</b>

## **TIEBREAKERS**

Ties will be broken based on the greatest number of low ranks. Participants' low ranks will be counted and the participant with the greatest number of low ranks will be declared the winner. If a tie still exists, the event superintendent will rank the participants' response to questions. The participant with the lowest rank from the response to question will be declared the winner. If a tie still exists, the participants' raw scores will be totaled. The participant with the greatest total of raw points will be declared the winner.



## Awards

*Awards will be presented to individuals based upon their rankings at the awards ceremony.*

Manuscript judges' comments and presentation judges' comment cards will be presented to the participants at that time. Awards are sponsored by a cooperating industry sponsor(s) as a special project and/or by the general fund of the National FFA Foundation.

## References

*This list of references is not intended to be all inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. Make sure to use discretion when selecting website references by only using reputable, proven sites. The following list contains references that may prove helpful during event preparation. The most current edition of resources should be used.

Past CDE materials, finals hall footage and other resources are available on [FFA.org](http://FFA.org).

- National FFA Core Catalog: DEVELOPING GREAT SPEECHES GUIDE
- APA Style Guide (most current edition) – [www.apastyle.org](http://www.apastyle.org)
- Speak Well, latest edition, Liz O'Brien, McGraw-Hill Higher Education
- Purdue's Online Writing Lab – APA Formatting Guide:  
<https://owl.english.purdue.edu/owl/resource/560/01/>



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Manuscript Content and Composition Rubric

200 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_

INDICATOR	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 1-0 points	Points Earned	Weight	Total Points
Topic relevance	Topic addresses an issue facing the industry of agriculture.	Topic addresses an issue that may show some relationship to the industry of agriculture.	Topic addresses an issue that is unrelated to the industry of agriculture.		x 6	
Persuasive explanation of position on topic	Position clearly stated and ample evidence is provided.	Position is not obvious and evidence is not clearly provided.	Position is not stated and evidence is not provided.		x8	
Alternative viewpoints recognized	Identifies and counters alternative viewpoints.	Only identifies alternate viewpoints.	Does not identify alternate viewpoints.		x 4	
Logical order and unity of thought	Clearly organized and concise with strong introduction, body and conclusion layout.	Good organization with few statements out of place or lacking in clear construction.	Little to no organization is present; sometimes awkward and lacking construction.		x 4	
Spelling/grammar (sentence structure, verb agreement, etc.).	Spelling and grammar are extremely high quality with two or less errors in the document	Spelling and grammar are adequate with three to five errors in the document.	Spelling and grammar are less than adequate with six or more errors in the document.		x 7	
Quality of resources	Resources are from reputable sources.	Resources are from questionable sources.	Resources are unreliable and invalid.		x 6	
Manuscript written according to guidelines	5 points		0 points			
Double-spaced formatted to 8½” x 11” with 1” margins 12 point serif (Times new roman, Cambria, etc.) or sans serif font (Ariel, Calibri, etc.)					x 1	
Cover page with speech title, participant’s name, state and year					x 1	
APA style for references and citations					x 3	
TOTAL POINTS						



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

# Presentation and Questions Rubric

800 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_

INDICATORS	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 1-0 points	Points Earned	Weight	Total Score
<b>Oral Communication and non-verbal communication</b>						
Supporting evidence	Examples (stories, statistics, etc.) are vivid, precise and clearly explained.	Examples are usually concrete and sometimes need clarification.	Examples are sometimes confusing leaving the listeners with questions.		x 15	
Persuasive use of evidence	Exemplary use of evidence to persuade listeners.	Sufficient use of evidence to persuade listeners.	Has difficulty using evidence to persuade listeners.		x 15	
Pace	Speaks very articulately at rate that engages audience.	Speaks articulately but occasionally speaks too fast or has long unnecessary hesitations.	Speaks too slow or too fast to engage audience.		x 15	
Command of audience	Speaker uses appropriate emphasis and tone to captivate audience.	Speaker presents speech as mere repeating of facts and speech comes across as a report.	Speaker lacks enthusiasm and power to engage audience.		x 20	
Eye contact	Constantly looks at the entire audience (90 to 100 percent of the time).	Mostly looks around the audience (60 to 80 percent of the time).	Occasionally looks at someone or some groups (less than 50 percent of the time).		x 10	
Mannerisms and gestures	No nervous habits are displayed. Hand motions are expressive and used to emphasize talking points.	Sometimes exhibits nervous habits. Hands are sometimes used to express or emphasize.	Displays some nervous habits. Hands are not used to emphasize talking points; hand motions are sometimes distracting.		x 10	
Poise	Portrays confidence and composure through appropriate body language (stance, posture, facial expressions)	Maintains control most of the time; rarely loses composure.	Lacks confidence and composure.		x 15	
<b>Response to questions</b>						
Response to questions	Is able to respond with organized thoughts and concise answers.	Answers effectively but has to stop and think and sometimes gets off focus.	Rambles or responds before thinking.		x 20	
Knowledge of topic	Answer shows thorough knowledge of the subject and supports answer with strong evidence.	Answer shows some knowledge of the subject but lacks strong evidence.	Answer shows little knowledge of subject and lacks evidence.		x 40	
<b>TOTAL</b>						



NATIONAL FFA  
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DEVELOPMENT EVENTS

## Agriculture, Food and Natural Resources Content Standards

**CS.01.01. Performance Indicator: Examine issues and trends that impact AFNR systems on local, state, national and global levels.**

Measurement Assessed	Where measured in event	Academic Content Standards Addressed
CS.7.02.01.c. Evaluate a public policy within AFNR systems and defend or challenge it.	Manuscript	

**CS.02.02. Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy.**

CS.02.02.01.c. Devise a strategy for explaining components of AFNR systems to audiences with limited knowledge.	Presentation	
CS.02.02.03.c. Evaluate how positive or negative changes in the local, state, national or global economy impacts AFNR systems.	Manuscript	

**CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.**

CRP.04.01.01.a. Identify and categorize strategies for ensuring clarity, logic, purpose and professionalism in verbal and non-verbal communication (e.g., vocal tone, organization of thoughts, eye contact, preparation, etc.).	Presentation	
CRP.04.01.02.b. Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Presentation	

**CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.**

CRP.04.02.02.c. Compose clear and coherent written documents (e.g., agendas, audio-visuals, drafts, forms, etc.) for formal and informal settings.	Manuscript	
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**CRP.04.03. Performance Indicator: Model active listening strategies when interacting with others in formal and informal settings.**

CRP.04.03.01.b. Apply active listening strategies (e.g., be attentive, observe non-verbal cues, ask clarifying questions, etc.).	Presentation	
CRP.04.03.02.c. Model active listening strategies in formal and informal settings.	Presentation	





# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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# VETERINARY SCIENCE

2017-2021



**NATIONAL FFA**  
**CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS**

### IMPORTANT NOTE

Please thoroughly read the introduction section located on [FFA.org/cdeintro](https://www.ffa.org/cdeintro) for complete rules and procedures that are relevant to all National FFA Career/Leadership Development Events.



### **Purpose**

*The purpose of the veterinary science career development event is to promote college and career readiness by providing opportunities to develop technical knowledge and demonstrate practical skills in the field of veterinary science.*

## Objectives

*Participants will demonstrate professional ethics, decision-making, business competency, communication and problem-solving skills.*

Participants will demonstrate technical competency with small and large animals in the areas of:

- Anatomy and physiology
- Clinical procedures
- Identification
- Health and safety
- Medical terminology
- Veterinary math applications

## Event Rules

*Teams will consist of four members with all four members' scores counting toward total team score.*

### **DRESS CODE:**

**Day 1:** It is highly recommended that participants wear FFA Official Dress for the written portion of the event.

**Day 2:** All participants must wear either scrubs (top and bottoms; solid color) or polo with slacks. All participants must wear closed toe, closed heel and flat shoes (no clogs, sandals or flip-flops). No jewelry may be worn on the second day of this event. This includes rings, bracelets, earrings and exposed body piercings.

### **TOOLS AND EQUIPMENT:**

- Equipment provided: pencils, calculators, clipboards and paper.
- FFA will provide the specific tools and equipment needed to complete practicums.
- Any participant in possession of an electronic device in the event area is subject to disqualification.

## Event Rules

### INDIVIDUAL ACTIVITIES

#### WRITTEN EXAM (100 POINTS)

The objective exam is designed to determine team members' broad understanding of the veterinary science field. The written exam will consist of 50 questions. Forty minutes will be given for the exam.

Topics for the exam may include:

- Behavior
- Disease (causes and sources, signs and clinical signs)
- Medical terminology
- Medical records
- Anatomy/physiology
- Regulations (OSHA: Federal Occupational Safety and Health Administration; GHS: Globally Harmonized System for Hazard Communication; SDS: Safety Data Sheets)
- Patient management
- Facility management
- Practice management
- Genetics
- Nutrition
- Husbandry

#### MATH APPLICATIONS EXAM (100 POINTS)

The number of practicum questions will vary based on the type of activity that is assigned. Participants will have 30 minutes to complete the entire math application practicum. Questions may include conversions, dose calculations, dilutions, cost calculations and invoices.

**CURRENT EVENTS (100 POINTS)**

The current event activity will allow students to utilize critical thinking and problem-solving skills. Thirty minutes total will be allowed to complete this portion of the event. Participants will be provided a current event topic in the superintendent letter. The current event portion could be a blend of writing and digital evaluation. Written responses may range from short answers to essays.

**IDENTIFICATION (100 POINTS TOTAL)**

Participants will identify equipment, parasites and breeds/species for a total of 100 points (two points per item). Forty minutes will be given for this activity. Identification lists are located at the end of this handbook.

**EQUIPMENT (50 POINTS)**

Participants will identify pieces of equipment (actual equipment and photos). They will also need to have general knowledge about the use for each item.

**PARASITES/MICROSCOPIC (30 POINTS)**

Participants will identify parasites (specimen and photos) and explain the life cycles of selected parasites.

Participants will identify microscopic organisms.

**BREEDS (20 POINTS)**

Participants will identify breeds of small and large animals (photos).



## **PRACTICUMS (320 POINTS) TOTAL**

### **Clinical Procedure Practicum (200 points)**

Participants will be given four clinical procedure activities to complete (50 points each). Fifteen to thirty minutes will be allotted for this section depending on the activities selected each year. Participants are expected to talk through the clinical procedure steps to a judge as they are being scored. Judges may ask participants for clarification on steps performed. All clinical procedure scorecards can be found at the end of this handbook.

### **Handling and Restraining Practicum (120 points)**

Participants will be given four handling/restraint activities to complete (30 points each). Fifteen to thirty minutes will be allotted for this section depending on the activities selected each year. Participants are expected to talk through the handling and restraining steps to a judge as they are being scored. Judges may ask participants for clarification on steps performed. All handling and restraining scorecards can be found at the end of this handbook.

### **Team Activity (500 points)**

Teams will conduct research using local veterinarians and veterinary resources based on the annual topic posted on the CDE webpage in November. The team will be provided a specific scenario when they begin their team activity. They will have a total of 15 minutes to prepare their presentation. Teamwork will be assessed during the plan development time.

Teams will evaluate the information provided and prepare the questions, diagnostics and recommendations as well as explain steps and procedures for the veterinary process in their plan. Teams need to determine what aspects of veterinary medicine and roles are most important to demonstrate based on the annual topic.

After preparation the team will be required to give an oral presentation for a maximum of 15 minutes explaining decisions



made by the team. All team members are expected to participate in the presentation. The team will then be required to answer questions from judges regarding the decisions reached by their team.

Resources provided for the team activity may include diagnostic information like blood work, synopsis of disease state, treatment recommendations and cost information.

## Scoring

ACTIVITIES	Individual Points	Team Points
Written Exam	100	400
Current Event	100	400
Identification	100	400
Math Application Exam	100	400
Handling and Restraining Exam	120	480
Clinical Procedures Practicum	200	800
Team Activity		500
	<b>720</b>	<b>3,380</b>

## TIEBREAKERS

Team tiebreakers will be settled in the following order:

1. Combined individual practicum total score
2. Combined individual written exam total score

Individuals tiebreakers will be settled in the following order:

1. Combined practicum score
2. Written exam score



## Awards

*Awards will be presented to individuals and teams based upon their rankings at the awards ceremony.*

Awards are sponsored by a cooperating industry sponsor(s) as a special project, and/or by the general fund of the National FFA Foundation.

Specialty awards will be presented for highest exam score, highest math application score, and highest identification score.

## Resources

*This list of references is not intended to be all inclusive.*

Other sources may be utilized, and teachers are encouraged to make use of the very best instructional materials available. Make sure to use discretion when selecting website references by only using reputable, proven sites. The following list contains references that may prove helpful during event preparation. The most current edition of resources will be used.

Past CDE materials and other resources are available by logging in to <https://www.ffa.org/participate/cdes/veterinary-science>

### WRITTEN EXAM:

- Small Animal Care and Management. Warren. ISBN: 978-1-4180-4105-2
- McCurnin's Clinical Textbook for Vet Technicians 8th edition- ISBN 978-1-4377-2690-0
- An Illustrated Guide to Veterinary Medical Terminology. Romich. ISBN: 978-1-4354-2012-0
- Official Guide: Maintaining and Cleaning Surgical Instruments. Stow.: [https://www.ffa.org/SiteCollectionDocuments/cde\\_vetsci\\_guide\\_maintaining\\_clearing\\_surgical\\_instruments.pdf](https://www.ffa.org/SiteCollectionDocuments/cde_vetsci_guide_maintaining_clearing_surgical_instruments.pdf)
- Veterinary Science: Preparatory Training for the Veterinary Assistant. Faries. ISBN: 978-0-9849115-0-9. Order online: [https://agrillifebookstore.org/publications\\_browse2.cfm?keywordid=4](https://agrillifebookstore.org/publications_browse2.cfm?keywordid=4)
- Introduction to Veterinary Science. Lawhead, Baker. ISBN: 978-1-4283-1225-8
- <http://todaysveterinarypractice.navc.com/>
- Veterinary Assisting: Fundamentals and Applications. Vanhorn, Clark. ISBN: 978-1-4354-5387-6
- Clinical Procedures & Handling/Restraining Practicums :

- Veterinary Assisting: Fundamentals and Applications. Vanhorn, Clark. ISBN: 978-1-4354-5387-6
- McCurnin's Clinical Textbook for Vet Technicians 8th edition- ISBN 978-1-4377-2690-0
- Manual of Clinical Procedures in Dogs, Cats, Rabbits & Rodents. Crow, Walshaw, Boyle. ISBN: 978-0813813042
- Veterinary Science: Preparatory Training for the Veterinary Assistant. Faries. ISBN: 978-0-9849115-0-9. Order online: [https://agrillifebookstore.org/publications\\_browse2.cfm?keywordid=4](https://agrillifebookstore.org/publications_browse2.cfm?keywordid=4)

### IDENTIFICATION:

- Veterinary Instruments and Equipment: A Pocket Guide. Sonsthagen. ISBN: 978-0323032032 <http://loudoun.nvcc.edu/vetonline/vet121/instruments.htm>
- <https://www.spectrumsurgical.com/product/10-0227/Surgical-Instrument-Flash-Cards.php>
- American Kennel Club – <http://www.akc.org/index.cfm>
- Cat Fanciers' Association – <http://www.cfa.org/client/breeds.aspx>
- American Rabbit Breeders Association – <http://www.arba.net/>

### MATH PRACTICUM:

- Medical Mathematics and Dosage Calculations for Veterinary Professionals. Bill, Robert. ISBN: 978-08138263
- Essential Calculations for Veterinary Nurses and Technicians. Terry Lake and Nicola Green. ISBN 978-0-7020-2930-1
- <https://www.ffa.org/SiteCollectionDocuments/Math%20Resource.pdf>



NATIONAL FFA  
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## Equipment and Materials Identification List

- |                                      |  |  |
|--------------------------------------|--|--|
| 100. Ambubag                         | 130. Fecalizers                              | 159. Rumen magnet                            |
| 101. Anesthetic machines             | 131. Feeding tube for small animals          | 160. Scalpel blade                           |
| 102. Autoclave                       | 132. Fetal extractor — calf                  | 161. Scalpel handle                          |
| 103. Autoclave tape indicator        | 133. Forceps — Alligator                     | 162. Scissors — Suture wire cutting          |
| 104. Backhaus towel clamps           | 134. Forceps — Allis tissue                  | 163. Scissors — Bandage                      |
| 105. Balling gun                     | 135. Forceps — Babcock tissue                | 164. Scissors — Lister bandage               |
| 106. Bandaging material — Elasticon  | 136. Forceps — Brown-Adson thumb             | 165. Scissors — Littauer suture removal      |
| 107. Bandaging material — roll gauze | 137. Forceps — Crile                         | 166. Scissors — Mayo dissecting              |
| 108. Bandaging material — vet wrap   | 138. Forceps — Kelly                         | 167. Scissors — Metzenbaum dissecting        |
| 109. Bands (castration or docking)   | 139. Forceps — Halstead mosquito hemostatic  | 168. Silver nitrate sticks                   |
| 110. Cat bag                         | 140. Forceps — Rat tooth thumb               | 169. Small animal oxygen cage                |
| 111. Catch pole (dog snare)          | 141. Gravity feeder / J tube                 | 170. Snook ovariohysterectomy hook           |
| 112. Catheter — butterfly            | 142. Head gate                               | 171. Speculum — large animal oral            |
| 113. Catheter — IV                   | 143. Hog snare                               | 172. Speculum — small animal oral            |
| 114. Catheter — Tomcat urinary       | 144. Hoof knife                              | 173. Speculum — vaginal                      |
| 115. Centrifuge                      | 145. Hoof rasp                               | 174. Squeeze chute                           |
| 116. Chemical indicator strips       | 146. IV administration set                   | 175. Staple remover                          |
| 117. Cold sterile tray               | 147. Laparoscope                             | 176. Stethoscope                             |
| 118. Dehorner — Barnes               | 148. Laryngoscopes                           | 177. Surgical drapes                         |
| 119. Dehorner — electric             | 149. Muzzle — basket                         | 178. Suture needle — cutting                 |
| 120. Dental floats                   | 150. Muzzle — nylon                          | 179. Suture needle — taper                   |
| 121. Dental scaler                   | 151. Needle holder — Mayo-Hegar              | 180. Syringe — automatic, multi-dose         |
| 122. Drench gun — small ruminant     | 152. Needle holder — Olsen-Hegar             | 181. Tattooing instruments — small and large |
| 123. Ear notcher                     | 153. Obstetrical chain and handle            | 182. Tonometer                               |
| 124. Elastrator                      | 154. Ophthalmoscope                          | 183. Tourniquet                              |
| 125. Elizabethan collar              | 155. Otoscope                                | 184. Trocar and cannula                      |
| 126. Emasculators                    | 156. Pig tooth nippers                       | 185. Twitch chain                            |
| 127. Endoscope                       | 157. Radiology personal protective equipment | 186. Twitch human                            |
| 128. Endotracheal tubes              |  |  |
| 129. Fecal loop                      | 158. Rectal prolapse ring — swine            |  |



NATIONAL FFA  
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DEVELOPMENT EVENTS

## Parasite/Microscopic Identification List

- |   |  |
|---|--|
| 200. Blowfly (Family Calliphoridae)   | Culex or Aedes)  |
| 201. Calcium oxalate crystals   | 225. Mosquito Larva (Family Culicidae; Genus Anopheles, Culex or Aedes)  |
| 202. Cat Warble (Genus Cuterebra)   | 226. Neutrophils   |
| 203. Cocci (bacteria)   | 227. Platelets   |
| 204. Coccidia (Genus Isospora or Eimeria)   | 228. Red blood cell (erythrocyte)  |
| 205. Demodectic Mite (Genus Demodex)  | 229. Rod (bacteria)  |
| 206. Ear Mite (Family Psoroptidae ; Genus Otodectes)  | 230. Roundworm Adult* (Family Ascarididae or Toxocaridae; Genus Toxocara, Toxascaris, Ascaris, Parascaris or Neoascaris) |
| 207. Eosinophils  | 231. Roundworm Egg* (Family Ascarididae or Toxocaridae; Genus Toxocara, Toxascaris, Ascaris, Parascaris or Neoascaris)   |
| 208. Epithelial cells (urine)   | 232. Sarcoptic Mite (Family Sarcoptidae ; Genus Sarcoptes or Notoedres)  |
| 209. Flea Larva (Genus Ctenocephalides)   | 233. Struvite crystals (triple magnesium phosphate)  |
| 210. Flea Tapeworm Egg* (Genus Dipylidium)  | 234. Taenia Tapeworm Egg* (Family Taeniidae; Genus Taenia)   |
| 211. Flea Tapeworm Segment* (Genus Dipylidium)  | 235. Taenia Tapeworm Segment* (Family Taeniidae; Genus Taenia)   |
| 212. Flea Tapeworm* (Genus Dipylidium)  | 236. Taenia Tapeworm* (Family Taeniidae; Genus Taenia)   |
| 213. Fleas* (Genus Ctenocephalides)   | 237. Tick — American Dog (Family Dermacentor; Genus variabilis)  |
| 214. Giardia* (Genus Giardia)   | 238. Tick — Black Legged Deer (Family Ixodes; Genus scapularis)  |
| 215. Heartworm Adult* (Genus Dirofilaria)   | 239. Tick — Brown Dog (Family Rhipicephalus; Genus sanguineus)   |
| 216. Heartworm Microfilaria* (Genus Dirofilaria)  | 240. Tick — Lonestar (Family Amblyomma; Genus americanum)  |
| 217. Hookworm Adult* (Family Ancylostomatidae; Genus Ancylostoma, Uncinaria, Bunostomum or Globocephalus) | 241. Whipworm Egg* (Genus Trichuris)   |
| 218. Hookworm Egg* (Family Ancylostomatidae; Genus Ancylostoma, Uncinaria, Bunostomum or Globocephalus)   | 242. Whipworm* (Genus Trichuris)   |
| 219. Horse Bots* (Genus Gasterophilus)  | 243. Yeast (cytology)  |
| 220. Horse Strongyles* (Family Strongylidae; Genus Strongylus)  |  |
| 221. Lice — Biting (Order Mallophaga; Genus Bovicola or Trichodectes)                                     |  |
| 222. Lice — Sucking (Order Anoplura; Genus Linognathus or Hematopinus)                                    |  |
| 223. Liver Fluke (Class Trematoda; Genus Fasciola, Fascioloides or Dicrocoelium)                          |  |
| 224. Mosquito Adult (Family Culicidae; Genus Anopheles,   |  |

\*Asterisk indicates which parasite life cycles could have questions.



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DEVELOPMENT EVENTS

# Breed/Species Identification List

## DOGS

### HERDING GROUP

- 300. Australian Cattle Dog
- 301. Australian Shepherd
- 302. Border Collie
- 303. Collie
- 304. German Shepherd Dog
- 305. Old English Sheepdog
- 306. Pembroke Welsh Corgi
- 307. Shetland Sheepdog

### HOUD GROUP

- 308. Afghan Hound
- 309. Basenji
- 310. Basset Hound
- 311. Beagle
- 312. Black and Tan Coonhound
- 313. Bloodhound
- 314. Dachshund
- 315. Greyhound
- 316. Rhodesian Ridgeback

### NON-SPORTING GROUP

- 317. Bichon Frise
- 318. Boston Terrier
- 319. Bulldog
- 320. Chinese Shar-Pei
- 321. Chow Chow
- 322. Dalmatian
- 323. Poodle

### SPORTING GROUP

- 324. Brittany Spaniel
- 325. Cocker Spaniel
- 326. English Setter
- 327. German Shorthaired Pointer
- 328. Golden Retriever
- 329. Irish Setter
- 330. Labrador Retriever
- 331. Weimaraner

### TERRIER GROUP

- 332. Bull Terrier
- 333. Cairn Terrier
- 334. Parson Russell Terrier
- 335. Scottish Terrier
- 336. West Highland White Terrier

### TOY GROUP

- 337. Cavalier King Charles Spaniel
- 338. Chihuahua
- 339. Miniature Pinscher
- 340. Papillon
- 341. Pekingese
- 342. Pomeranian
- 343. Poodle
- 344. Pug
- 345. Shih Tzu
- 346. Yorkshire Terrier

### WORKING GROUP

- 347. Bernese Mountain Dog
- 348. Boxer
- 349. Doberman Pinscher
- 350. Great Dane

- 351. Great Pyrenees
- 352. Mastiff
- 353. Newfoundland
- 354. Portuguese Water Dog
- 355. Rottweiler
- 356. Saint Bernard
- 357. Siberian Husky
- 358. Standard Schnauzer

## CATS

- 359. Abyssinian
- 360. American Shorthair
- 361. Burmese
- 362. Maine Coon
- 363. Manx
- 364. Persian
- 365. Ragdoll
- 366. Russian Blue
- 367. Siamese
- 368. Sphynx

## BIRDS

- 369. African Gray Parrot
- 370. Canary
- 371. Cockatiel
- 372. Cockatoos
- 373. Love Birds
- 374. Macaw
- 375. Parakeet
- 376. Sun Conure
- 377. Zebra Finch



*Breed/Species Identification List continued***REPTILES**

- 378. Bearded Dragon
- 379. Chameleon
- 380. Gecko
- 381. Iguana

**POULTRY**

- 382. Chicken — Cornish
- 383. Chicken — Leghorns
- 384. Chicken — Plymouth Rock
- 385. Chicken — Rhode Island Red
- 386. Duck
- 387. Geese
- 388. Quail
- 389. Turkey

**SMALL MAMMALS**

- 390. Chinchilla
- 391. Ferret
- 392. Gerbils
- 393. Guinea Pig
- 394. Hamster
- 395. Hedgehog
- 396. Sugar Glider

**RABBITS**

- 397. Angora
- 398. Californian
- 399. Dutch
- 400. English Spot
- 401. Holland Lop
- 402. Mini-Rex
- 403. Netherland Dwarf
- 404. New Zealand

**DAIRY CATTLE**

- 405. Ayrshire
- 406. Brown Swiss
- 407. Guernsey
- 408. Holstein
- 409. Jersey

**BEEF CATTLE**

- 410. Angus
- 411. Brahman
- 412. Charolais
- 413. Hereford
- 414. Shorthorn
- 415. Simmental

**HORSE**

- 416. Appaloosa
- 417. Arabian
- 418. Belgian
- 419. Clydesdale
- 420. Morgan
- 421. Paint
- 422. Percheron
- 423. Quarter Horse
- 424. Saddlebred
- 425. Tennessee Walking Horse
- 426. Thoroughbred

**GOAT**

- 427. Alpine
- 428. Nubian
- 429. Angora
- 430. Boer
- 431. LaMancha
- 432. Saanen
- 433. Toggenburg

**SHEEP**

- 434. Columbia
- 435. Dorper
- 436. Dorset
- 437. Hampshire
- 438. Merino
- 439. Rambouillet
- 440. Southdown
- 441. Suffolk

**SWINE**

- 442. American Landrace
- 443. Berkshire
- 444. Chester White
- 445. Duroc
- 446. Hampshire
- 447. Yorkshire



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## Team Activity Preparation Rubric

200 points

INDICATOR	Very strong evidence of skill 5-4 points	Moderate evidence of skill 3-2 points	Weak evidence of skill 1-0 points	Points Earned	Weight	Total Score
Effective listening	Clearly evident that all team members are listening.	Listening occurs but distraction is evident.	Not listening to each other and/or talking over each other.		X 5	
Oral communication	Clearly evident that all team members are discussing the topic.	Communication occurs but side conversations are occurring or two to three members dominating.	One member dominating conversation.		X5	
Demonstrated cooperation	Clearly all team members completing tasks, sharing written and oral solutions.	Tasks primarily completed by two to three members, other members assist occasionally.	Tasks primarily completed by one member, other members contributing only slightly.		X8	
	Clearly all team members respected the input of other team members.	Most team members respected the input of other team members.	The team members did not respect the input of other team members.		X7	
Participated in the team preparation	Clearly all team members are engaged, attentive, and making notes for the full term of event.	Members are engaged and attentive with two to three making notes, participation fades over time.	One to twomembers form the primary team, other members participate occasionally early, fade over time.		X8	
	Clearly all team members demonstrate efficient use of his/her time in comprising the plan.	Most team members demonstrate efficient use of his/her time in comprising the plan.	One to twoteam members demonstrate efficient use of his/her time in comprising the plan.		X7	
TOTAL						



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## Team Activity Presentation Rubric

300 points

INDICATOR	Very strong evidence of skill 5-4 points	Moderate evidence of skill 3-2 points	Weak evidence of skill 1-0 points	Points Earned	Weight	Total Score
<b>Non-verbal – 50 points</b>						
<b>Attention</b> (eye contact)	Eye contact constantly used as an effective connection. Constantly looks at the entire audience (90-100 percent of the time).	Eye contact is mostly effective and consistent. Mostly looks around the audience (60-80 percent of the time).	Eye contact does not always allow connection with the speaker. Occasionally looks at someone or some groups (less than 50 percent of the time).		X4	
<b>Mannerisms</b>	Does not have distracting mannerisms that affect effectiveness.	Sometimes has distracting mannerisms that pull from the presentation.	Has mannerisms that pull from the effectiveness of the presentation.		X3	
<b>Gestures</b>	Gestures are purposeful and effective. Hand motions are expressive, and used to emphasize talking points. Confident with positive body language.	Usually uses purposeful gestures. Hands are sometimes used to express or emphasize. Occasionally slumps; sometimes negative body language.	Occasionally gestures are used effectively. Hands are not used to emphasize talking points; hand motions are sometimes distracting. Lacks positive body language; slumps.		X3	
<b>Oral – 50 points</b>						
<b>Speaking without hesitation</b>	Speaks very articulately without hesitation. Never has the need for unnecessary pauses or hesitation when speaking.	Speaks articulately, but sometimes hesitates. Occasionally has the need for a long pause or moderate hesitation when speaking.	Speaks articulately, but frequently hesitates. Frequently hesitates or has long, awkward pauses while speaking.		X 3	
<b>Tone</b>	Appropriate tone is consistent. Speaks at the right pace to be clear. Pronunciation of words is very clear and intent is apparent.	Appropriate tone is usually consistent. Speaks at the right pace most of the time, but shows some nervousness. Pronunciation of words is usually clear, sometimes vague.	Has difficulty using an appropriate tone. Pace is too fast; nervous. Pronunciation of words is difficult to understand; unclear.		X 2	

Team Activity Presentation Rubric continued

<b>All team members participated</b>	All team members took an active role in the presentation.	Three team members took an active role in the presentation.	Two or less team members took an active role in the presentation.		X 5	
<b>Content – 200 points</b>						
<b>Veterinary topic research</b>	Demonstrates prior research and preparedness of the veterinary topic.	Demonstrates somewhat prior research and preparedness of the veterinary topic.	Does not demonstrate prior research and preparedness of the veterinary process.		X 5	
	Full understanding of disease and/or veterinary process.	Somewhat understanding of disease and/or veterinary process.	Does not understand the disease and/or veterinary process.		X 5	
	Full understanding of treatment protocols and/or recommendation for the topic.	Somewhat understanding of treatment protocols and/or recommendation for the topic.	Does not understand the treatment protocols and/or recommendation for the topic.		X5	
<b>Demonstrates knowledge of topic</b>	Presentation supports strong knowledge of the subject with good evidence of support.	Presentation supports some knowledge of the subject with fair evidence of support.	Presentation supports little knowledge of the subject with poor evidence of support.		X 15	
<b>Q&amp;A: Knowledge of the topic</b>	Participants knowledge of topics: Strong knowledge with solid answers.	Participants knowledge of topics: Somewhat knowledgeable but with less concise and clear answers.	Participants knowledge of topics: Little knowledge with weak evidence of support to answers.		X5	
	Speaks unrehearsed with comfort and ease. Is able to speak quickly with organized thoughts and concise answers.	Speaks unrehearsed mostly with comfort and ease, but sometimes seems nervous or unsure. Is able to speak effectively, has to stop and think sometimes, and gets off focus.	Shows nervousness or seems unprepared when speaking unrehearsed. Seems to ramble or speaks before thinking.		X5	
<b>TOTAL</b>						



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# Current Events Rubric

100 points

NAME \_\_\_\_\_ MEMBER NUMBER \_\_\_\_\_

CHAPTER \_\_\_\_\_ STATE \_\_\_\_\_

INDICATOR	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 1-0 points	Points Earned	Weight	Total Score
<b>WRITTEN COMMUNICATION</b>						
<b>Spelling/grammar</b> (sentence structure, verb agreement, etc.)	Spelling and grammar are extremely high quality. • Two or fewer spelling errors are present. • Two or fewer grammar errors are present.	Spelling and grammar are adequate. • Three to five spelling errors are present. • Three to five grammar errors are present.	Spelling and grammar are less than adequate. • Six or more spelling errors are present. • Six or more grammar errors are present.		X 1	
<b>Message</b>	Communicates ideas extremely clearly as well as extremely focused. Thoughts are very interesting and understandable. • All main ideas are supported by clear and vivid details. • Clearly organized and concise by remaining on target, is completely focused with obvious construction and strong introduction, body and conclusion layout.	Communicates ideas clearly and concisely, and message is interesting and understandable. • Most of the main ideas are supported by sufficient details. • Good organization with few statements out of place or lacking in clear construction.	Communicates ideas clearly, but message is difficult to understand. • None of the main ideas are supported by sufficient details. • Little to no organization is present and is sometimes awkward and lacking construction.		X 3	
<b>Writing style</b>	Writing style is selectively appropriate for the intended audience. • The style chosen has obviously been well thought-out based on the specific audience.	Thought was given to the intended audience, and the style reflects the purpose for communicating with that audience. • Most language is appropriate for the intended audience.	Writing style does not show intent to connect with different types of audiences, style is more for a generic reader. • Some language used might be confusing for some audiences		X 1	

*Breed/Species Identification List continued*

INDICATOR	Very strong evidence of skill is present 5-4 points	Moderate evidence of skill is present 3-2 points	Strong evidence of skill is not present 1-0 points	Points Earned	Weight	Total Score
<b>WRITTEN CONTENT</b>						
<b>Subject knowledge</b>	Covers topic in-depth with details and examples. • Subject knowledge is excellent.	Includes essential knowledge about the topic. • Subject knowledge appears to be good.	Includes essential information about the topic but there are one to two factual errors.		X 6	
<b>Critical thinking/ problem-solving skills</b>	Uses general methods, in an orderly manner, for finding solutions to specific problems. • Evaluates evidence and assesses conclusions. • Develops and defends a reasonable position or argument.	Uses limited critical thinking skills in determining solutions to problems. • Develops moderate defense to conclusion for position or argument.	Uses weak critical thinking skills in determining solutions to problems. • Develops weak defense to conclusion for position or argument.		X 6	
<b>Inductive reasoning skills</b>	Establishes a logical, systematic process of achieving certain ends with accuracy and efficiency. • Gathers together particular observations in the form of premises. • Moves from specific premises to a general conclusion.	Establishes a shallow reasoning process of achieving certain ends. • Gathers together limited observations in the form of premises. • Moves from incomplete specific premises to a general conclusion.	Establishes an inadequate reasoning process of achieving certain ends. • Incompletely gathers observations in the form of specific premises. • Inadequately formulates a general conclusion.		X 3	
<b>TOTAL POINTS</b>						



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## Clinical Procedures Practicum

# Administering Aural Medication

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student successfully administered the proper amount of medication into the ear canal. <ul style="list-style-type: none"><li>• Ear pinna held upright</li><li>• Correct amount of medication was administered without contamination</li></ul>	20	
The student massages the base of the outside of the ear canal causing a swishing sound from the medication moving around in the ear canal.	15	
The student wipes any solution that may have leaked onto the outside of the ear flap or hair.	15	
<b>TOTAL POINTS</b>	<b>50</b>	



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## Clinical Procedures Practicum

# Administering Ophthalmic Medication

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student wipes any discharge from the patient's eye using a gauze sponge or cotton ball.	8	
The student opens the end of the ophthalmic medicine	6	
The student uses the index finger and thumb to pull the upper and lower lids apart to open the eye. The student's thumb pulls the lower lid down and the index finger pulls the upper lid upward. The student's other finger may rest on the head of the animal.	12	
While resting the hand holding the medication on the head of the patient, the student applies the drops or ointment gently into the eye without touching the eye, counting each drop or applying the proper amount of ointment without contamination.	12	
The student releases the eyelids.	6	
The student allows the animal to blink to move the medication throughout the eye.	6	
<b>TOTAL POINTS</b>	<b>50</b>	





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## Clinical Procedures Practicum

# Administering an Intramuscular Injection

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student selected the proper site for administration.	10	
The student directs the needle through the skin and into the muscle.	10	
The student aspirates; if no blood is noted, inject.	10	
The student withdraws the needle and places in the sharps container.	10	
The student massages the area where the injection was given and praises the patient.	10	
<b>TOTAL POINTS</b>	<b>50</b>	



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## Clinical Procedures Practicum

# Administering a Subcutaneous Injection

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student lifts the skin using the thumb and forefinger forming a triangle or tent with the skin.	10	
The student inserts the needle into the skin at the base of the tent or triangle parallel to the body.	10	
The student aspirates; looking for any signs of blood entering the syringe; if no blood enters the syringe, the student administers the injection.	10	
The student withdraws the needle and places in the sharps container.	10	
The student rubs the injection site and praises the patient.	10	
<b>TOTAL POINTS</b>	<b>50</b>	



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## Clinical Procedures Practicum

# Bandage Removal

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student chooses the bandage scissors and holds in proper orientation.	10	
The student keeps the blade flat against the body and the tip raised slightly upward in contact with bandage.	10	
The student begins cutting each layer from the distal end moving proximally.	10	
The student gently removes each layer of bandage.	10	
The student notes the status of the unbandaged area and states if it is normal or if there are any problems.	6	
The student cleans up work area.	4	
<b>TOTAL POINTS</b>	<b>50</b>	



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## Clinical Procedures Practicum

# Filling a Syringe for Injection

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student determines the amount to be placed in the syringe.	6	
The student selects the proper-sized syringe.	8	
The student inserts the syringe into the top of the bottle.	6	
The student places the bottle upside down in one hand and holds securely.	6	
The student withdraws the proper volume.	6	
The student removes the syringe from the bottle.	6	
The student gently taps or snaps the edge of the syringe to remove any air bubbles, or slightly expel the air by pushing the end of the plunger.	6	
The student places syringe in the sharps container.	6	
<b>TOTAL POINTS</b>	<b>50</b>	



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## Clinical Procedures Practicum

# Fecal Flotation with Fecalyzer

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student selected about $\frac{1}{4}$ teaspoon of feces and placed it into a fecalyzer.	6	
The student added enough flotation solution to fill the fecalyzer about half full.	6	
The student mixed the feces into solution until no large fecal particles remain.	6	
The student places insert into fecalyzer.	6	
The student filled the vial with more solution until there was a visible meniscus at the top.	6	
The student placed a cover slip on top of the fecalyzer.	6	
The student allowed the vial to sit undisturbed for 10-15 minutes.	6	
The student carefully removed the cover slip without tilting it and placed it on a microscope slide.	8	
<b>TOTAL POINTS</b>	<b>50</b>	



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## Clinical Procedures Practicum

# Opening a Surgery Pack

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student placed the surgery pack on a clean, dry surface.	4	
The student removed or tore the tape securing the package.	4	
The student opened the first flap away from them.	8	
The student opens the side flaps without reaching across open pack.	8	
The student opens the last flap towards them.	8	
The student opened the pack without contamination.	12	
The student stepped away so the surgeon or scrub nurse could complete the opening of the pack.	6	
<b>TOTAL POINTS</b>	<b>50</b>	



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## Clinical Procedures Practicum

# Prepare a Surgical Pack for Sterilization

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student gathered the appropriate instruments and instrument pan if applicable.	5	
The student gathered additional supplies if applicable.	10	
The student selected the appropriate packaging material and chemical indicator.	10	
The student assembled the pack correctly by following the instructions on the checklist or recipe.	10	
The student placed the chemical indicator in the correct area of the pack.	10	
The student properly wrapped, secured and labeled the pack.	5	
<b>TOTAL POINTS</b>	<b>50</b>	



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## Clinical Procedures Practicum

# Surgical Site Preparation

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student applied antiseptic scrub to clipped area.	8	
The student prepped the clipped area with a clean surgical sponge beginning at the incision site moving in a circular motion and worked toward the edges.	8	
The student did not bring the sponge back to the incision site once it was moved away from the incision site.	8	
The student discarded the sponge once it reached the edge of the clipped area.	8	
The student wiped the clipped area with a rinse solution using a clean surgical sponge following the same pattern as when scrubbing with the antiseptic.	8	
The student repeated the scrub and rinse a minimum of three times or until the final rinse sponge was clean.	10	
<b>TOTAL POINTS</b>	<b>50</b>	





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## Clinical Procedures Practicum

# Prescription Filling

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student reads and verbally interprets prescription.	10	
The student selects the correct drug and concentration.	20	
The student places the pill counting tray on the pharmacy counter with the channel to the left and the open plate in front of him/her.	1	
The student pours the medication tablets or capsules onto the tray plate.	1	
The student opens the channel cover.	1	
The student uses a spatula or tongue depressor to push groups of tablets or capsules into the channel.	1	
When the student has counted the desired amount of medication, he/she closes the channel cover. The student tilts the tray to return the unused medicine into the stock bottle.	4	
The student lifts the tray to place the channel spout into the medicine vial and transfers medication.	4	
The student places the lid on the vial and sets it on the counter.	1	
The student appropriately fills out label with prescription information.	7	
<b>TOTAL POINTS</b>	<b>50</b>	



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## Clinical Procedures Practicum

# Removal of Sutures

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student clearly visualized and inspected the incision site.	10	
If there were problems with the incision site, the student informed the veterinarian. If there were no problems, the student removed the sutures.	10	
The student chose the correct tool to remove the sutures.	10	
The student placed the curved blade underneath the suture for removal and removed the suture.	15	
The student did not cause unnecessary harm or discomfort to the patient.	5	
<b>TOTAL POINTS</b>	<b>50</b>	



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## Clinical Procedures Practicum

# Administer Oral Tablet/Capsule

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student reads and interprets the veterinarian's order.	10	
The student selects the correct drug and concentration.	20	
The student was able to open the mouth of the animal.	5	
The student maintained control of the head or muzzle during the administration of the medication.	5	
The student used an appropriate technique to encourage the patient to swallow.	5	
The student was able to control the animal in a manner that was adequate to administer the medication yet did no harm to the patient.	5	
<b>TOTAL POINTS</b>	<b>50</b>	



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## Handling and Restraining Practicum

# Removing a Cat from a Cage and Placing in Cat Bag

Participant must talk through practicum steps with judge.

CRITERIA	Points Possible	Points Earned
The student opens the cage door and calls the cat by name.	2	
The student scruffs the cat with one hand and lifts it up.	3	
The student cradles the cat's abdomen with their other hand and removes the cat from the cage.	2	
With the cat still scruffed, the student places the cat under one arm close to their body and closes the cage door with their free hand.	3	
The student carries the cat close to their body to the exam table.	3	
The student scruffs the cat and lifts it into the bag in one swift motion while supporting the hind end.	4	
The student wraps the Velcro strap around the cat's neck and immediately zips up the bag.	4	
The student uses the proper zippered opening to expose the front limb.	4	
To remove the cat, the student removes the Velcro strap first, then unzips the bag and removes the cat by scruffing and supports hind end.	5	
<b>TOTAL POINTS</b>	<b>30</b>	



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## Handling and Restraining Practicum

# Applying a Cat Muzzle

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student opens the cage door and calls the cat by name.	2	
The student scruffs the cat with one hand and lifts it up.	2	
The student cradles the cat's abdomen with their other hand and removes the cat from the cage.	2	
With the cat still scruffed, the student places the cat under one arm close to their body and closes the cage door with their free hand.	2	
The student places cat on table.	2	
The student selects a muzzle of appropriate size for the cat.	5	
The student places the cat in sitting or sternal position on exam table.	2	
The student positions the muzzle properly in his/her hands.	3	
The student approaches the cat from behind with the muzzle in both hands while another person restrains cat.	3	
The student brings the muzzle up to the cat's face in one swift motion.	4	
The student secures the muzzle.	3	
<b>TOTAL POINTS</b>	<b>30</b>	



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## Handling and Restraining Practicum

# Restraint of the Cat in Lateral Recumbency for Femoral Venipuncture

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student places the cat on an examination table.	3	
The student scruffs the cat with one hand and lifts it off of the table enough to grasp both hind legs with his/her other hand or reach under cat to grasp both hind limbs.	8	
The student lays the cat on its side with the hind legs stretched rearward.	7	
The student tucks top rear leg and tail while occluding with side of hand.	8	
The student spoke to the patient in a calm and affectionate manner during the procedure.	4	
<b>TOTAL POINTS</b>	<b>30</b>	



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## Handling and Restraining Practicum

# Restraint of the Cat for Jugular Venipuncture

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student places the cat in sternal recumbency with its chest close to the edge of the table.	6	
The student controls and lifts the head up by placing thumb and forefingers over top of head, fingers firm on zygomatic arches (below eyes).	7	
The student's other hand grasps the front legs and extends them down off the edge of the table.	7	
The student uses arm and elbow to restrain the cat's body close to the student's body.	6	
The student spoke to the patient in a calm and affectionate manner during the procedure.	4	
<b>TOTAL POINTS</b>	<b>30</b>	



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## Handling and Restraining Practicum

# Restraint of the Cat for Cephalic IV Catheter Placement

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student places the cat in sternal recumbency on an examination table.	4	
The student controls and lifts the head up by placing up by placing thumb and forefingers over top of head, fingers firm on zygomatic arches (below eyes).	7	
The student extends the left front limb forward by grasping the elbow in the palm of his/her hand with thumb on the top of the elbow joint.	7	
The student allows the judge to grasp the left front paw and extend the limb toward him/her.	5	
The student occludes the vein by pressing down on the top of the elbow joint with his/her thumb and then rotating his/her thumb laterally.	7	
<b>TOTAL POINTS</b>	<b>30</b>	





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## Handling and Restraining Practicum

# Applying a Gauze Dog Muzzle

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student selects proper type of material and length.	4	
The student places the dog in sitting or sternal position on exam table or floor.	2	
The student makes a loop in the gauze and approaches the dog from behind.	6	
The student places the loop on the dog's face with the tie on top.	6	
The student quickly tightens the loop, and then crosses the ends under the dog's face.	6	
The student brings the ends back behind the dog's head under the ears and ties in a quick-release bow.	6	
<b>TOTAL POINTS</b>	<b>30</b>	



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Handling and Restraining Practicum

# Applying a Nylon Dog Muzzle

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student selects appropriate muzzle.	4	
The student places the dog in sitting or sternal position on exam table or floor.	2	
The student comes from behind the dog's head with the muzzle in one hand in the correct position.	7	
The student brings the muzzle up to the dog's face and slips it on while grasping the strap with the other hand.	6	
The student secures the muzzle.	5	
The student checks for proper fit (one finger inserted under the strap).	6	
<b>TOTAL POINTS</b>	<b>30</b>	



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Handling and Restraining Practicum

# Removing Dog from Floor Level Cage to Restrain for Lateral Saphenous Venipuncture

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student places a leash in one hand with a large loop open in the correct position (in the "P") and ready to place over the dog's head.	2	
While blocking the opening, the student opens the cage door enough to slip the hand holding the leash into the cage.	2	
The student slips the leash over the neck of the dog and gently tightens the leash around the neck.	2	
The student opens the door and allows the dog to exit the cage.	1	
The student lifts the dog and places on the table.	1	
The student places his/her right arm across the dog's neck and reaches between the front legs to grasp the dog's right forelimb in right hand.	4	
The student places left arm over the dog's back and reaches for the dog's right rear limb; just proximal to the hock.	5	
With the dog's body close, the student gently lifts the limbs while allowing the dog's body to lay on the table; the dog should be on its right side.	5	
The student allows the dog to relax for a couple seconds, not releasing the grasp on the limbs.	3	
The student uses left hand to hold the limb tightly in the area just distal to the stifle, which will occlude the vein.	5	
<b>TOTAL POINTS</b>	<b>30</b>	



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Handling and Restraining Practicum

# Restraint of the Small Dog for Jugular Venipuncture

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student puts a noose leash on the dog and has the dog sit.	3	
The student places one arm around the dog's neck and places the other arm around the dog's back to grasp the forelimbs.	6	
The student pushes the dog's back with his/her body to encourage the dog to lie down.	6	
The student holds the head up under the jaw, away from the chest (can be achieved by cupping hand underneath the muzzle and by pushing the head upward.)	8	
The student's other hand grasps the front legs and extends them over the end of the table.	7	
<b>TOTAL POINTS</b>	<b>30</b>	



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Handling and Restraining Practicum

# Restraint of the Dog for Cephalic Venipuncture

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student places a noose leash on the dog.	2	
The student restrains the dog in sternal recumbency.	5	
The student stands on the dog's right side; wrapping his/her right arm around the dog's neck.	5	
The student holds the dog's left forelimb with elbow in the palm of his/her hand; extend the limb forward toward the person performing the procedure.	6	
With the elbow of the dog in his/her palm, the student rotates his/her thumb up so it is on top of the limb at the bend of the elbow.	6	
The student occludes the vessel with the thumb, rotates the thumb laterally.	6	
<b>TOTAL POINTS</b>	<b>30</b>	



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Handling and Restraining Practicum

# Restraint of a Rabbit

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student approaches the rabbit calmly and quietly.	4	
The student scruffs the rabbit with one hand while gently lifting the front end.	6	
The student's other hand immediately reaches under the hind limbs and holds them (not allowing the hind limbs to dangle).	7	
The student rests the rabbit's body on the arm with the hand holding the hind limbs.	6	
The scruffing hold is released and the hand is moved to hold the rabbit's outside front leg.	7	
<b>TOTAL POINTS</b>	<b>30</b>	



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Handling and Restraining Practicum

# Haltering Ruminants

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
Without quick movements and loud noises, the student properly approaches the patient at a 45 degree angle to the patient's left shoulder.	5	
The student places crown piece of halter over ears, then slips nose through nosepiece.	6	
The student properly adjusts the halter such that the nose band crosses over bridge of nose halfway between the nostrils and eyes.	7	
The student ensures that the adjustable portion of the nose band is under the chin, not across the bridge of the nose.	6	
The student keeps the standing end or lead rope portion on the left side of the cow.	6	
<b>TOTAL POINTS</b>	<b>30</b>	



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Handling and Restraining Practicum

# Haltering a Horse

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
Without quick movements and loud noises, the student properly approaches the patient at a 45 degree angle to the patient's left shoulder.	5	
The student places end of the lead rope over the horse's neck and passes sufficient length of lead to form a handheld loop around the horse's neck.	5	
Holding the handheld loop in their right hand, with their left hand, the student slip the nose-band of the halter over the nose.	5	
Student releases the lead rope and with their right hand under the horse's neck, the student passes the crown strap over the head and behind the ears and attaches the end to the appropriate place on the halter.	5	
The student snaps the end of the lead to the lead ring of the halter and undrapes the lead rope from the horse's neck.	4	
The student adjusts the halter so it is snug enough that the nose piece could not fall over the end of the nose, but not so tight that the halter cut or rubbed the horse or restricted jaw movement or breathing.	6	
<b>TOTAL POINTS</b>	<b>30</b>	





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CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Handling and Restraining Practicum

# Placing a Tail Tie

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student lays the rope over the tail at the tip of the tail bone.	6	
The student folds all the tail hairs up over the rope.	6	
The student passes the short end of the rope behind the tail, and makes a fold or bight in it.	6	
The student passes the fold or bight over the folded tail and under the rope, which is looped around the tail.	6	
The student pulls tight.	6	
<b>TOTAL POINTS</b>	<b>30</b>	



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Handling and Restraining Practicum

# Applying Elizabethan Collar

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student chooses the correct size of E-collar for the patient.	6	
The student correctly prepared the E-collar for placement.	6	
The student correctly placed the E-collar on the animal.	6	
Placement was adequately secured so the animal could not remove the E-collar.	6	
The E-collar was secured such that the animal's breathing was not restricted.	6	
<b>TOTAL POINTS</b>	<b>30</b>	



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## Handling and Restraining Practicum

# Snare Restraint of the Pig

*Participant must talk through practicum steps with judge.*

CRITERIA	Points Possible	Points Earned
The student, standing next to the patient, guided the loop of the snare into the mouth and over the nose or upper jaw	4	
The student made sure the loop is inserted far enough into the patient's mouth	5	
The student pulled the loop tight when it is in the proper position	5	
The student kept the loop tight while moving to the front of the patient	5	
The student maintained the pressure on the snare so that the patient could not escape.	5	
The student kept control of the patient until the patient ceased to struggle.	4	
The student released the patient after the procedure was completed	2	
<b>TOTAL POINTS</b>	<b>30</b>	



NATIONAL FFA  
CAREER AND LEADERSHIP  
DEVELOPMENT EVENTS

## AFNR Career Cluster Content Standards

Performance Measurement Levels	Event activities addressing measurements	Related Academic Standards
<b>ABS.01.03 Performance Indicator: Devise and apply management skills to organize and run an AFNR business in an efficient, legal and ethical manner</b>		
<b>ABS.01.03.02.b</b> Assess how local, state, federal, international and industry regulations positively and negatively affect the management of AFNR businesses.	Team activity, written exam	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>ABS.01.03.03.a</b> Identify and observe ethical standards in planning and operating AFNR businesses	Team activity, written exam	CCSS.ELA-LITERACY.SL.9-10.6 CCSS.ELA-LITERACY.SL.11-12.6 CCSS.ELA-LITERACY.L.9-10.6 CCSS.ELA-LITERACY.L.11-12.6 CCSS.ELA-LITERACY.RST.9-10.4 CCSS.ELA-LITERACY.RST.11-12.4
<b>AS.01.01. Performance Indicator: Evaluate the historical development and implications of animal origin, domestication and distribution on production practices and the environment</b>		
<b>AS.01.01.01.a.</b> Research and summarize the origin, significance, distribution and domestication of different animal species	Written exam	HS-LS4-3
<b>AS.01.01.02.a.</b> Research and summarize major components of animal systems (eg livestock, companion animal, etc)	Identification	HS-LS4-3
<b>AS.01.02. Performance Indicator: Assess and select animal production methods for use in animal systems based upon their effectiveness and impacts</b>		
<b>AS.01.02.01.a.</b> Identify and categorize terms and methods related to animal production	Identification	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
<b>AS.01.02.02.</b> Calculate costs of marketing versus predicted increases in sales versus predicted	Identification	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3

## AFNR Career Cluster Content Standards continued

Performance Measurement Levels	Event activities addressing measurements	Related Academic Standards
AS.01.02.03.b. Analyze and evaluate the accuracy and effectiveness of records used in an animal system business	Written exam; practicums, current event	AFNR Career Cluster, Statement 1 AFNR Career Cluster – Animal Systems Pathway, Statement 3 STEM Career Cluster, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 1 Buying Goods and Services, Benchmarks: Grade 12, Statement 3
<b>AS.01.03. Performance Indicator: Analyze and apply laws and sustainable practices to animal agriculture from a global perspective</b>		
AS.01.03.01.c. Evaluate the impact of laws pertaining to animal agriculture and assess the compliance of production practices with established regulations.	Written exam, current event	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 HS-ETS1-1
AS.01.03.02.b. Analyze the local and global impact of sustainable animal agriculture practices on human and environmental systems	Written exam, current event, team activity	AFNR Career Cluster, Statement 2 AFNR Career Cluster – Animal Systems Pathway, Statement 1 STEM Career Cluster, Statement 1, 4 CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b CCSS.ELA-Literacy.RI.9-10.1 CCSS.ELA-Literacy.RI.11-12.1 HS-ETS1-1
<b>AS.02.01. Performance Indicator: Demonstrate management techniques that ensure animal welfare.</b>		
AS.02.01.01.b. Design programs that assure the welfare of animals and prevent abuse or mistreatment.	Written exam; current event, team activity	HS-ETS1-2
AS.02.01.02.b. Analyze and document animal welfare procedures used to ensure safety and maintain low stress when moving and restraining animals.	Written exam, practicums, current event	HS-ETS1-2
AS.02.01.03.b. Analyze and document animal husbandry practices and their impact on animal welfare.	Written exam, current event	HS-ETS1-2
<b>AS.02.02. Performance Indicator: Analyze procedures to ensure that animal products are safe for consumption.</b>		
AS.02.02.01.b. Utilize tools, technology and equipment to perform animal husbandry and welfare tasks.	Identification	HS-ETS1-2
AS.02.02.02.b. Analyze consumer concerns with animal production practices relative to human health.	Current event, written exam	HS-ETS1-2
AS.02.02.03.b. Analyze and summarize the impact of animal trace-back capabilities on producers and consumers.	Written exam; current event	HS-ETS1-2

## AFNR Career Cluster Content Standards continued

Performance Measurement Levels	Event activities addressing measurements	Related Academic Standards
<b>AS.03.01. Performance Indicator: Analyze the nutritional needs of animals.</b>		
<b>AS.03.01.01.c.</b> Assess nutritional needs for an individual animal based on its growth stage and production system.	Written exam; current event, team activity	
<b>AS.03.01.02.b.</b> Correlate a species' nutritional needs to feedstuffs that could meet those needs.	Written exam, current event, team activity	
<b>AS.03.02. Performance Indicator: Analyze feed rations and assess if they meet the nutritional needs of animals.</b>		
<b>AS.03.02.01.c.</b> Select appropriate feedstuffs for animals based on a variety of factors (e.g., economics, digestive system and nutritional needs, etc.).	Written exam; current event, team activity	
<b>AS.03.02.02.c.</b> Select and utilize animal feeds based on nutritional requirements, using rations for maximum nutrition and optimal economic production.	Written exam; current event	
<b>AS.03.02.03.b.</b> Compare and contrast methods that utilize feed additives and growth promotants with production practices that do not, (e.g., organic versus conventional production methods).	Written exam, team activity, current event	
<b>AS.03.03. Performance Indicator: Utilize industry tools to make animal nutrition decisions.</b>		
<b>AS.03.03.01.a.</b> Identify and categorize tools and equipment used to meet animal nutrition needs and ensure an abundant and safe food supply.	Identification	
<b>AS.03.03.02.b.</b> Analyze and apply information from a feed label and feeding directions to feed animals.	Written exam, team activity, current event	
<b>AS.03.03.03.b.</b> Analyze technologies used to provide animal nutrition and summarize their potential benefits and consequences.	Written exam, team activity, current event	

## AFNR Career Cluster Content Standards continued

Performance Measurement Levels	Event activities addressing measurements	Related Academic Standards
<b>AS.04.01. Performance Indicator: Evaluate animals for breeding readiness and soundness.</b>		
<b>AS.04.01.01.b.</b> Analyze the functions of major organs in the male and female reproductive systems.	Written exam, team activity, current Event	
<b>AS.04.01.02.b.</b> Assess factors that lead to reproductive maturity.	Written exam, team activity, current event	
<b>AS.04.02.03.b.</b> Evaluate reproductive problems that occur in animals	Written exam, team activity, current event	
<b>AS.04.02. Performance Indicator: Apply scientific principles to select and care for breeding animals.</b>		
<b>AS.04.02.01.a.</b> Summarize genetic inheritance in animals.	Written exam, team activity, current event	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.04.02.02.a.</b> Identify and summarize inheritance and terms related to inheritance in animal breeding (e.g., dominate, co-dominate, recessive, homozygous, heterozygous, etc.).	Written exam, team activity, current event	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.04.02.03.a.</b> Identify and summarize genetic defects that affect animal performance	Written exam, team activity, current event	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.04.02.04.b.</b> Analyze the care needs for breeding stock in each stage of growth.	Written exam, team activity, current event	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.04.03 Performance Indicator: Apply scientific principles to breed animals.</b>		
<b>AS.04.03.01.a.</b> Identify and categorize natural and artificial breeding methods (e.g., natural breeding, artificial insemination, estrous synchronization, flushing, cloning, etc.).	Written exam, team activity, current event	
<b>AS.04.03.02.b.</b> Demonstrate artificial insemination techniques.	Written exam, team activity, current event	
<b>AS.04.03.03.b.</b> Analyze the processes of major reproductive management practices, including estrous synchronization, superovulation, flushing and embryo transfer.	Written exam, team activity, current event	

## AFNR Career Cluster Content Standards continued

Performance Measurement Levels	Event activities addressing measurements	Related Academic Standards
<b>AS.05.01. Performance Indicator: Design animal housing, equipment and handling facilities for the major systems of animal production.</b>		
<b>AS.05.01.01.a.</b> Differentiate between the types of facilities needed to house and produce animal species safely and efficiently	Written exam, team activity, current event	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.05.01.02.c.</b> Select, use and evaluate equipment, technology and handling procedures to enhance sustainability and production efficiency	Written exam, team activity, current event, Identification	CCSS.MATH.CONTENT.HSS.MD.A.3 HS-LS3-2 HS-LS3-3
<b>AS.05.02. Performance Indicator: Comply with government regulations and safety standards for facilities used in animal production.</b>		
<b>AS.05.02.01.a.</b> Identify and summarize the general standards that must be met in facilities for animal production (e.g., environmental, zoning, construction, etc.).	Written exam, team activity, current event	CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b
<b>AS.05.02.02.a.</b> Distinguish between the types of laws and regulations pertaining to animal systems.	Written exam, team activity, current event	CCSS.ELA-Literacy.W.9-10.9b CCSS.ELA-Literacy.W.11-12.9b
<b>AS.06.01. Performance Indicator: Classify animals according to taxonomic classification systems and use (e.g. agricultural, companion, etc.).</b>		
<b>AS.06.01.01.b.</b> Explain how animals are classified using a taxonomic classification system.	Written exam; current event	
<b>AS.06.01.02.b.</b> Appraise and evaluate the economic value of animals for various applications in the agriculture industry.	Written exam; current event	
<b>AS.06.01.03.b.</b> Analyze the visual characteristics of an animal or animal product and select correct classification terminology when referring to companion and production animals.	Written exam; current event	
<b>AS.06.02. Performance Indicator: Apply principles of comparative anatomy and physiology to uses within various animal systems.</b>		
<b>AS.06.02.01.b.</b> Analyze the functions of each animal cell structure.	Written exam	HS-LS1-2



## AFNR Career Cluster Content Standards continued

Performance Measurement Levels	Event activities addressing measurements	Related Academic Standards
<b>AS.06.02.02.b.</b> Analyze the processes of meiosis and mitosis in animal growth, development, health and reproduction	Written exam	HS-LS1-2
<b>AS.06.02.03.b.</b> Compare and contrast animal cells, tissues, organs, body systems types and functions among animal species.	Written exam	HS-LS1-2
<b>AS.06.03. Performance Indicator: Select animals for specific purposes and maximum performance based on anatomy and physiology.</b>		
<b>AS.06.03.01.a.</b> Identify and summarize how an animal's health can be affected by anatomical and physiological disorders.	Written exam	STEM Career Cluster, Statement 5
<b>AS.06.03.02.a.</b> Evaluate an animal against its optimal anatomical and physiological characteristics.	Written exam, identification, current event	STEM Career Cluster, Statement 5
<b>AS.07.01. Performance Indicator: Design programs to prevent animal diseases, parasites and other disorders and ensure animal welfare.</b>		
<b>AS.07.01.01.c.</b> Select and use tools and technology to meet specific animal health management goals	Written exam, identification, current event, practicums	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.01.02.c.</b> Determine when an animal health concern needs to be referred to an animal health professional.	Written exam, identification, current event	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.01.03.b.</b> Identify and describe common illnesses and disorders of animals based on symptoms and problems caused by wounds, diseases, parasites and physiological disorders.	Written exam, identification, current event	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.01.04.b.</b> Research and analyze data to evaluate preventive measures for controlling and limiting the spread of diseases, parasites and disorders among animals	Written exam, identification, current event	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3
<b>AS.07.01.05.b.</b> Assess the safety and effectiveness of facilities and equipment used for surgical and nonsurgical veterinary treatments and procedures.	Written exam, identification, current event	CCSS.MATH.CONTENT.HSN.Q.A.1 CCSS.MATH.CONTENT.HSN.Q.A.2 CCSS.MATH.CONTENT.HSN.Q.A.3

## AFNR Career Cluster Content Standards continued

Performance Measurement Levels	Event activities addressing measurements	Related Academic Standards
<b>AS.07.02. Performance Indicator: Analyze biosecurity measures utilized to protect the welfare of animals.</b>		
<b>AS.07.02.01.a.</b> Summarize the importance of biosecurity to the animal industry.	Written exam, identification, current event	
<b>AS.07.02.02.b.</b> Analyze the health risk of different zoonotic diseases to humans and identify prevention methods.	Written exam, identification, current event	
<b>AS.08.01. Performance Indicator: Design and implement methods to reduce the effects of animal production on the environment.</b>		
<b>AS.08.01.01.a.</b> Identify and summarize the effects of animal agriculture on the environment (e.g., waste disposal, carbon footprint, air quality, environmental efficiencies, etc.).	Written exam, identification, current event	AFNR Career Cluster – Environmental Service Systems Pathway, Statement 1 HS-LS2-6 HS-LS2-7
<b>AS.08.02. Performance Indicator: Evaluate the effects of environmental conditions on animals and create plans to ensure favorable environments for animals.</b>		
<b>AS.08.02.01.a.</b> Research and summarize environmental conditions that impact animals (e.g., weather, sources of water, food resources, etc.).	Written exam, identification, current event	HS.LS4-6
<b>AS.08.02.01.a.</b> Identify and summarize methods for ensuring optimal environmental conditions for animals.	Written exam, identification, current event	HS.LS4-6
<b>CS.01.03. Performance Indicator: Identify public policies and their impact on AFNR systems</b>		
<b>CS.01.03.01.a.</b> Summarize public policies affecting AFNR standards	Team activity, written exam	
<b>CS.01.03.02.a.</b> Identify influential historical and current public policies that impact AFNR systems	Team activity, written exam	
<b>CS.02.02. Performance Indicator: Examine the components of the AFNR systems and their impact on the local, state, national and global society and economy</b>		
<b>CS.02.02.01.b.</b> Assess components within AFNR systems and analyze relationships between systems	Math exam, written exam, team activity	

## AFNR Career Cluster Content Standards continued

Performance Measurement Levels	Event activities addressing measurements	Related Academic Standards
<b>CS.05.01. Performance Indicator: Evaluate the steps and requirements to pursue a career opportunity in each of the AFNR career pathways (eg. Goals, degrees, certifications, resumes, cover letter, portfolios, interviews, etc)</b>		
CS.05.01.01.a. Identify and summarize the steps to pursue a career in an AFNR pathway (eg self-assessment, set goals, etc)	Current event; team activity, practicums	
CS.05.01.02.b. Analyze personal skillset and create a plan for obtaining the required education, training, and experiences to obtain a career in an AFNR pathway	Current event; team activity, practicums	
CS.05.01.03.c. Evaluate, update and improve a set of personal tools to reflect current skills, experiences, education, goals, etc. and complete the processes needed to pursue and obtain a career in an AFNR pathway	Current event, written exam, math applications exam, practicums, identification	
<b>CS.05.02. Performance Indicator: Examine careers in each of the AFNR Pathways</b>		
CS.05.02.01.b. Assess personal skills and align them with potential career opportunities in AFNR pathways	Practicums	
<b>CRP.01.01. Performance Indicator: Model personal responsibility in the workplace and community.</b>		
CRP.01.01.01.a. Define personal responsibility and distinguish how it applies in workplace and community (e.g., make educated choices, listen and follow directions, ask for help when needed, meet expected standards, etc.).	Team event and current event	
CRP.01.01.02.a. Distinguish personal levels of responsibility, which can be applied in the workplace and community.	Team event and current event	
<b>CRP.01.02 Performance Indicator: Evaluate and consider the near-term and long-term impacts of personal and professional decisions on employers and community before taking action.</b>		
CRP.01.02.01.b. Assess the pros and cons of personal decisions based on their anticipated impact on self and others	Team event and current event	

## AFNR Career Cluster Content Standards continued

Performance Measurement Levels	Event activities addressing measurements	Related Academic Standards
<b>CRP.01.03. Performance Indicator: Identify and act upon opportunities for professional and civic service at work and in the community.</b>		
<b>CRP.01.03.01.b.</b> Assess available professional service opportunities at work places and in community (e.g., trainings, organizing events, etc.).	Team event, exam and current event	
<b>CRP.01.03.02.b.</b> Assess available civic service opportunities at workplaces and in the community (e.g., community events, attend meetings, etc.).	Team event, exam and current event	
<b>CRP.04.01. Performance Indicator: Speak using strategies that ensure clarity, logic, purpose and professionalism in formal and informal settings.</b>		
<b>CRP.04.01.01.b.</b> Analyze use of verbal and non-verbal communication strategies in workplace situations.	Team event, practicums and current event	
<b>CRP.04.01.02.b.</b> Apply strategies for speaking with clarity, logic, purpose and professionalism in a variety of situations in formal and informal settings.	Team event and current event	
<b>CRP.04.02. Performance Indicator: Produce clear, reasoned and coherent written communication in formal and informal settings.</b>		
<b>CRP.04.02.01.a.</b> Research and summarize the purpose of different forms of written communication in formal and informal settings (e.g., letters, emails, reports, social media, etc.).	Current event	
<b>CRP.04.02.02.b.</b> Apply techniques for ensuring clarity, logic and coherence to edit written communications (e.g., emails, reports, presentations, technical documents, etc.).	Math practicum and current event	
<b>CRP.05.01. Performance Indicator: Assess, identify and synthesize the information and resources needed to make decisions that positively impact the workplace and community.</b>		
<b>CRP.05.01.01.b.</b> Analyze how the process of decision making is used in workplace and community situations.	Team event	

## AFNR Career Cluster Content Standards continued

Performance Measurement Levels	Event activities addressing measurements	Related Academic Standards
<b>CRP.08.01. Performance Indicator: Apply reason and logic to evaluate workplace and community situations from multiple perspectives.</b>		
CRP.08.01.01.b. Apply steps for critical thinking to a variety of workplace and community situations.	Current event and team event	
<b>CRP.10.01. Performance Indicator: Identify career opportunities within a career cluster that match personal interests, talents, goals and preferences.</b>		
CRP.10.01.02.b. Analyze skills needed for potential careers and compare and contrast skills needed with personal interests, talents, goals and preferences.	Practicums	
<b>CRP.10.02. Performance Indicator: Examine career advancement requirements (e.g., education, certification, training, etc.) and create goals for continuous growth in a chosen career.</b>		
CRP.10.02.01.b. Analyze the steps to meet career advancement requirements for potential careers.	Practicums	
<b>CRP.12.01. Performance Indicator: Contribute to team-oriented projects and builds consensus to accomplish results using cultural global competence in the workplace and community.</b>		
CRP.12.01.01.b. Formulate action plans to complete team-oriented projects in the workplace and community, including plans for personal contributions.	Team activity	
<b>CRP.12.02. Performance Indicator: Create and implement strategies to engage team members to work toward team and organizational goals in a variety of workplace and community situations (e.g., meetings, presentations, etc.).</b>		
CRP.12.02.01.b. Assess team dynamics and match strategies to increase team member engagement.	Team activity	



# NATIONAL FFA ORGANIZATION

## FFA MISSION

FFA makes a positive difference in the lives of students by developing their potential for premier leadership, personal growth and career success through agricultural education.

## THE AGRICULTURAL EDUCATION MISSION

Agricultural education prepares students for successful careers and a lifetime of informed choices in the global agriculture, food, fiber and natural resources systems.

The National FFA Organization is a resource and support organization that does not select, control, or supervise state association, local chapter or individual member activities. Educational materials are developed by FFA in cooperation with the U.S. Department of Education as a service to state and local agricultural education agencies.

The National FFA Organization affirms its belief in the value of all human beings and seeks diversity in its membership, leadership and staff as an equal opportunity employer.

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## Selection of Superintendents and Committee Members

*Nominations for CDE/LDE superintendents may come to national FFA staff from the following sources:*

- Standing CDE/LDE superintendent
- Current CDE/LDE committee members
- State leadership
- Team Ag Ed partners

CDE/LDE superintendents will be selected by national FFA staff and approved by the FFA chief operating officer.

Each CDE/LDE superintendent may serve two three-year terms. At the end of the superintendent's term, a qualified replacement will assume the duties of superintendent.

National FFA staff and CDE/LDE superintendents will select qualified individuals to serve on event committees. Selection of committee members will be based on:

- Individual qualifications.
- Recommendations from state leaders, current CDE/LDE committee members, CDE/LDE superintendents or national FFA staff.
- Recommendations from Team Ag Ed partners.
- Current rotational procedures developed by each CDE/LDE committee.
- Ability to provide diversity for the committee.
- Commitment to serve a minimum of three and a maximum of 12 years on the committee

Final approval of new committee members is the responsibility of the national FFA CDE/LDE staff with input and recommendations from CDE/LDE event superintendent and committee.

## Sanctioning Events

*Sanctioning of non-national FFA competitive events (those competitive events conducted by organizations other than the National FFA Organization) as CDE/LDE should occur when:*

- The highest quality event possible is conducted.
- The organization conducting event and National FFA Organization agree that event can and should be sanctioned.
- The event is recommended by the National FFA CDE/LDE education specialist with input and agreement from the award and recognition advisory committee and approved by the FFA chief operating officer.
- The National FFA Organization is represented by a staff member responsible for CDE/LDE on the planning and implementation committee for each event.

Winners of the national sanctioned event will be recognized in the same manner as national CDE/LDE winners are currently recognized.

## Official Dress

*Participants are expected to observe the National FFA Code of Ethics and the proper use of the FFA jacket during career and leadership development events. (Please reference the latest edition of the Official FFA Manual.)*

Official FFA dress is highly recommended for all participants where appropriate and is required for the awards presentation and recognition.



## Accessibility for All Students

*All special needs requests and appropriate documentation as outlined in the special needs request policy must be submitted August 15.*

Special needs policy is posted on the CDE/LDE program page at [www.FFA.org/cde](http://www.FFA.org/cde).

## Written Document Penalties

*A penalty of 10 percent of the total points allotted will be assessed for the written documents received after the online submission deadline.*

If the document is still not received seven days after the postmarked deadline, the team/individual may be subject to disqualification.

- National FFA staff will mark late entries as such.
- Event officials will be notified of late entries at the time written documents are evaluated and scored.
- Event superintendent will ensure that penalty is applied.



## Career and Leadership Development Event **SUPERINTENDENTS**

### **POSITION DESCRIPTION**

- Provide leadership and coordination in the development and implementation of the program.
- Coordinate summer planning and convention activities along with working within set event budgets.
- Manage event committee and delegate event tasks and responsibilities to appropriate members.
- Collaborate with national, state and local agricultural education leaders and industry representatives to provide a high quality experience for members, chapters and teachers.
- Ensure the program is executed in a way that complies with information provided in the program handbook.
- Participate in the revision process.

- Assist in the development of plans and setting priorities; maintain a strategic and programmatic direction for the team that is within the missions of the team, FFA and agricultural education.
- May make recommendations for improvements and enhancements of the program; however, the authority to make final decision rests with national staff and the National FFA Board of Directors.
- Abide by all FFA policies and procedures as approved by the board of directors.

## **QUALIFICATIONS AND SKILLS**

- Have relevant educational experience and content knowledge associated with the program.
- Understand FFA, FFA programs and agricultural education.
- Have industry or educational background in coordinating the activity or similar activity.
- Have good organizational skills; broad personal and organizational managements skills; strong leadership skills, including team building, knowledge of computer applications for communications operations, excellent written, oral and interpersonal skills.

## **COMMITMENT**

- Maintain superintendent role for 3–6 years (with a succession plan in place).
- There will be moderate travel to national FFA convention, and other planning activities including a superintendent meeting in January/February and some weekend travel.

## **BENEFITS**

- Provide an experience for FFA members to apply classroom learning, gain recognition and explore career options.
- Provide networking opportunities among agricultural education peers and agricultural industry representatives.
- Provide annual superintendent honorarium.
- All expenses must be approved with national staff prior to expenditure.
- Provide letter of appreciation to employer/administrator upon request.

## **CONFLICT OF INTEREST**

- Each state agricultural education department is encouraged to provide staff to help administer and conduct national FFA programs.
- States may recommend a person or persons to serve as a national program superintendent.
- Individuals may be supervisors, teacher educators, teachers of agriculture or other qualified individuals.
- A person serving as a superintendent must neither be the coach, advisor or agricultural instructor of a team/individual in the assigned award area; nor shall they have any direct part in training/coaching a team/individual in preparation for the assigned award area after qualification for nationals has occurred.

## **INTELLECTUAL PROPERTY**

- All work made or created by the either solely or jointly with another party on behalf of the National FFA Organization for the use by the National FFA Organization will be the property of the National FFA Organization.
- The National FFA Organization may voluntarily choose to transfer such property in full or in part.