

# Agriscience Fair Handbook

## Introduction

### ***Purpose***

The Nebraska FFA Agriscience Fair is designed to recognize students for their outstanding work in their research-based Supervised Agriculture Experiences (SAE). The program allows students to investigate scientific principles and emerging technologies that impact the agriculture industry. The Nebraska FFA Agriscience Fair provides middle and high school students the opportunity to achieve local, state, and national recognition for their accomplishments in agriscience. The program also gives students a chance to demonstrate and display agriscience projects that are extensions of their agriscience courses.

### ***Selecting a Topic and Developing a Project***

The Nebraska FFA Agriscience Fair provides recognition to students in outstanding experimental immersion SAEs.

The research immersion SAE includes analytical, experimental, and invention types. During analytical SAEs, students explore agricultural phenomena they become interested in during their agriscience class or foundational SAEs. Experimental SAEs allow students to apply the scientific process to explore questions that might have been answered during their analytical SAE. The agriscience fair is designed to award outstanding experimental SAEs. Outstanding experimental SAEs are those that ask a question that cannot be answered by a quick internet search, apply the scientific method to answer the question, and come up with practical recommendations that have meaningful impact on those involved in the agriculture, food, and natural resource industries.

Developing a high quality agriscience project includes and requires:

- Focusing on an important agricultural/scientific issue, question, or principle
- Specific research objectives
- Using several steps
- Following a scientific process to collect and analyze data
- Student commitment to a moderate or substantial amount of time
- Teacher supervision

### **Nebraska FFA Agriscience Fair 2023 Deadlines**

February 15: Agriscience Fair applications due and submitted through the AET

February 24: State Agriscience Fair Pre-Qualifying Review

See additional information on pre-qualification and review the pre-qualification rubrics in this handbook.

Date TBA: State winning Agriscience Fair individuals and teams submit their applications for National FFA competition.

### **Category Description**

Student researcher(s) can compete in the state and national levels of the agriscience fair in one of six categories:

- Animal Systems
- Environmental Services/Natural Resource Systems
- Food Products and Processing Systems
- Plant Systems
- Power, Structural, and Technical Systems
- Social Science

Categories are determined by which agricultural system would be most interested in the practical recommendations of the experiment. For instance, if a student tests the width of buffer strips adjacent to corn fields to filter out sediments, the project would be in Environmental Service/Natural Resource Systems because the largest impacts would be on the stream system and aquatic organisms living in the stream.

Biotechnology Systems is the study of using data and scientific techniques to solve problems concerning living organisms with an emphasis on applications to agriculture, food, and natural resource systems. Because of this, biotechnology research is incorporated into all categories listed depending on the study conducted.

Biotechnology Systems is not its own category.

### ***Animal Systems (AS)***

The study of animal systems including life processes, health, nutrition, genetics, management, and processing through the study of small animals, aquaculture, livestock, dairy, horses and/or poultry.

#### *Examples:*

- Compare nutrient levels on animal growth
- Research new disease control mechanisms
- Effects of estrous synchronization on ovulation
- Compare effects of thawing temperatures on livestock semen
- Effects of growth hormone on meat/milk production

### ***Environmental Service/Natural Resources Systems (ENR)***

Environmental Service Systems: The study of systems, instruments, and technology used to monitor and minimize the impact of human activity on environmental systems.

Natural Resource Systems: The study of the management, protection, enhancement, and improvement of soil, water, wildlife, forests, and air as natural resources.

#### *Examples:*

- Effect of agricultural chemicals on water quality
- Effects of cropping practices on wildlife populations
- Compare water movements through different soil types

### ***Food Products and Processing Systems (FPP)***

The study of product development, quality assurance, food safety, production, regulation, and compliance and food service within the food science industry.

#### *Examples:*

- Effects of packaging techniques on food spoilage rates
- Resistance of organic fruits to common diseases
- Determining if varieties of sweet corn have different chemical energy
- Control of molds on bakery products
- Effects of the amount of sucrose used in baked goods
- Use of a triangle test in sensory science

**Plant Systems (PS)**

The study of plant life cycles, classifications, functions, structures, reproduction, media, and nutrients, as well as growth and cultural practices, through the study of crops, turf grass, trees and shrubs, and/or ornamental plants.

*Examples:*

- Determine rates of transpiration in plants in different locations in a landscape
- Effects of heavy metals such as cadmium on the growth rate of plants
- Compare GMO and conventional seed/plant growth under various conditions
- Effects of lunar climate and soil condition on plant growth
- Compare plant growth of hydroponics and conventional methods

**Power, Structural, and Technical Systems (PST)**

The study of agricultural equipment, power systems, alternative fuel sources, and precision technology, as well as woodworking, metalworking, welding, and project planning for agricultural structures.

*Examples:*

- Compare the energy output of alternative fuel sources to traditional forms
- Create minimum energy use structures
- Compare properties of various alternative insulation products
- Examining the efficiency and the configurations of ventilation systems in a swine facility

**Social Sciences (SS)**

The study of agricultural areas including agricultural education, agribusiness, agricultural communication, agricultural leadership and sales in agriculture, food, and natural resources.

*Examples:*

- Investigate perceptions of community members toward alternative agricultural practices
- Determine the impact of local/state/national safety programs upon accident rates in agricultural/natural resource occupations
- Comparison of profitability of various agricultural/natural resource practices
- Investigate the impact of significant historical figures on a local community

- Determine the economic effects of local/state/national legislation impacting agricultural/natural resources
- Consumer confidence and understanding of food labels
- Economic effect of employment rate and meat consumption

## Eligibility of Participants

### **Membership**

The participant, at the time of their selection as a state and/or national participant, must be:

- A secondary education (grades 7–12) FFA member during the school year in which the participant qualified to participate at the state/national level.
  - A graduating senior is considered eligible to compete at the state and national level up to and including their first national convention following graduation.
- Enrolled in at least one agricultural education course during the school year in which the participant qualified to participate at the state/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 an agricultural career.

Each member and/or team may enter only one project. Exhibited projects and written reports will be the result of the students' own efforts. A team is a maximum of two members working cooperatively on the same project. Teams can be made up of two students in different grades but will compete in the division in which the older participant would qualify.

If a student moves to a different chapter or a different state once they have qualified as a state representative in the agriscience fair, that student may be allowed to compete in the national event with the school they qualified with during the qualifying year. Team members must be from the same chapter at the time of qualification.

Once a student places in the top three of a division and category nationally, they can no longer compete in that division and category regardless of the research subject. Students who wish to continue research on the same topic are encouraged to seek additional recognition using the agriscience proficiency award or star award.

If a student wishes to continue with the same research, at least one variable must be changed, and the data must be from the current year. For more information, please consult the Extension of Agriscience Fair portion of this handbook.

Students may compete in another agriscience research category within the agriscience fair. Students may not participate in more than one category and division of the agriscience fair each year.

### ***Divisions***

Competition is open to all FFA members in grades 7-12. There are six divisions.

- Division 1—individual members in grades 7 and 8
- Division 2—team of two members in grades 7 and 8
- Division 3—individual member in grades 9 and 10
- Division 4—team of two members in grades 9 and 10
- Division 5—individual member in grades 11 and 12
- Division 6—team of two members in grades 11 and 12

Grade is determined by the grade level of the member at the time of the State FFA convention. If a team is composed of two members that span two divisions, the team must compete in the division in which the oldest student qualifies. For example, a team of two members in grades 10 and 11 must compete in Division 6.

## Rules

### ***Project Rules***

Questions regarding the state-level rules should be directed to Donnie Wolters at [donniewolters@gmail.com](mailto:donniewolters@gmail.com). Questions regarding the national-level rules should be directed to National FFA staff at [agriscience@ffa.org](mailto:agriscience@ffa.org).

### ***General***

1. All studies not meeting the criteria of the National FFA Agriscience Fair but are otherwise permissible must be conducted in a Regulated Research Institution (RRI). A Regulated Research Institution is defined as a professional research/teaching institution that is regularly inspected by the USDA and is licensed to use animals covered by the Animal Welfare Act and may also be subject to U.S. Public Health Service Policy. Also included are federal laboratories such as National Institutes of Health and Centers for Disease Control. In addition, pharmaceutical and biotechnology companies and research institutes that utilize research animals that are not covered by the Animal Welfare Act but have been an operational Institutional Animal Care and Use Committee and are in compliance with U.S. federal laws are included in this definition. In these studies, proper documentation must be presented, and the project must be reviewed by the National FFA Organization prior to experimentation.
2. A research project may be part of a larger study performed by professional scientists but the project presented by the student researcher(s) must be only their own portion of the complete study.
3. Data may not be added to the research project after state level selection. Projects may not have more than one year of data included. See "Extension of Agriscience Fair Projects" for additional information about extension projects.

### ***Human Vertebrate***

The following policies will govern the use of human beings in agriscience fair research projects:

1. No projects involving human cultures of any type (mouth, throat, skin or otherwise) are allowed. However, tissue cultures purchased from reputable biological supply houses or research facilities are suitable for the student researcher(s) use. Researchers should not use animals

- (including insects, birds, fish etc.) to represent human tissue. Research in health systems related to humans is beyond the scope of the agriscience fair.
2. Projects that involve taste, color, texture, or any other choice are allowed but are limited to preference only. Quantities of normal food and non-alcoholic beverages are limited to normal serving amounts or less. No project may use drugs, food, or beverages in order to measure their effect on a person.
  3. The only human blood that may be used is that which is either obtained through a blood bank, hospital, or laboratory. No blood may be drawn by any person or from any person specifically for an agriscience project. This rule does not preclude student researcher(s) making use of the data collected from blood tests not made exclusively for an agriscience project.
  4. Psychological, educational, and opinion studies are allowed. Projects that involve learning, ESP, motivation, hearing, and vision are also permitted (examples might include surveys, questionnaires, tests, etc.).
  5. Data/record review studies in which the data is taken from pre-existing data sets that are publicly available and/or published and do not involve any interaction with humans or the collection of any data from a human participant for the purpose of the research project are allowed.
  6. No project will be allowed that is in violation of these rules. No person may perform any experiment for student researcher(s) that violates any of the rules.

### ***Non-Human Vertebrate***

The following policies will govern the use of non-human vertebrates in agriscience fair research projects:

1. The use of vertebrate animals in agriscience projects is allowable under the conditions and rules below. Vertebrate animals are defined as:
  - a) Live, nonhuman vertebrate mammalian embryos or fetuses
  - b) Tadpoles
  - c) Bird and reptile eggs within three days (72 hours) of hatching
  - d) All other nonhuman vertebrates (including fish) at hatching or birth
2. Vertebrate animal studies may be conducted at a home, school, farm, ranch, in the field, etc. This includes:
  - a) Studies of animals in their natural environment



- b) Studies of animals in zoological parks
  - c) Studies of livestock that use standard agricultural practices
  - d) Studies of fish that use standard aquaculture practices
3. Intrusive techniques used cannot exceed momentary pain and must comply with commonly accepted agriculture and livestock management procedures.
4. Student researcher(s) are prohibited from designing or participating in an experiment associated with the following types of studies on vertebrate animals:
  - a) Induced toxicity studies with known toxic substances that could cause pain, distress, or death, including but not limited to alcohol, acid rain, harmful chemicals, or heavy metals
  - b) Behavioral experiments using conditioning with aversive stimuli, mother/infant separation, or induced helplessness
  - c) Studies of pain
  - d) Predator/vertebrate prey experiments
5. Food and water cannot be used or withheld for more than 24 hours for maze running and other learning or conditioning activities.
6. The student researcher(s) and advisor have the responsibility to see that animals are properly cared for in a well-ventilated, lighted, and warm location with adequate food, water, and sanitary conditions. Care must be taken to see that organisms are properly cared for during weekends and vacation periods.
7. Livestock or fish raised for food using standard agricultural/aquacultural production practices may be euthanized by a qualified adult for carcass evaluation.
8. No vertebrate animal deaths due to the experimental procedures are permitted in any group or subgroup.
  - a) Studies that are designed or anticipated to cause vertebrate animal death are prohibited.
  - b) Any death that occurs must be investigated by a veterinarian or another professional qualified to determine if the cause of death was incidental or due to the experimental procedures. The project must be suspended until the cause is determined and then the results must be documented in writing.

- c) If death was the result of the experimental procedure, the study must be terminated, and the study will not qualify for the National FFA Agriscience Fair.
9. Projects that involve behavioral studies or newly hatched chickens or other birds will be allowed, provided no change has been made in the normal incubation and hatching of the organism and all vertebrate rules are followed.

### ***Extension of Agriscience Fair Projects***

The completion of a research project can generate additional research questions that are worthy of investigation. Participants will have the opportunity to conduct this additional research as long as the current year's project could not have been done without what was learned from the past year's research. This project would now be considered an extension project for competition. If participants have competed at the National Agriscience Fair, for the category they are competing in (regardless of the division), they must complete a project extension and they should complete original work.

1. Student researcher(s) may use findings of previous research to formulate their research hypothesis; however, the student researcher(s) will be evaluated on research they have conducted in the twelve months prior to June 15 annually. No additional information can be added or included after state FFA convention before submission of national qualifying applications.
2. Previous research and information should only be included in the Literature Review/ Others' Work by citing the student researcher(s)' previous work in the same fashion as other scholarly sources. Additionally, student researcher(s)' work could be used to inform discussions and conclusions indirectly (not specifically listed). Judging will be based on the current year of research.
3. Extension projects should be unique in question and manuscript development. If an extension is filed, the introduction, review of literature, methods, results, and conclusions should not be copied and pasted into the new manuscript. Exceptions to this are methods that follow the same step-by-step procedures. Copying and pasting large sections of text from year to year will be considered plagiarism and will be disqualified.

4. The project must document that the additional research is an expansion based on findings of prior work (e.g., testing a new variable or new line of investigation, etc.) Repetition of previous experiments with the same methodology and research question or increasing sample size are examples of unacceptable extensions and will be ranked as a participant at the national prequalifying judging event.
5. The project display must reflect the current year's work only. The project title displayed in the finalist's booth should not mention years (e.g., "Year Two of an Ongoing Study").
6. Longitudinal studies are permitted under the following conditions:
  - a) The study is a multi-year study testing or documenting the same variables in which time is a critical variable (e.g., effect of high rain or drought on soil in a given basin; return of flora and fauna in a burned area over time.)
  - b) Each consecutive year must demonstrate time-based change.
  - c) The display board must be based on collective past data and its comparison to the current year data set. No raw data from previous years may be displayed.

All extension projects must be reviewed and approved each year and forms must be completed for each year.

7. Successive year projects must indicate change or growth in the project from the previous year(s) in the logbooks and complete the continuation form in the application.
8. To complete an extension, students should indicate on the cover page of the application that the project is an extension. Once the student has selected "yes," a link will appear in the blue box on the left-hand side of the application. Complete this form to file an extension.

NOTE: For an extension project to be eligible for competition in the agriscience fair, the project extension form in the online application must be completed and will include the abstract for all other prior years. The documentation should be clearly labeled in the upper right-hand corner with the year (i.e., 2021-22.) Please retain all prior years' paperwork in case event officials request additional documentation.

### ***Multiple Research Projects from a Chapter***

If more than one agriscience project is entered from the same chapter and/or school, then projects must differ in:

- Research hypotheses (questions or objectives)

- Findings related to the research hypothesis (questions or objectives)
- Conclusions
- Recommendations
- Student researcher(s) (each student researcher may only participate in one project.)

Each of the published authors must have made a unique and substantial contribution to the research endeavor. It is standard that peripheral contributions be acknowledged (i.e., the student researchers would like to thank Mrs. Smith's 7th Period Animal Science Class for their assistance in...).

### **Disqualification**

A project will be disqualified if:

1. Teams or participants arrive after the designated interview time at the state competition.
2. Any assistance is given to a team or participant from any source other than the agriscience fair officials or assistants once judging has begun.
3. The superintendent/state staff stops any participants for manners they deem to be hazardous to themselves or others. Such removal will constitute immediate disqualification.
4. The participant does not complete the event they start, unless prior permission from the superintendent/state staff has been obtained.
5. Participants access and/or utilize personal electronic communication devices during the entire course of the event. Participants who access personal electronic communication devices without prior approval of the superintendent/state staff will be disqualified (examples include but are not limited to iPads, tablets, computers, cell phones, WiFi devices, etc.).
6. If an advisor, coach, parent, or fellow chapter member is in the judging area once state judging officially begins. Any advisor, coach, parent, or fellow chapter member found to do so may disqualify their participant.
7. Any participant, advisor, or chapter member tampers with another participant's display.
8. The display fails to meet the requirements. See the "Display" section of this handbook for more information.
9. Participant fails to meet any rules or participation guidelines set forth in this handbook.
10. Participants commits plagiarism.
11. Participants conduct unethical research.

12. The completed study is unrelated to agriculture.
13. The student(s) have previously placed in the top three of a division and category at the national level and compete(s) again in the same division and category.
14. The project was entered in the wrong category.
15. Participants alter the application and/or written report template.

### **Plagiarism**

An agriscience fair project must be the result of a student's own effort and ability. Securing information such as direct quotes or phrases, specific dates, figures, or other materials must be properly cited. Non-compliance represents plagiarism and will automatically disqualify a participant. Student researcher(s) may not:

- In any way falsify a permission form, scientific paper, or display.
- Use another person's results or thoughts as their own even with the permission of this person. This includes work done by a family member or a mentor.
- Use information or data obtained from the Internet without proper citation.
- Re-enter a project with only minor changes or re-use parts of a report in a new report even if the original report was written by the same researcher (i.e., copying and pasting from the review of literature.)

The AET will run a report of plagiarism. It will screen all applications and match it to other applications in the AET. The report will flag 50 consecutive characters, which is about 3-4 sentences, and link it to the application with the same pattern.

The results of the report will be reviewed by 5 people consisting of State FFA Staff and representatives from the FFA Board of Directors who do not have a member included on the report. Applications flagged as plagiarized may be disqualified or dropped rating/ranking levels.

### **Ethics Statement**

Scientific fraud and misconduct is not condoned at any level of research or competition. Plagiarism, use of presentation of other researcher's work as one's own, and fabrication or falsification of data will not be tolerated. Fraudulent projects will result in disqualification from the Nebraska FFA Agriscience Fair. Unethical behavior will result in notification to the student researcher(s) local school administration.

Exhibited projects and project reports shall be the result of the student researcher(s) own effort.

### ***Required Forms***

As a part of the Nebraska competition application process, the application and written report must be submitted in the AET by February 15 of the convention year. If the complete application is not submitted by February 15, the participant(s) will be disqualified.

For national qualifying individuals and teams, more information on submission for the national competition will be provided after State FFA Convention.

## **Agriscience Fair Pre-Qualifying Process**

The Agriscience Fair application will be due on February 15, submitted in AET.

Agriscience Fair Report Pre-Qualifying Review will take place in conjunction with the Spring Leadership Conferences in Kearney. Each district will be required to have two reviewers participate. These reviewers can be ag teachers, high school science teachers, individuals from industry, etc. Pre-service teachers will also be encouraged to participate in the review but will not count toward a district's two required reviewers. Each team of reviewers must include at least one ag teacher. A final review team will also be in place to check for consistency (similar to the proficiency review consistency committee.) The review team will check for the proper category.

Any application scoring a 55 or higher will advance to the state interview process. The review committee may choose to advance an application below 55 based on competitive comparison within the area, evidence of student effort within the area, or evidence of student learning and growth.

Applications earning a score below 30 will not qualify for the Nebraska FFA Agriscience Fair.

Note: A letter from the local Special Education Department can accompany the application for students with an IEP.

[Links to Pre-Qualifying Score Sheets](#) by Divisions. Forms can also be viewed at the end of this handbook.

## Recognition

### **State Level**

Winners from each division in all categories may be selected annually in Nebraska. Each of these first-place projects will be submitted to National FFA for prescreening before moving on to compete at the national level fair. See the “Agriscience Fair Prequalifying” section of the National Agriscience Fair Handbook located at [www.ffa.org](http://www.ffa.org) for more information.

All state level entries will be ranked Gold, Silver, or Bronze. The top three entries in each division of each area will be awarded Gold Medals.

National Level: Refer to the National Agriscience Fair Handbook for national review and national finalist selection information.

## Project Components

### **Written Report**

The full written report must be submitted as a component of the Agriscience Fair Application as generated from AET.

Reminder – it is required to use the [report template](#).

As developing student researchers, the expectations for the written report are slightly different for Divisions 1 and 2 (7th and 8th grade students) compared to Divisions 3, 4, 5 and 6. The purpose of the rubric for Divisions 1 and 2 is to introduce young student researchers to the process of scholarly thinking. As the student researcher ages, skills grow and advance to utilize the rubric for Divisions 3-6 (grades 9-12). See “Prequalifying Rubric: Divisions 1-2” and “Prequalifying Rubric: Divisions 3-6” in the National FFA Agriscience Fair Handbook for additional information.

### Format of Report

The report should be created on 8 ½x 11-inch white paper. The report will have 1-inch margins. Font size must be 12 using Arial, Courier or Times New Roman font. **The written report template is required and is available [here](#) by division.**

### Written Report Guidelines by Division

Division 1—2 (Grades 7—8)	Divisions 3—6 (Grades 9—12)
<p>See summary area of the <i>Written Report</i> section of this handbook.</p>	<p><b>ABSTRACT</b></p> <p>A brief summary of the paper, which concisely describes the purpose, methods, results, and conclusions. The abstract may include potential research applications or future research. The abstract should not contain cited references. It should be no longer than one page and in paragraph form. Because this is the first page of the project report, it will be where the reader forms an opinion on the study. In the abstract, arrange the points in this order:</p> <ol style="list-style-type: none"> <li>1. Purpose</li> <li>2. Procedure</li> <li>3. Results</li> <li>4. Conclusions</li> </ol> <p>This section would include methods, primary results/effects of major treatments and main conclusions. Do not include discussion, citations and footnotes, or references to tables and figures.</p>
<p><b>IMPORTANCE</b></p> <p>The importance answers the question, “Why was the work done?” Provide an explanation of:</p> <ol style="list-style-type: none"> <li>1. Why the research topic is important to the agriculture industry</li> <li>2. What problem the investigation attempts to solve</li> </ol> <p>Each point should be addressed in a paragraph for a minimum of two paragraphs in the importance section.</p>	<p><b>INTRODUCTION</b></p> <p>The introduction answers the question, “Why was the work done?” It provides background on the subject in several paragraphs. The introduction should clearly state the problem that justifies conducting the research, the purpose of the research, its impact on agriculture, the findings of earlier work, and the general approach and objectives. You must cite sources for statements that are not common knowledge. The last paragraph of the introduction includes the objectives of the study.</p>

Division 1—2 (Grades 7—8)	Divisions 3—6 (Grades 9—12)
<p><b>OTHER’S WORK</b></p> <p>The other’s work section details the information that currently exists concerning the research topic. What other information did the student researcher(s) read before conducting the project? What information did student researcher(s) look up during the investigation? Reference information regarding where the publication was found should be listed, then a brief summary should be written by the student researcher(s) for each publication. Publications could include articles about similar studies, similar research methods, history of the research area, and any other items that support the current knowledge base for the research topic.</p>	<p><b>LITERATURE REVIEW</b></p> <p>The literature review should detail what information currently exists concerning the research project. Information. In the review should be written in APA style and should include publications used for the research. Publications cited could include articles about similar studies, similar research methods, history of the research area, and any other items that support the current knowledge base for the research topic and how the project might complement existing information.</p>
<p><b>MATERIALS AND METHODS</b></p> <p>This section enables others to reproduce the results by duplicating the study. Write in first person, encompass all materials required and explain the study design by sharing the technical and experimental procedures used. If used, any statistical procedures are included here. This section should be a narrative rather than a list of steps on how to do the process.</p>	<p><b>MATERIALS AND METHODS</b></p> <p>A well-written materials and methods section enables others to reproduce the results by replicating the study. Write in past tense, third person, encompass all materials required, state the hypothesis/research questions and explain the study design by sharing the technical and experimental procedures employed.</p>
<p><b>HYPOTHESIS/ANTICIPATED RESULTS</b></p> <p>The student researcher(s) state the hypothesis and/or anticipated results. What are the expected results of the study?</p>	
<p><b>RESULTS</b></p> <p>This section is a summary of the results, even if they are not what was hypothesized. Do not include discussion or conclusions about the data. Tell the reader exactly what was discovered and what patterns, trends, or relationships were observed. Decide on the most meaningful way to present the data (tables, figures) and refer to them in the text. Data should be able to stand alone in the form of tables and/or figures. Data should not be added after the state level selection as it may alter the discussion and conclusions.</p>	<p><b>RESULTS</b></p> <p>This section is a summary of the results, even if they are not what was hypothesized. Do not include discussion or conclusions about the data. Tell the reader exactly what was discovered and what patterns, trends, or relationships were observed. Decide on the most meaningful way to present the data (tables, figures) and refer to them alone in the text. Data should be able to stand alone in the form of tables and/or figures. Data should not be added after the state level selection as it may alter the discussion and conclusions.</p>

**DISCUSSION**

In this section, the student researcher(s) should include information about the meaning of the results, how the results relate to the "Other's Work" section and what impact the study has on the agriculture industry.

**DISCUSSION AND CONCLUSIONS**

In this section, draw conclusions from the results of the study and relate them to the original hypothesis. It is helpful to briefly recap the results and use them as a foundation for the conclusions. If the results were not what was expected, take this opportunity to explain why. Give details about the results and observations by elaborating on the mechanisms behind what happened. Tie the study in with the literature, but do not hesitate to offer sound reasoning of your own. Discussion should refer to facts and figures in the results section and provide recommendations for practice and future research. Discussion and conclusions should also address the impact the research has on the agriculture industry.

**CONCLUSIONS**

In the conclusion, the student researcher(s) should share recommendations on what should be done or what should change as a result of the research. It is helpful to briefly recap the results and use them as a foundation for the conclusions. If the results were not what was expected, take this opportunity to explain why. The student researcher(s) should share what the next steps are to continue the study.

*See "Other's Work" area of the Written Report section of this handbook.*

**REFERENCES**

Only significant, published and relevant sources accessible through a library or an information system should be included. All citations in the text must be included in the reference section. When information or facts are used that are not common knowledge, give credit to the source of that information by citing a reference. Use the APA style recognized citation system throughout the report.

**SUMMARY**

The summary should be two to three paragraphs describing the study conducted. Describes why the student researcher(s) chose to conduct the study, why the study is important to the agriculture industry, how the student researcher(s) conducted the study, what the

*See Abstract area of the Written Report section of this handbook.*

<p>student researcher(s) found by conducting the study and how the results apply within the agriculture industry.</p>	
<p><b>ACKNOWLEDGEMENTS</b> Acknowledge anyone who helped in any aspect of the project in this section.</p>	<p><b>ACKNOWLEDGEMENTS</b> Acknowledge anyone who helped in any aspect of the project in this section.</p>
<p><b>SKILL DEVELOPMENT</b> The student researcher(s) select three appropriate competencies based on the study conducted. Two competencies must be from the student’s primary pathway, and the third can be from any pathway. The student researcher(s) demonstrate skills that are appropriate for the scope of the project. The project demonstrates application of skill attainment with measurable impact on the overall study.</p>	<p><b>SKILL DEVELOPMENT</b> The student researcher(s) select five appropriate competencies based on the study conducted. Three competencies must be from the student’s primary pathway, and the other two can be from any pathway. The student researcher(s) demonstrate skills that are appropriate for the scope of the project. The project demonstrates application of skill attainment with measurable impact on the overall study.</p>
<p><b>SPELLING/GRAMMAR</b> The student researcher(s) should use correct spelling, complete sentences, and proper grammar throughout the report. APA or MLA-style writing used throughout the report.</p>	<p><b>APA STYLE/SPELLING</b> The student researcher(s) should use correct spelling, complete sentences, proper grammar, and appropriate APA-style writing throughout the report.</p>

### Framework of Report

Student(s) must use the division appropriate written report template available on FFA.org/agriscience fair or the following headings to create a research report. All reports must meet the additional criteria listed in the “Format of Report” section.

Division 1—2 (Grades 7—8)	Divisions 3—6 (Grades 9—12)
<ul style="list-style-type: none"> <li>• Title Page               <ul style="list-style-type: none"> <li>○ Project Title</li> <li>○ Includes student’s name(s), chapter, state, category division</li> </ul> </li> <li>• Importance               <ul style="list-style-type: none"> <li>○ Why is this topic important to the agriculture industry?</li> <li>○ What problem does the investigation solve for agriculture?</li> </ul> </li> <li>• Other’s Work</li> <li>• Materials and Methods</li> <li>• Hypothesis/Anticipated Results</li> <li>• Results</li> <li>• Discussion               <ul style="list-style-type: none"> <li>○ What do the results of the study mean?</li> <li>○ How are they related to what others found in the “Other’s Work” section?</li> </ul> </li> <li>• Conclusions</li> <li>• Summary</li> <li>• Acknowledgements</li> </ul>	<ul style="list-style-type: none"> <li>• A short title (50 characters or less)</li> <li>• Title Page               <ul style="list-style-type: none"> <li>○ Project Title (Maximum 3 lines/15 words)</li> <li>○ Includes student’s name(s), chapter, state, category division</li> </ul> </li> <li>• Abstract               <ul style="list-style-type: none"> <li>○ No longer than one page</li> </ul> </li> <li>• Introduction</li> <li>• Literature Review</li> <li>• Materials and Methods</li> <li>• Results</li> <li>• Discussions and Conclusions</li> <li>• Acknowledgements</li> <li>• References</li> </ul>

### Display Requirements

Each exhibit should include information relevant to the study and any objects the student wishes to display. All projects must have the following information attached to the exhibit:

- Name of agriscience fair participant(s) responsible for developing the project
- Chapter name
- Title of category
- Division (1, 2, 3, 4, 5 or 6)

The poster may not have anything affixed to them including, but not limited to, tabs, pop-up images, foam core title pages, etc. Any poster with those will be marked as a participant.

Nebraska Agriscience Fair participant(s)' display shows the results of their study utilizing a display board not to exceed the dimensions of:

- 36 inches high (from top of table to top of display)
- 48 inches (width)
- 30 inches deep (the distance from front to back)

The complete display, which includes methods of attaching as needed (easel, stand, etc.) cannot exceed the dimensions of:

- 38 inches high (from top of table to top of display)
- 50 inches wide
- 30 inches deep (the distance from the front to the back)

Nebraska FFA Association will provide tables and will not exceed the height of 36 inches. Failure to meet these requirements will result in disqualification.

The display must consist of a stable, free-standing display board on the provided table top not to exceed the sizes outlined above. No additional props, logbooks, handouts, or electronics will be permitted. No tablets, iPads, cell phones, or other electronic devices will be permitted. Internet access will not be provided. Failure to meet these requirements will result in disqualification.

Posters can be created utilizing Microsoft PowerPoint slide format; however, this is not required. Participant(s) are responsible for providing backing for the poster if needed.

### ***Recommended Display Components***

- Title
- Name Tag (front or back)
- Introduction or Abstract
- Hypothesis or Research Question
- Materials
- Methods
- Results
  - Include data table, graph, chart, or some other representation

- Conclusions
- Application
- Pictures

### **Display Safety Rules**

1. If an exhibit becomes unsafe or unsuitable for display, it will be removed and deemed ineligible for any awards.
2. Electricity will not be provided or permitted as part of a display at the Nebraska FFA Convention.
3. Displays will consist of:
  - A free-standing display board not to exceed the dimensions listed in the "Display Requirements" section of this handbook.
  - No additional props, logbooks, handouts or electronics are permitted in project displays.
  - If Display Requirements fail to be met project will be disqualified.

**Note: Visual Displays are no longer a requirement or component of the National FFA Agriscience Fair.**

### **Interview**

The interview is an opportunity for judges to ask students questions about the research project. The interview will be a maximum of 10 minutes during the time assigned to the participant(s) prior to the convention. A team project must be presented by a team of two. If only one team member is present, the team cannot rank higher than 3rd overall and will not have the opportunity to advance to the national level if the 1st and 2nd place teams choose not to advance.

Judges will ask questions to determine the extent of the knowledge gained, understanding of the project, how it relates to the student's SAE and possibly how the project relates to other FFA activities. The following is a list of example questions that may be asked:

1. How and why was the project selected?
2. What was your goal? What did you plan to accomplish in your project?
3. Were there any surprises in your project? How did you handle them?
4. What did you learn from the experience?
5. How much time did you devote to your project?
6. What kept you from being discouraged?

7. How did you manage time for this project in relation to your other activities?
8. What would you advise others doing a project? What is the value of completing an agriscience fair project?
9. How can your findings and conclusions be applied in the agriculture, food and natural resources industry?

This list of questions is not comprehensive but is meant to offer a guide to students as they prepare for their interview.

### ***Interview Schedule Conflicts***

Participants/teams unable to meet with judges during the allotted time will be disqualified. No exceptions will be made. Members who have a scheduling conflict due to participation in another Nebraska FFA award area need to contact Donnie Wolters at [donniewolters@gmail.com](mailto:donniewolters@gmail.com), so a potential scheduling accommodation may be made. Scheduling accommodations will be made to the best of the staff's ability.

### ***Add/Delete Policy***

If one individual on a team is unable to attend the convention, another individual who worked on the project may take their place. If the absence is a result of an emergency, the individual present may represent the team solely. If the absence is identified prior to the established schedule conflict resolution deadline of each convention year, the advisor must notify State FFA Staff if a substitution will occur.

\*National competition: No Add/Delete policy in place (no substitution permitted).

### ***Official Dress***

Participants are expected to observe the National FFA Code of Ethics and the proper use of the FFA jacket during the agriscience fair. (Please reference the latest edition of the Official FFA Manual) Official dress is required for the interview and awards presentation and recognition.

### ***Scoresheet and Rubric***

This section contains scoresheets and rubrics utilized by judges to evaluate written reports and interviews. As developing student researchers, the expectations for the written report are slightly different for Divisions 1 and 2 (grades 7 to 8) compared to Divisions 3 through 6 (grades 9 to 12). Please note that these written reports are evaluated differently.

## Pre-Qualifying Scoresheet: Divisions 1—2 (Grades 7—8)

Student Researchers: \_\_\_\_\_

Category: \_\_\_\_\_

Area		Points Possible	Points Earned
Importance	The importance includes a one paragraph answer for each question that clearly answers: Why is the topic important to the agriculture industry? What problem does the investigation solve for agriculture?	10	
Other's Work	Clearly details what information currently exists concerning the research project. Reference where the information was found (website, book, article, etc.) is listed, then a paragraph written by the student researcher(s) clearly describing the reference and information is provided for each publication used.	15	
Materials and Methods	Clearly written to enable others to replicate the study and results. Section is written in first person and encompasses all materials required. If used, the statistical procedures are included. A narration of the steps taken to complete the experiment is included.	10	
Hypothesis/Anticipated Results	Student researcher(s) clearly state the hypothesis and/or anticipated results.	5	
Results	Written results of the project are summarized. Trends and relationships are clearly addressed. No conclusions are made in this section. Data that can stand alone in the form of tables and/or figures are included.	20	
Discussion	The discussion includes clear, detailed answers for each question: What do the results of the study mean? How are they related to what others found in the "Other's Work" section?	10	
Conclusions	The conclusion clearly states what should be done and/or changed as a result of the research. Clearly states what the next steps are to continue the research.	5	
Summary	The summary is two to three paragraphs describing the study conducted. Describes why the student researcher(s) chose to conduct the study, why the study is important to the agriculture industry, how the study was conducted, what was found by conducting the study and how the results apply within the agriculture industry.	5	
Acknowledgements	Detailed list or paragraph is included acknowledging anyone who assisted with any aspect of the project and how they helped.	3	
Skill Development	All three competencies (two from primary pathway, one from any other pathway) demonstrate skills that are appropriate for the scope of the research project. The project demonstrates application of skill attainment with significant measurable impact on the overall project.	15	

Spelling/Grammar	APA or MLA citation style writing is used throughout the written report. Student researcher(s) use complete sentences; no spelling or grammar errors present.	2	
<b>TOTAL SCORE (100 points possible)</b> This constitutes 25% of the overall score to determine final ranking.			

*\*In the event of a tie, qualification for the agriscience fair will be based on the scores received in the following sections in order: discussion, conclusions, results, importance, summary.*

Comments:

## Pre-Qualifying Rubric: Divisions 1—2 (Grades 7—8)

Use this sheet as a reference to complete the pre-qualifying student score sheet on previous page.

Area	High Points	Medium Points	Low Points	Points Possible
Importance	10-7 points	6-4 points	3-0 points	10
	The importance includes a one paragraph answer for each question that clearly answers: Why is the topic important to the agriculture industry? What problem does the investigation solve for agriculture?	The importance includes a one paragraph answer for each question that vaguely answers: Why is the topic important to the agriculture industry? What problem does the investigation solve for agriculture?	The importance includes a one paragraph answer for each question that poorly answers: Why is the topic important to the agriculture industry? What problem does the investigation solve for agriculture?	
Other's Work	15-11 points	10-5 points	4-0 points	15
	Clearly details what information currently exists concerning the research project. Reference where the information was found (website, book, article, etc.) is listed, then a paragraph written by the student researcher(s) clearly describing the reference and information it provided for each publication used.	Poorly details what information currently exists concerning the research project. Reference where the information was found (website, book, article, etc.) is listed, then a paragraph written by the student researcher(s) vaguely describes the reference and information it provided for each publication used.	Does not detail what information currently exists concerning the research project. Reference where the information was found (website, book, article, etc.) is listed, then a paragraph written by the student researcher(s) poorly describes or is not included on what the reference says for each publication used.	
Materials and Methods	10-7 points	6-4 points	3-0 points	
	Clearly written to enable others to replicate the study and results. Section is written in first person and encompasses all materials required. If	Not written clearly to enable others to replicate the study and results. Section may or may not be written in first person	Written poorly so that others cannot replicate the study and results. Section is not written in first person and does not encompass all	

	used, the statistical procedures are included. A narration of the steps taken to complete the experiment is included.	and encompasses all materials required. The statistical procedures are included but are unclear. A narration of the steps taken to complete the experiment is included.	materials required. The statistical procedures are not included. Steps taken to complete the experiment are listed.	10
Hypothesis/Anticipated Results	5-4 points	3-2 points	1-0 points	
	Student researcher(s) clearly state the hypothesis and/or anticipated results.	Student researcher(s) vaguely state the hypothesis and/or anticipated results.	Student researcher(s) do not state or poorly state the hypothesis and/or anticipated results.	5
Results	20-14 points	13-7 points	6-0 points	
	Written results of the project are summarized. Trends and relationships are clearly addressed. No conclusions are made in this section. Data that can stand alone in the form of tables and/or figures are included.	Written results of the project are incompletely summarized. Trends and relationships are vague. No conclusions are made in this section. Data that can stand alone in the form of tables and/or figures are sometimes included.	Written results of the project are poorly summarized. Trends and relationships are not addressed. Data is not appropriately included as tables and figures.	20
Discussion	10-7 points	6-4 points	3-0 points	
	The discussion includes clear, detailed answers for each question: What do the results of the study mean? How are they related to what others found in the "Other's Work" section?	The discussion includes vague answers for each question: What do the results of the study mean? How are they related to what others found in the "Other's Work" section?	The discussion poorly answers each question: What do the results of the study mean? How are they related to what others found in the "Other's Work" section?	10
	5-4 points	3-2 points	1-0 points	
Conclusions	The conclusion clearly states what should be done and/or changed as a result of the research. Clearly states what the	The conclusion vaguely states what should be done and/or changed as a result of the research. The next steps for	The conclusion poorly states what should be done and/or changed as a result of the	5

	next steps are to continue the research.	research are unclear.	research. The next steps for research are not included.	
Summary	5-4 points	3-2 points	1-0 points	
	The summary is two to three paragraphs describing the study conducted. Describes why the student researcher(s) chose to conduct the study, why the study is important to the agriculture industry, how the study was conducted, what was found by conducting the study and how the results apply within the agriculture industry.	The summary is two to three paragraphs vaguely describing the study conducted. Vaguely describes why the student researcher(s) chose to conduct the study, why the study is important to the agriculture industry, how the study was conducted, what was found by conducting the study and how the results apply within the agriculture industry.	The summary is two to three paragraphs that poorly describes the study conducted. Why the student researcher(s) chose to conduct the study, why the study is important to the agriculture industry, how the study was conducted, what was found by conducting the study and how the results apply within the agriculture industry is unclear.	5
Acknowledgements	3 points	2-1 points	0 points	
	Detailed list or paragraph is included acknowledging anyone who assisted with any aspect of the project and how they helped.	A list or paragraph is included acknowledging anyone who assisted with any aspect of the project.	A list or paragraph is not included acknowledging anyone who assisted with any aspect of the project and how they helped.	3
Skill Development	15-11 points	10-5 points	4-0 points	
	All three competencies (two from primary pathway, one from any other pathway) demonstrate skills that are appropriate for the scope of the research project. The project demonstrates application of skill attainment with significant	Some of the competencies somewhat demonstrate skills that are appropriate for the scope of the research project. The project demonstrates application of skill attainment with incomplete measurable impact on the overall project.	Very few competencies are listed and are not appropriate for the scope of the research project. The project does not demonstrate application of skill attainment and has no measurable	15

	measurable impact on the overall project.		impact on the overall project.	
	2 points	1 point	0 points	
Spelling/Grammar	APA or MLA citation style writing is used throughout the report. Student researcher(s) use complete sentences; no spelling or grammar errors present.	APA or MLA citation style writing is used. Student researcher(s) use complete sentences; minor spelling or grammar errors present.	APA or MLA citation style writing is not used. Student researcher(s) do not use complete sentences; excessive spelling or grammar errors present.	2
<b>TOTAL SCORE (100 points possible)</b>				
This constitutes 25% of the overall score to determine final ranking.				

*\*In the event of a tie, qualification for the agriscience fair will be based on the scores received in the following sections in order: discussion, conclusions, results, importance, summary.*

## Pre-Qualifying Scoresheet: Divisions 3—6 (Grades 9—12)

Student Researchers: \_\_\_\_\_

Category: \_\_\_\_\_

Area		Points Possible	Points Earned
Abstract	Abstract is brief and concisely describes the purpose, methods, results and conclusions. Abstract does not include cited references. Abstract is no longer than one page. Arrangement makes the purpose, procedure, results and conclusions clear.	3	
Introduction	Introduction answers the question "Why was the work done?" It clearly states the problem that justifies conducting the research, the purpose of the research, its impact on agriculture, the findings of earlier work and the general approach and objectives.	10	
Literature Review	The literature review details what information currently exists concerning the research project. The information includes materials used in the research and material cited such as articles about similar studies, similar research methods, history of the research area and other items that support the current knowledge base for the topic and how the project might complement existing information.	10	
Materials and Methods	Clearly written to enable others to replicate the study and results. Section is written in third person, encompasses all materials required, states the hypothesis/research questions and explains the study design. If used, the statistical procedures are included. A narration of the steps taken to complete the experiment is included.	15	
Results	Written results of the project are summarized. Trends and relationships are clearly addressed. No conclusions are made in this section. Data that can stand alone in the form of tables and/or figures are included.	20	
Discussion and Conclusions	Brief recap of the results is included and shows how they were the foundation of the study. Sound reasoning is shown that conclusions are based on results, incorporates previous literature and relates directly to the hypothesis. Discussion refers to or references facts and figures in results section and provides recommendations for practice, future research and the impact on the agriculture industry.	15	
Acknowledgements	Detailed list or paragraph is included acknowledging anyone who assisted with any aspect of the project and how they helped.	3	
References	References contain significant, published and relevant sources.	2	
Skill Development	All five competencies (three from primary pathway, two from any other pathway) demonstrate skills that are appropriate for the scope of the research project. The project demonstrates application of skill attainment with significant measurable impact on the overall project.	20	

APA Style/Spelling	APA citation style writing is used throughout the written report. No spelling or grammar errors present.	2	
<b>TOTAL SCORE (100 points possible)</b> This constitutes 25% of the overall score to determine final ranking.			

*\*In the event of a tie, qualification for the agriscience fair will be based on the scores received in the following sections in order: discussion and conclusions, results, introduction, abstract.*

Comments:

## Pre-Qualifying Rubric: Divisions 3—6 (Grades 9—12)

Use this sheet as a reference to complete the pre-qualifying student score sheet on previous page.

Area	High Points	Medium Points	Low Points	Points Possible
Abstract	3 points	2-1 points	1-0 points	3
	Abstract is brief and concisely describes the purpose, methods, results and conclusions. Abstract does not include cited references. Abstract is no longer than one page. Arrangement makes the purpose, procedure, results and conclusions clear.	Abstract describes the purpose, methods, results and conclusions. Abstract does not include cited references. Abstract is longer than one page. Arrangement makes the purpose, procedure, results and conclusions vague.	Abstract poorly describes the purpose, methods, results and conclusions. Abstract includes cited references. Abstract is longer than one page. Arrangement makes the purpose, procedure, results and conclusions unclear.	
Introduction	10-7 points	6-4 points	3-0 points	10
	Introduction answers the question "Why was the work done?" It clearly states the problem that justifies conducting the research, the purpose of the research, its impact on agriculture, the findings of earlier work, and the general approach and objectives.	Introduction answers the question "Why was the work done?" It vaguely states the problem that justifies conducting the research, the purpose of the research, its impact on agriculture, the findings of earlier work, and the general approach and objectives.	Introduction does not answer the question "Why was the work done?" It does not state the problem that justifies conducting the research, the purpose of the research, its impact on agriculture, the findings of earlier work, and the general approach and objectives.	
	10-7 points	6-4 points	3-0 points	

Literature Review	The literature review details what information currently exists concerning the research project. The information includes materials used in the research and material cited such as articles about similar studies, similar research methods, history of the research area and other items that support the current knowledge base for the topic and how the project might complement existing information.	The literature review poorly details what information currently exists concerning the research project. The information may or may not include materials used in the research. Some materials cited include articles about similar studies, similar research methods and history of the research area. How the project might complement existing information is not clear.	The literature review does not detail what information currently exists concerning the research project. There is no information included or it does not reference materials used in the research. No information cited such as articles about similar studies, similar research methods or history of the research area. How the project might complement existing information is not clear.	10
Materials and Methods	15-11 points Clearly written to enable others to replicate the study and results. Section is written in third person, encompasses all materials required, states the hypothesis/research questions and explains the study design. If used, the statistical procedures are included. A narration of the steps taken to complete the experiment is included.	10-5 points Not written clearly to enable others to replicate the study and results. Section may or may not be written in third person, encompasses all materials required, states the hypothesis/research questions and explains the study design. The statistical procedures are included but are unclear. A narration of the steps taken to complete the experiment is included.	4-0 points Written poorly so others cannot replicate the study and results. Section is not written in third person, does not encompass all materials required for the research and hypothesis/research questions are not stated. The statistical procedures are not included. Steps taken to complete the experiment are listed.	15
Results	20-14 points Written results of the project are summarized. Trends and relationships are clearly addressed. No conclusions are made in this section. Data that can	13-7 points Written results of the project are incompletely summarized. Trends and relationships are vague. No conclusions are made in This section. Data that can	6-0 points Written results of the project are poorly summarized. Trends and relationships are not addressed. Data is not appropriately	

	stand alone in the form of tables and/or figures are included.	stand alone in the form of tables and/or figures are sometimes included.	included as tables and figures.	20
Discussion and Conclusion	15-11 points	10-5 points	4-0 points	
	Brief recap of the results is included and shows how they were the foundation of the study. Sound reasoning is shown that conclusions are based on results, incorporates previous literature and relates directly to the hypothesis. Discussion refers to or references facts and figures in results section and provides recommendations for practice, future research and the impact on the agriculture industry.	Brief recap of the results is included and shows how they were the foundation of the study. Unsound reasoning is shown that conclusions are based on results, vaguely incorporates previous literature and partially relates to the hypothesis. Discussion refers to or references facts and figures in results section and provides recommendations for practice, future research and the impact on the agriculture industry.	No recap of the results is included or poorly shows how they were the foundation for the study. Conclusions are not based on results, previous literature not included and do not relate directly to the hypothesis. Discussion poorly refers to or references facts and figures in the results section and does not provide recommendations for practice, future research and does not illustrate the impact on the agriculture industry.	15
Acknowledgements	3 points	2 – 1 points	0 points	
	Detailed list or paragraph is included acknowledging anyone who assisted with any aspect of the project and how they helped.	A list or paragraph is included acknowledging anyone who assisted with any aspect of the project.	A list or paragraph is not included acknowledging anyone who assisted with any aspect of the project and how they helped.	3
References	2 points	1 point	0 points	
	References contain significant, published and relevant sources.	References listed are somewhat significant, published and relevant sources.	References listed are not significant, published and relevant sources.	2
	20-14 points	13-7 points	6-0 points	

Skill Development	All five competencies (three from primary pathway, two from any other pathway) demonstrate skills that are appropriate for the scope of the research project. The project demonstrates application of skill attainment with significant measurable impact on the overall project.	Some of the competencies somewhat demonstrate skills that are appropriate for the scope of the research project. The project demonstrates application of skill attainment with incomplete measurable impact on the overall project.	Very few competencies are listed and are not appropriate for the scope of the research project. The project does not demonstrate application of skill attainment and has no measurable impact on the overall project.	20
	2 points	1 point	0 points	
APA Style/Spelling	APA citation style writing is used throughout the report. No spelling or grammar errors are present.	APA citation style writing is used. Minor spelling or grammar errors are present.	APA citation style writing is not used. Excessive spelling or grammar errors are present.	2

**TOTAL SCORE (100 points possible)**

This constitutes 25% of the overall score to determine final ranking.

## Convention Scoresheet: Divisions 1, 3, 5 (Grades 7—12)

Student Researchers: \_\_\_\_\_

Category: \_\_\_\_\_

Area		Points Possible	Points Earned
Knowledge Gained	Is there evidence the student researcher has acquired scientific skills and/or knowledge by doing this project? Does the student researcher recognize the scope and limitation of the problem he or she has selected?	25	
Scientific Research	Has the problem been clearly stated? Has the student researcher used scientific facts as a basis for new conclusions? Is the student researcher aware of the basic scientific principles that lend support to the methods used and conclusions reached? Can the research be the basis for further study? Have the appropriate methods and scientific design principles been applied? Is the student researcher aware of the empirical method (the necessity of repeating trials) and the importance of controlling the variables in order to reach valid conclusions?	30	
Collaboration	Is there evidence of collaboration present? Identify the portions of the project representing the work of others. Others include student researchers, teachers, specialists in the field of study, etc.	15	
Thoroughness/Information	How successfully was the original plan carried through to completion? Were adaptations to the study made? If so, were they made in a way that upholds the integrity of the study? Are known facts and principles stated correctly and used accurately? Have the results of experiments been reported accurately even though faulty experimental methods or conditions may have made the data unreliable? If so, have these errors been noted? Did the student researcher identify areas of weakness in the study?	30	
Results/Conclusions	Has the student researcher started with known facts and drawn their own conclusions? Are the conclusions consistent with the data and/or observations? Did the student researcher share what was learned as a result of the research? Can the student researcher effectively communicate the results and impact of the study?	15	
Visual Display	Has the data been presented in the best manner for the particular type of information involved? Are spelling errors present? Does the exhibit demonstrate a general neatness and attractiveness? Is the display presented in a logical and interesting manner?	5	
<b>TOTAL SCORE (120 points possible)</b> This constitutes 75% of the overall score to determine final ranking.			

*\*In the event of a tie, winner will be determined based on the score of the written report. If a tie still exists, the tie will be broken on scores received in the following sections in order: knowledge gained, thoroughness/information, results/conclusions.*

## Convention Rubric: Divisions 1, 3, 5 (Grades 7—12)

Use this sheet as a reference to complete the student score sheet on previous page.

Area	High Points	Medium Points	Low Points	Points Possible
Knowledge Gained	25-16 points	15-7 points	6-0 points	25
	<p>There is evidence the student researcher has acquired scientific skills and/or knowledge by doing the project. The student researcher exhibits knowledge of the scope and limitations of the problem selected.</p>	<p>There is some evidence that the student researcher has acquired scientific skills and/or knowledge by doing this project. The student researcher has limited knowledge of the scope and limitations of the problem selected.</p>	<p>There is no evidence that the student researcher has acquired scientific skills and/or knowledge by doing this project. The student researcher does not recognize the scope and limitations of the problem selected.</p>	
Scientific Research	30-21 points	20-11 points	10-0 points	30
	<p>The problem is clearly stated. The student researcher uses scientific facts as a basis for new conclusions. The student researcher is aware of the basic scientific principles that lend support to the methods used and conclusions reached. The research is the basis for further study. The appropriate methods and scientific design have been applied. The student researcher is aware of the empirical method and the importance of controlling the variables in order to reach valid conclusions.</p>	<p>The problem is not clearly stated. The student researcher uses some scientific facts as a basis for new conclusions. The student researcher has limited knowledge of the basic scientific principles that lend support to the methods used and conclusions reached. With some modification, the research could be the basis for further study. Some of the appropriate methods and scientific design have been applied. The student researcher is partially aware of the empirical method and the importance of controlling the variables in order to reach valid conclusions.</p>	<p>The problem is not stated. The student researcher does not use scientific facts as a basis for new conclusions. The student researcher is unaware of the basic scientific principles that lend support to the methods used and conclusions reached. The research cannot be the basis for further study. Inappropriate methods and a flawed scientific design have been applied. The student researcher is unaware of the empirical method and do not recognize the importance of controlling the variables in order to</p>	

			reach valid conclusions.	
Collaboration	15-11 points	10-5 points	4-0 points	
	There is clear evidence of collaboration. The student researcher identified portions of the project representing the work of others.	There is lack of clear evidence of collaboration, or the student researcher does not identify portions of the project representing the work of others.	There is lack of clear evidence of collaboration and the student researcher does not identify portions of the project representing the work of others.	15
Thoroughness/Information	30-21 points	20-11 points	10-0 points	
	Student researcher clearly communicates the original plan and adaptations that may have been made to the study. Any adaptations made uphold the integrity of the study. Facts and principles the student researcher states are correct and accurate. All results of the experiments are reported accurately based on methodology used. Any errors and weaknesses in the study are identified, if applicable.	Student researcher partially communicates the original plan and adaptations that may have been made to the study. Any adaptations made may uphold the integrity of the study. Facts and principles the student researcher states are partially correct and accurate. Most results of the experiments are reported accurately based on methodology used. Most errors and weaknesses in the study are identified, if applicable.	Student researcher does not communicate the original plan and adaptations that may have been made to the study. Adaptations made do not uphold the integrity of the study. Facts and principles the student researcher states are inaccurate. Results of the experiments are not reported accurately based on methodology used. Errors and weaknesses in the study are not identified.	30

Results/Conclusions	15-11 points	10-5 points	4-0 points	15
	The student researcher uses known facts to draw conclusions. Conclusions are consistent with the data and/or observations presented. The student researcher clearly shares what was learned as a result of the research. The student researcher effectively communicates the results and impact of the study.	The student researcher uses known facts to draw conclusions. Conclusions are inconsistent with the data and/or observations presented. The student researcher ineffectively shares what was learned as a result of the research. The student researcher ineffectively communicates the results and impact of the study.	The student researcher does not use known facts to draw conclusions. Conclusions are inconsistent with the data and/or observations presented. The student researcher does not share what was learned as a result of the research. The student researcher does not communicate the results and impact of the study.	
Visual Display	5-4 points	3-2 points	1-0 points	5
	The data is presented in the best manner for the particular type of information involved. No spelling errors are present. The exhibit demonstrates general neatness and attractiveness. The display is presented in a logical and interesting manner.	The data is presented in a logical manner for the particular type of information involved. Some spelling errors are present. The exhibit lacks general neatness and attractiveness. The display is presented in a logical yet uninteresting manner.	The data is not presented in a rational manner for the particular type of information involved. Several spelling errors are present. The exhibit lacks general neatness and attractiveness. The display lacks logic and appears uninteresting.	
<b>TOTAL SCORE (120 points possible)</b> This constitutes 75% of the overall score to determine final ranking.				

*\*In the event of a tie, winner will be determined based on the score of the written report. If a tie still exists, the tie will be broken on scores received in the following sections in order: knowledge gained, thoroughness/information, results/conclusions.*

## Convention Scoresheet: Divisions 2, 4, 6 (Grades 7—12)

Student Researchers: \_\_\_\_\_

Category: \_\_\_\_\_

Area		Points Possible		Points Earned		
Knowledge Gained	<p>Is there evidence the student researcher has acquired scientific skills and/or knowledge by doing this project? Does the student researcher recognize the scope and limitation of the problem he or she has selected?</p> <p><i>Each team member can receive the maximum of 12.5 points. If a team member is not in attendance the highest point possible for this category is 12.5</i></p>	25	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">Student #1 12.5</td> </tr> <tr> <td style="text-align: center;">Student #2 12.5</td> </tr> </table>	Student #1 12.5	Student #2 12.5	
Student #1 12.5						
Student #2 12.5						
Scientific Research	<p>Has the problem been clearly stated? Have the student researchers used scientific facts as a basis for new conclusions? Are the student researchers aware of the basic scientific principles that lend support to the methods used and conclusions reached?</p> <p>Can the research be the basis for further study? Have the appropriate methods and scientific design principles been applied? Are the student researchers aware of the empirical method (the necessity of repeating trials) and the importance of controlling the variables in order to reach valid conclusions?</p>	30				
Collaboration	Is there evidence of collaboration present? Identify the portions of the project representing the work of others. Others include student researchers, teachers, specialists in the field of study, etc.	5				
Peer to Peer Collaboration	Evidence during interview of collaboration between teammates. <i>If only one team member is present, no points will be awarded in this area.</i>	10				
Thoroughness/Information	How successfully was the original plan carried through to completion? Were adaptations to the study made? If so, were they made in a way that upholds the integrity of the study? Are known facts and principles stated correctly and used accurately? Have the results of experiments been reported accurately even though faulty experimental methods or conditions may have made the data unreliable? If so, have these errors been noted? Did the student researchers identify areas of weakness in the study?	30				

Results/Conclusions	Have the student researchers started with known facts and drawn their own conclusions? Are the conclusions consistent with the data and/or observations? Did the student researchers share what was learned as a result of the research? Can student researchers effectively communicate the results and impact of the study?	15	
Visual Display	Has the data been presented in the best manner for the particular type of information involved? Are spelling errors present? Does the exhibit demonstrate a general neatness and attractiveness? Is the display presented in a logical and interesting manner?	5	
<b>TOTAL SCORE (120 points possible)</b> This constitutes 75% of the overall score to determine final ranking.			

*\*In the event of a tie, winner will be determined based on the score of the written report. If a tie still exists, the tie will be broken on scores received in the following sections in order: knowledge gained, thoroughness/information, results/conclusions.*

*\*\*If a team project only has one student present, they cannot rank higher than fourth overall. In the "Knowledge Gained" section, team members can receive up to 7.5 points each. Both team members must be present to receive points for "peer-to-peer collaboration".*

Comments:

## Convention Rubric: Divisions 2, 4, 6 (Grades 7—12)

Use this sheet as a reference to complete the student score sheet on previous page.

Area	High Points	Medium Points	Low Points	Points Possible	
Knowledge Gained	25-16 points	15-7 points	6-0 points	25	Student #1 12.5
	There is evidence the student researchers have acquired scientific skills and/or knowledge by doing the project. The student researchers exhibit knowledge of the scope and limitations of the problem selected.	There is some evidence that the student researchers have acquired scientific skills and/or knowledge by doing this project. The student researchers have limited knowledge of the scope and limitations of the problem selected.	There is no evidence that the student researchers have acquired scientific skills and/or knowledge by doing this project. The student researchers do not recognize the scope and limitations of the problem selected.		Student #2 12.5
Scientific Research	30-21 points	20-11 points	10-0 points	30	
	The problem is clearly stated. The student researchers use scientific facts as a basis for new conclusions. The student researchers are aware of the basic scientific principles that lend support to the methods used and conclusions reached. The research is the basis for further study. The appropriate methods and scientific design have been applied. The student researchers are aware of the empirical method and the importance of controlling the variables in order to reach valid conclusions.	The problem is not clearly stated. The student researchers use some scientific facts as a basis for new conclusions. The student researchers have limited knowledge of the basic scientific principles that lend support to the methods used and conclusions reached. With some modification, the research could be the basis for further study. Some of the appropriate methods and scientific design have been applied. The student researchers are	The problem is not stated. The student researchers do not use scientific facts as a basis for new conclusions. The student researchers are unaware of the basic scientific principles that lend support to the methods used and conclusions reached. The research cannot be the basis for further study. Inappropriate methods and a flawed scientific design have been applied. The student researchers		

		partially aware of the empirical method and the importance of controlling the variables in order to reach valid conclusions.	are unaware of the empirical method and do not recognize the importance of controlling the variables in order to reach valid conclusions.	
Collaboration	5-4 points	3-2 points	1-0 points	
	There is clear evidence of collaboration. The student researchers identified portions of the project representing the work of others.	There is lack of clear evidence of collaboration, or the student researchers do not identify portions of the project representing the work of others.	There is lack of clear evidence of collaboration and the student researchers do not identify portions of the project representing the work of others.	5
Peer to Peer Collaboration	10-7 points	6-4 points	3-0 points	
	There is clear evidence of collaboration. Both team members are present.  No points will be award if only one team member is present.	Some collaboration is evident.  No points will be award if only one team member is present.	There is lack of evidence of collaboration.  No points will be award if only one team member is present.	10

	30-21 points	20-11 points	10-0 points	
	<p>Student researchers clearly communicate the original plan and adaptations that may have been made to the study. Any adaptations made uphold the integrity of the study. Facts and principles the student researchers state are correct and accurate. All results of the experiments are reported accurately based on methodology used. Any errors and weaknesses in the study are identified, if applicable.</p>	<p>Student researchers partially communicate the original plan and adaptations that may have been made to the study. Any adaptations made may uphold the integrity of the study. Facts and principles the student researchers state are partially correct and accurate. Most results of the experiments are reported accurately based on methodology used.</p> <p>Most errors and weaknesses in the study are identified, if applicable.</p>	<p>Student researchers do not communicate the original plan and adaptations that may have been made to the study. Adaptations made do not uphold the integrity of the study. Facts and principles the student researchers state are inaccurate.</p> <p>Results of the experiments are not reported accurately based on methodology used. Errors and weaknesses in the study are not identified.</p>	30
Thoroughness/ Information	15-11 points	10-5 points	4-0 points	
	<p>The student researchers use known facts to draw conclusions. Conclusions are consistent with the data and/or observations presented. The student researchers clearly share what was learned as a result of the research. The student researchers effectively communicate the results and impact of the study.</p>	<p>The student researchers use known facts to draw conclusions. Conclusions are inconsistent with the data and/or observations presented. The student researchers ineffectively share what was learned as a result of the research.</p> <p>The student researchers ineffectively communicate the results and impact of</p>	<p>The student researchers do not use known facts to draw conclusions. Conclusions are inconsistent with the data and/or observations presented. The student researchers do not share what was learned as a result of the research. The student</p>	15
Results/Conclusions				

		the study.	researchers do not communicate the results and impact of the study.	
Visual Display	5-4 points	3-2 points	1-0 points	
	The data is presented in the best manner for the particular type of information involved. No spelling errors are present. The exhibit demonstrates general neatness and attractiveness. The display is presented in a logical and interesting manner.	The data is presented in a logical manner for the particular type of information involved. Some spelling errors are present. The exhibit lacks general neatness and attractiveness. The display is presented in a logical yet uninteresting manner.	The data is not presented in a rational manner for the particular type of information involved. Several spelling errors are present. The exhibit lacks general neatness and attractiveness. The display lacks logic and appears uninteresting.	5
<b>TOTAL SCORE (120 points possible)</b> This constitutes 75% of the overall score to determine final ranking.				

*\*In the event of a tie, winner will be determined based on the score of the written report. If a tie still exists, the tie will be broken on scores received in the following sections in order: knowledge gained, thoroughness/information, results/conclusions.*

*\*\*If a team project only has one student present, they cannot rank higher than fourth overall. In the "Knowledge Gained" section, team members can receive up to 12.5 points each. Both team members must be present to receive points for "peer-to-peer collaboration".*