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DEPARTMENT H - SET SCIENCE, ENGINEERING & TECHNOLOGY

DRESS CODE -

Please follow the dress code for your county as noted in the "General Rules and Regulations" section of this fair book.

IMPORTANT – There is **NOT** a **County Only Section** in the Fair book. There will either be a **CF** or **SF** in front of every **Class Number**.

- **CF:** means that exhibit is **ONLY** eligible to be exhibited at the **County Fair**.
- **SF:** means that exhibit if **CHOSEN** at County Fair is eligible to advance to **State Fair**.

Eligibility

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.

Quota

County Fair Quota - For general rules see the [General Rules and Regulations Section of the Fair Book](#)

State Fair Quota - Refer to general rules for information regarding quota <https://4h.unl.edu/fairbook/general/rules>

State Fair Special Award

Premier 4-H Science Award - Premier 4-H Science Award is available in this area. Visit here for more details <https://4h.unl.edu/fairbook/premier-science-award>

Resources

To find the youth and leader resources associated with this project area go to <https://4hcurriculum.unl.edu/>. Use the search box to search by curriculum area.

DEPARTMENT H - ROPE

Exhibit Rules

Each rope exhibit must be mounted on a board that is ¼" thick by 24" high by 32" wide. All items placed on demo-boards must be made according to instructions found in the 4-H Rope Manual, EC 7-01-79. Mount the knots in the same position as shown in the 4-H Rope Manual. Either manila or synthetic rope may be used. When halters are exhibited, the tie rope, plus a required second piece of rope must show any three of the following items: 1) end whipping, 2) eye splice, 3) crown splice, 4) rosebud knot, 5) Matthew Walker knot, or 6) diamond knot.

DIVISION 500 - ROPE CLASSES

CF-H500900 - Rope Display - At least 10 and not more than 12 knots, hitches, and splices (include two splices) made of ¾" rope. Include appropriate board title and item labels. The end of all ropes must be whipped. Judging consideration will be given to difficulty of items shown on the board.

CF-H500901 - Single Loop Halter, Double Loop Halter and/or Halter Designed by Exhibitor - Single or double loop halter (sheep and goats use ¾" rope; cattle and horses use ⅝" or ¾" rope) or Halter that has been designed by the exhibitor using any size rope and for animal of their choice. Document where you got your idea for your halter, animal halter is for and the types of knots used in making your halter. See above requirements for halter exhibits.

CF-H500902 - Rope - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

DEPARTMENT H - SMALL ENGINES/RESTORED VEHICLE

DIVISION - 510 - SMALL ENGINE/ RESTORED VEHICLE CLASSES

CF-H510900 - Small Engine Display/Item - Show an application from one of the concepts learned in any of the 3 Small Engine Units. State which unit you are exhibiting from. Examples: CRANK IT UP - UNIT 1: identify the parts of a small engine, safety rules for starting a small engine, small engine repair tool identification; WARM IT UP - UNIT 2: comparison of engine oil types, transmissions, or safety related to engines; TUNE IT UP - UNIT 3: diagnostic tools, fuel systems, ignition systems. If a complete engine is exhibited it will not be started. However, display needs to report process of building/rebuilding engine and how/where engine will be utilized (i.e. lawn mower, weed eater, snow blower, etc.). Exhibit could be a poster display, or an actual item.

CF-H510901 - Restored Vehicle - Detailed Report - In lieu of bringing a tractor, etc. to the fair, the 4-H'er can submit a detailed report explaining the process used to restore or overhaul. Also include a digital recorded copy of the item and the process used.

DEPARTMENT H - MODELS, BUILDING ITEMS, & COLLECTIONS

DIVISION 520 - MODELS, BUILDING ITEMS, & COLLECTIONS CLASSES

MODELS INFORMATION - Any model of the 4-H'ers choice

CF-H520900 – Models - Snap Together

CF-H520901 – Models - Glued

MODEL HORSE INFORMATION - No Horse Levels are required. - **Ages - Junior Classes** - 8-11 Years of Age prior to Jan. 1 of the current year; **Senior Classes** - 12 Years and Older prior to Jan. 1 of the current year

CF-H520902 – Models - Junior Display of Horse or Multiple Horses In Action - (Example: Trail Class, Jumping, Roping, Barrel Racing, Trail Riding, Working Cattle, Pulling Carts, Wagons, Etc. or Any Display That Shows horses in Action. Displays should be approximately 2 ft. x 2 ft. to be set up on a table. Judging will be based on originality, authenticity, creativity of display. Props, Tack and Equipment can be handmade or manufactured, and may also be judged in Class 904 if handmade. Limited to 2 entries.

CF-H520903 - Models - Senior Display of Horse or Multiple Horses In Action - (See examples in Class 902. Props, Tack and Equipment can be handmade or manufactured, and may also be judged in class 905 if handmade. Limited to 2 entries.

CF-H520904 - For Model Horses - Junior Handmade Tack, Equipment or Accessories - Items will be judged on Quality of Workmanship, Authenticity, Originality, Creativity, and Proper Fit. Items can be used as part of the model horse display entered by the 4-H'er. Limited to 4 entries.

CF-H520905 - For Model Horses - Senior Handmade Tack, Equipment or Accessories - Items will be judged on Quality of Workmanship, Authenticity, Originality, Creativity, and Proper Fit. Items can be used as part of the model horse display entered by the 4-H'er. Limited to 4 entries.

BUILDING ITEMS INFORMATION – Number of Exhibits Per Exhibitor - Holt County-2; Boyd County- no limits.

CF-H520906 - Building Items - Original Design

CF-H520907 - Building Items - Made from A Pattern, Bring Pattern to Fair

CF-H520908 - Building Items - Made from pattern but altered about 25%, bring pattern to Fair

CF-H520909 - Building Items - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

COLLECTIONS INFORMATION - An exhibit to consist of your collection of baseball cards, stamps, dolls, toys, etc. Included with the display will be a covered report that tells why you collect this item(s); where you found/bought/were given/etc. your items in the display; and what is new this year to your collection. Display your items in a way that does not destroy the value of the collection (for example, don't glue or pin baseball cards onto a backing). Display in a way to keep all pieces of your collection together. If your complete collection is very large it is suggested that you exhibit only a portion of your collection with the rest of the collection displayed as pictures in a photo album.

CF-H520910 - Collection Display

FIX A TOY INFORMATION - This class will involve the refinishing skills for a wood or metal toy as well as a doll. The exhibit must be accompanied by a supporting information card (suggested size: 4" x 6"). The card should describe and/or show by a photograph condition of toy before refinishing, steps taken to refinish and if any part of refinishing was done by someone other than exhibitor. If you wish to donate this toy to the Nebraska Department of Social Services at O'Neill please note this on your information card. The toys will be given to needy families in Holt and Boyd Counties at Christmas.

CF-H520911 - Fix a Toy

DEPARTMENT H - RECYCLED ITEM

DIVISION 540 - RECYCLED ITEM CLASSES

Recycled Item - This exhibit can be as simple or elaborate as you like. Exhibit must be able to be carried in your hands. No project enrollment or record books are necessary. You will need to identify how/why the item is a "recycled item".

CF-H540900 - Recycled Item - Metal

CF-H540901 - Recycled Item - Wood

CF-H540902 - Recycled Item - Plastic

CF-H540903 - Recycled Item - Glass

CF-H540904 - Recycled Item - Other

DEPARTMENT H - AEROSPACE (ROCKETS/DRONES)

This category gives 4-H'ers a chance to display the rockets and drones they have created. Through participation in this category 4-H'ers will show judges what they learned about and how they adapted their exhibit throughout this project. Involvement in SET Aerospace gives participants a first-hand experience in modern technology. For help getting started with this project contact your county 4-H office.

Rules

1. The name and county of each exhibitor should appear separately on the back of each board, poster, or article and on the front cover of the notebooks so owner of the exhibit may be identified if the entry tag is separated from the exhibit.
2. Several classes require a display board which should be a height of 24 inches and not to exceed 1/4-inch thickness. A height of 24 7/8 inches is acceptable to allow for the saw kerf (width) if two 24 inch boards are cut from one end of a 4 foot by 8-foot sheet of plywood. Nothing should be mounted within 3/4 inch of the top or bottom of the board. (Example: Woodworking & Electricity.)
3. Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays.

4. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.
5. Demonstration boards should include an overall title for the display, plus other necessary labeling.
6. Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations, Results: what you learned. All reports should be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.
7. Reports should be written using the scientific method whenever possible (Background, The question or hypothesis, What you plan to do and what you did, Method used and observations. Results: What you learned. All reports should be computer generated and enclosed in a clear, plastic cover. The reports should be attached securely to the display.
8. Premier 4-H Science Award is available in this area. Please see General Rules for more details.
9. Rockets must be supported substantially to protect the rocket from breakage. Rockets are to be mounted on a base that has dimensions equal or less than 12" x 12" and the base should be 3/4" thick. No metal bases. If the rocket fins extend beyond the edges of the required base (12" x 12"), then construct a base that is large enough to protect the fins. The base size is dictated by the size of the rocket fins.
10. The rockets must be mounted vertically. Please do not attach sideboards or backdrops to the displays. In addition, a used engine or length of dowel pin is to be glued and/or screwed into the board and extended up into the rockets engine mount to give added stability.
11. Rockets must be equipped as prepared for launching, with wadding and parachute or other recovery system. Rockets entered with live engines, wrong base size or sideboards will be disqualified.

12. A report, protected in a clear plastic cover, must include: 1) rocket specification (include original or photo of manufacture packaging stating rocket skill level), 2) a flight record for each launching (weather, distance, flight height), 3) number of launchings, 4) flight pictures 5) Safety (how did you choose your launch site? Document safe launch, preparations, and precautions)6 objectives learned and 7) conclusions.

13. The flight record should describe engine used, what the rocket did in flight and recovery success. Points will not be deducted for launching, flight or recovery failures described. This includes any damage that may show on the rocket. Complete factory assembled rockets will not be accepted at the State Fair.

14. Judging is based upon display appearance, rocket appearance, workmanship, design or capabilities for flight, number of times launched and report. Three launches are required to earn the maximum launch points given on the score sheets. For scoring for the State Fair, only actual launches count, misfires will not count towards one of the required three launches.

- For self-designed rockets only, please include digital recorded copy of one flight. In the documentation please include a description of stability testing before the rocket was flown.
- Skill level of project is not determined by number of years in project. Skill level is determined by the level listed on the manufacturing packaging.
- 4-H Rocket project levels are not intended to correspond to National Association of Rocketry model rocket difficulty ratings or levels.
- High power rockets (HPR) is similar to model rocketry with differences that include the propulsion power and weight increase of the model. They use motors in ranges over "G" power and/or weigh more than laws and regulations allow for unrestricted model rockets. These rockets are NOT appropriate for 4-H projects and will be disqualified.

For general rules see the [General Rules and Regulations Section of the Fair Book](#)

Eligibility

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair. Entry level rockets, made with PLASTIC FINS and PLASTIC BODY TUBES, are COUNTY ONLY projects.

Quota

County Fair Quota - For general rules see the [General Rules and Regulations Section of the Fair Book](#)

State Fair Quota - Refer to general rules for information regarding quota

<https://4h.unl.edu/fairbook/general/rules>

Scoresheets, Forms, and Contest Study Materials

Scoresheets, forms, contest study materials, and additional resources can be found at <https://go.unl.edu/ne4haerospace>.

Special Awards

Premier 4-H Science Award is available in this area. Visit here for more details

<https://4h.unl.edu/fairbook/premier-science-award>

DIVISION 850 – ROCKETS/AEROSPACE CLASSES

UNIT 1

CF-H850900 - Space Buggy – Unit 1 – Design and make a spacecraft from household items or items that could be re-used instead of being thrown away. Materials list: scissors, glue, assorted clean household materials such as; paper towel tubes, tissue boxes, plastic bottles, etc. Draw a picture design of your buggy on a sheet of paper. On another separate sheet of paper briefly explain the job/jobs your space buggy can do.

CF-H850901 - Space Station – Unit 1 - Draw a design of what you think an International Space Station of the future might look like. Using household items build a model of that station. On a sheet of paper briefly describe how scientist would use your Space Station.

CF-H850902 – Wooden Fins Rocket – Unit 1 - Any Skill Level 1 Rocket with wooden fins.

AEROSPACE UNIT 2, 3, or 4

Exhibit Rules

1. Youth enrolled in Aerospace 2, 3, or 4 may exhibit in any class within this division.

SF-H850001 - Rocket - (SF92) - Any Skill Level Rocket with **wooden fins and cardboard body tubes** painted by hand or air brush.

SF-H850002 - Aerospace Display - (SF93) - Poster or display board that displays or exemplifies one of the principles learned in the Lift Off project. Examples include display of rocket parts and purpose, explains the parts of a NASA rocket or shuttle, interview of someone in the aerospace field, or kite terminology. Include notebook containing terminology (definition), and what was learned. Display can be any size up to 28" by 22".

SF-H850003 - Rocket - (SF92) - Any Skill Level Rocket with wooden fins and cardboard body tubes painted using commercial application, for example: commercial spray paint.

DRONES

Exhibit Rules

1. Youth enrolled in Aerospace 2, 3, or 4 may exhibit in any class within this division.

H850005- Drone Poster—Exhibit must be designed to educate yourself and others on one or more of the following topics: drone technologies, uses of drones, the different types of drones, types of training needed to operate drones, and the laws and regulations users must follow. Posters can be any size up to 28" by 22".

H850006-Drone Video-Exhibit must demonstrate how the drone interacts with the outside world. Examples include field scouting, surveying damage from natural disasters, drones used in commercial applications and settings, and drones used for structural engineering. Video should not exceed 5 minutes. Videos should be submitted to Amy Timmerman at atimmerman2@unl.edu by August 17th, 2020.

SELF-DESIGNED ROCKET

Exhibit Rules

1. Youth enrolled in Aerospace 2, 3, or 4 may exhibit in any class within this division.

SF-H850004 - Rocket (SF92) Any self-designed rocket with wooden fins and cardboard body tubes.

ROCKET/AEROSPACE - ANY UNIT

CF-H850903 - Rocket - Any Skill Level Rocket with plastic fins.

CF-H850904 - Rocket - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

DEPARTMENT H - COMPUTERS

DIVISION 860 - COMPUTER CLASSES

This category gives 4-H'ers a chance to display their knowledge of computers. Through participation in this category 4-H'ers will develop presentations that show judges their knowledge in the different aspects of computer science. Involvement in SET Computers gives participants a first-hand experience in modern technology. For help getting started with this project contact your county 4-H extension office.

Rules

- 1.** The name and county of each exhibitor should appear separately on the back of each board, poster, or article and on the front cover of the notebooks so owner of the exhibit may be identified if the entry tag is separated from the exhibit.
- 2.** Demonstration boards should include an overall title for the display, plus other necessary labeling.
- 3.** Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations, Results: what you learned.) All reports should be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.
- 4.** Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations. Results: What you learned. All reports should be computer generated and enclosed in a clear, plastic cover. The reports should be attached securely to the display.
- 5.** Please refer to the General Rules for the policy regarding firearms, items with a blade, and other related items.
- 6.** Premier 4-H Science Award is available in this area.
- 7. Team Entries:** To qualify for entry at the Nebraska State Fair team materials entered in H860008 - Digital Fabrication **must** clearly be the work of a team instead of an individual, and must have at least 50% of all team members enrolled

in 4-H. Additionally, all enrolled 4-H members on the team should complete and attach an entry tag to the materials. A supplemental page documenting the individual contributions to the project should be included. The entry will be judged as a team, with all team members receiving the same ribbon placing.

For general rules see the [General Rules and Regulations Section of the Fair Book](#)

Eligibility

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.

Quota

County Fair Quota - For general rules see the [General Rules and Regulations Section of the Fair Book](#)

State Fair Quota - Refer to general rules for information regarding quota
<https://4h.unl.edu/fairbook/general/rules>

Scoresheets, Forms, and Contest Study Materials

Scoresheets, forms, contest study materials, and additional resources can be found at <http://go.unl.edu/ne4hcomputers>.

State Fair Special Award

Premier 4-H Science Award - Premier 4-H Science Award is available in this area. Visit here for more details <https://4h.unl.edu/fairbook/premier-science-award>

Resources

To find the youth and leader resources associated with this project area go to <https://4hcurriculum.unl.edu/>. Use the search box to search by curriculum area.

BOOTING UP - UNIT 1

CF-H860910 - Poster – Unit 1 - Create a poster on a lesson learned in Booting Up Unit 1. Examples might include: hardware, software programs, how to take care of a computer and operating systems. See General Information under Posters for size and other requirements.

COMPUTER MYSTERIES - UNIT 2

SF- H860001 - Computer Application Poster - (SF277) - 4-H exhibitor should use computer application to create a graphic notebook utilizing computer technology. 4-H'er may create any of the following: greeting card (5 different cards such as a birthday, wedding, anniversary, sympathy get well or other); a business card (3 cards for 3 different individuals and businesses); menu (minimum of 2 pages including short description of foods and pricing); book layout (I-book); promotional flyer (3 flyers promoting 3 different events); newsletter (minimum 2 pages); or other: examples such as precision farming or family business logo etc. This exhibit consists of a notebook (8.5x11 inches) which should include a (1) a detailed report describing: (a) the task to be completed, (b) the computer application software required to complete the task, (c) specific features of the computer application software necessary for completing the task (2) print out of your project. Project may be in color or black and white.

SF- H860002 - Produce a Computer Slideshow Presentation - (SF276) - Using presentation software. All slide shows for state fair should be emailed to Amy Timmerman atimmerman2@unl.edu before August 15. Files must be saved in a PC compatible format with county name and last name of participant before emailing. A notebook with a printout of all the slides should be submitted. Slideshow should include a minimum of 10 slides and no more than 25. Incorporate appropriate slide layouts, graphics, animations, and audio (music or voice and transition sounds do not count). Each slide should include notes for a presenter. All slideshows must be uploaded.

COMPUTER MYSTERIES - UNIT 3

SF-H860003 - Produce an Audio/Video Computer Presentation - Unit 3 – (SF276) - Using presentation software a 4-H exhibitor designs a multimedia computer presentation on one topic related to youth. The presentation should be at least 2 minutes in length and no more than 5 minutes in length, appropriate graphics, sound and either a video clip, animation or voice over and/or original video clip. The presentation must be able to be played and viewed on a PC using Windows Media Player, Real Player, iTunes or QuickTime Player.

SF-H860004 - How to STEM (Science, Technology, Engineering and Math) Presentation - Unit 3 – (SF276) - Youth design a fully automated 2 to 5 minute 4-H "how to" video. Submissions should incorporate a picture or video of the 4-H'er, as well as their name (first name only), age (as of January 1 of the current year), years in 4-H, and their personal interests or hobbies. Videos should be

designed for web viewing. Any of the following formats will be accepted: .mpeg, .rm, .wmv, .mp4, .mov, .ppt, or .avi.

SF-H860005 - Create a Web Site/Blog or App - Unit 3 – (SF275) - Design a simple Web site/blog or app for providing information about a topic related to youth using either software programs such as an HTML editor like Microsoft's FrontPage or Macromedia's Dreamweaver, and image editor like IrfanView or GIMP OR online using a WIKI such as Google Sites. If the Web site, Blog, or App isn't live include all files comprising the Web site, Blog or App should be submitted on a CD-ROM in a plastic case along with the explanation of why the site was created. If developed using a WIKI or other online tool include a link to the website in the explanation of why the site was created.

SF-H860006 - 3D PRINTING - Unique Items - Unit 3 – (SF1050) - 3D printing uses plastic or other materials to build a three-dimensional (3D) object for a digital design. Youth may use original designs or someone else's they have re-designed in a unique way. Exhibits will be judged based on the motivation and/or problem identified. For example, 3D objects printed as part of the design process for robot or other engineering project or cookie cutter. Must include design notebook with motivation or problem statement the prototype was 3D printing will include a notebook with the following:

1. Define motivation/problem solved
2. Software used
3. Document purpose of material and print settings
4. Material choice (PLA, PVA, ABS, etc.)
5. In-fill density
6. Moving parts

SF-H860007 - 3D Pen Creation - Unit 3 – (SF1050) - 3D pens rapidly melt and cool plastic filament allowing the 4-Her to draw in 3D. Youth may use original designs or use a template to create their 3D item. Exhibits will be judged based on the complexity of the design and shape. 3D pen creation will include a notebook with the following:

1. Copy of the template if used and description of any changes the youth created.
2. If no template used – an explanation of how the creation was built.
3. Must include paragraph of what the youth learned while creating their project (i.e. way to improve their next creation)
4. Paragraph on how 3D pens impact Science Engineering and Technology

SF-H860008 – Maker Space/Digital Fabrication - Unit 3 – (SF1050) - This project is a computer generated project created using a laser cutter, vinyl cutter, heat press or CNC router. Vector or 3D based software such as CorelDRAW or Fusion 360 would be an example of an appropriate software used to create your finished project. Project should include a notebook with the following:

1. What motivated you to create this project
2. Software and equipment used
3. Directions on how to create the project
4. Prototype of plans
5. Cost of creating project
6. Iterations or modifications made to original plans
7. Changes you would make if you remade the project

COMPUTERS - ANY UNIT

CF-H860900 - Digital Photo - Enhanced and/or Manipulated Photo – Any Unit - entry will consist of either digital photo or scanned photo with both before and after photos showing enhancement OR **Manipulated Photo**. A series of at least 3 photos that you have manipulated of either digital photo or scanned photo. Ask for permission if you are using a photo of a person or a photo that you did not take. Include under a plastic cover information stating what you did to enhance/manipulate the picture. Avoid the use of copyright materials.

CF-H860901 - E-Mail; E-Mail with Attachment; and/or E-Mail with Digital Photo Attachment – Any Unit - Exhibit should include the steps taken to send the e-mail and how you can benefit by using e-mail. Photo may be printed on computer paper - does not need to be printed on photo quality paper.

CF-H860902 - Internet Exploration – Any Unit - Compare 3 different internet sites to see if the information is correct; is it researched, cited, etc. Highlight the different information on the sites; explain how this will change the way you look at sites and the information.

CF-H860903 - Build Your Own Computer – Any Unit - (one component only) Exhibit will be a notebook (8.5x11 inches) that includes a (1) cover page, (2) detailed report (2-3 pages) describing a specific computer component, (a) describe the component's purpose (b) how it is used, (c) the location (d) why components were chosen (e) cost of component from more than one source, and (3) pictures and supporting materials.

CF-H860904 - Write A Software Program – Any Unit - This project allows a 4-H'er to demonstrate his or her skills in writing a computer program using a common programming language. The program must demonstrate the use of data files and subroutines. It should demonstrate a high degree of organization and quality suitable for distribution to the general public. This exhibit consists of a notebook (8.5x11) which should include these parts: (1) a cover page, (2) a report including: (a) what the software can do, (b) why you wrote the software, (c) what features are included in the software, (d) how you will use the program in the future, (3) a flow chart in block diagram form, and (4) an example of input and output.

CF-H860905 - App Smashing – Any Unit - Create a description (poster or report) of the app's used and how they were combined to feature the final product through print or digital media. If using digital media, bring the device and poster/report to demonstrate to the judge.

CF-H860906 - What's Up with Smart Phones – Any Unit - Create a report or poster that addresses one or more of the following questions: 1) What features do you use on your phone and why? 2) What are commonly used apps?

CF-H860907 - Social Media – Any Unit - Create a report or poster that addresses one or more of the following questions: 1) What are the risks/dangers associated with using social media? 2) What are the advantages of using social media? 3) Why do you choose certain social media over others?

CF-H860908 - Take the Technology to Fair – Any Unit - Create a QR code, Aurasma Aura or similar interactive technology to be displayed at the county fair highlighting a 4-H project area. For example: an overview of the horse project, entomology project etc. Please provide the code or Aurasma image and your title in a 5x7 inch photo frame (without the glass but with a hinged easel backing for display).

CF-H860909 - Computers - Other - Examples include: Original Story with Original or Clipart Illustrations - printed in book format; 6 Original Designed Greeting Cards (for Different Occasions/Holidays with a variety of folds and designs in a protective cover); Original Drawing (either black and white or color); Poster (either black and white or color); Promotional Flyer (either black and white or color; whole page or folded); Vacation Plans; Power Point (or similar program) Presentation; Internet Web Site Creation; Teaching Aids; Computer Designed T-Shirt. Create on paper no larger than 8½ x 11 inches in size. Remember to give credit when needed. Include a report explaining how you made your exhibit; program used, etc.

DEPARTMENT H - ELECTRICITY

In this category 4-H'ers have the opportunity to create informational exhibits about the different aspects of electricity. Through involvement in this category 4-H'ers will be better educated about electricity and be able to present their knowledge to others. For more resources and materials in this category refer to the resource section at the bottom of the page.

Rules

1. The name and county of each exhibitor should appear separately on the back of each board, poster, or article and on the front cover of the notebooks so owner of the exhibit may be identified if the entry tag is separated from the exhibit.

2. Several classes require a display board which should be a height of 24 inches and not to exceed 1/4-inch thickness. A height of 24 7/8 inches is acceptable to allow for the saw kerf (width) if two 24 inch boards are cut from one end of a 4 foot by 8-foot sheet of plywood. Nothing should be mounted within 3/4 inch of the top or bottom of the board. (Example: Woodworking & Electricity.)

- Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays.
- Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.
- Demonstration boards should include an overall title for the display, plus other necessary labeling.
- Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations, Results: what you learned. All reports should be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.

For general rules see the [General Rules and Regulations Section of the Fair Book](#)

Eligibility

Exhibits must have received a purple ribbon at the county fair to advance to State Fair.

Quota

County Fair Quota - For general rules see the [General Rules and Regulations Section of the Fair Book](#)

State Fair Quota - Refer to general rules for information regarding quota
<https://4h.unl.edu/fairbook/general/rules>

Scoresheets, Forms, and Contest Study Materials

Scoresheets, forms, contest study materials, and additional resources can be found at <https://go.unl.edu/ne4helectricity>.

Special Awards

Premier 4-H Science Award is available in this area. Visit here for more details
<https://4h.unl.edu/fairbook/premier-science-award> Resources

To find the youth and leader resources associated with this project area go to <https://4hcurriculum.unl.edu/>. Use the search box to search by curriculum area.

DIVISION 870 - ELECTRICITY CLASSES

MAGIC OF ELECTRICITY - UNIT 1

CF-H870900 - Bright Lights - Create your own flashlight using items found around your house. Flash lights should be made out of items that could be recycled or reused. No kits please.

CF-H870901 - Control the Flow – Make a switch. Use the following items: D cell battery, battery holder, insulated wire, 2 or 2.5 volt light bulb, bulb holder, paper clip, cardboard, and two brass paper fasteners to create a circuit that you can open and close.

CF-H870902 - Conducting Things – Make a circuit with a switch and a light bulb that can be used to test different household items for their ability to act as an insulator or conductor. You must find five items that are conductors and five items that are insulators. Create a table that illustrates your results.

CF-H870903 - Is There a Fork in the Road – Use the following items to construct one parallel and one series circuit. Items: D cell battery, battery holder, insulated wire, bulb holder and a 2 or 2.5 volt light bulb.

CF-H870904 - Electricity Unit 1 - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

INVESTIGATING ELECTRICITY - UNIT 2

CF-H870905 - Case of the Switching Circuit – Use the following items: two D cell batteries, two battery holders, light bulb, bulb holder, a 3 inch by 6 inch piece of cardboard, six brass paper fasteners and approx. two feet of 24 gauge insulated wire to build a three way switch. Write a short essay or create a poster that illustrates how three way switches function.

CF-H870906 - Rocket Launcher – Construct a rocket launcher out of the following materials: a plastic pencil box that is at least 4 inches by 8 inches, single pole switch, single throw switch, normally-open push button switch, 40 feet of 18 or 22 gauge stranded wire, 4 alligator clips, 2- by 6- board 6 inches long, 1/8 inch diameter metal rod, rosin core solder, soldering iron or gun, wire stripper, small crescent wrench, pliers, small Phillips and straight blade screwdrivers, drill, 1/8 inch and 1/4 inch drill bits, rocket engine igniters, additional drill bits matched to holes for two switches. You must successfully build a rocket launcher and light two rocket igniters with your launcher. You DO NOT have to actually fire a rocket off of the launcher. Create a poster using photographs to show the “step by step process” you used to build your launcher.

CF-H870907 - Stop the Crime – Build an ALARM using the following materials: On-off push button switch, mercury switch, buzzer-vibrating or piezoelectric, 9-volt battery, 9-volt battery holder, 4 inch by 4 inch by 1/8 inch Plexiglas board to mount circuit on; rosin core solder, soldering gun/iron, two feet of 22 gauge wire, wire strippers, hot glue sticks, hot glue gun and a plastic box with a lid to mount your alarm circuit on. Create a poster using photographs to show the “step by step process” you used to build your alarm.

CF-H870908 - Electricity Unit 2 - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

WIRED FOR POWER – UNIT 3

SF-H870001 - Electrical Tool/Supply Kit – (SF224) - Create an electrical supply kit to be used for basic electrical repair around the house. Include a brief description of each item and its use. Container should be appropriate to hold items.

SF-H870002 - Lighting Comparison – (SF225) - Display studying the efficiency of various lighting (incandescent, fluorescent, halogen, Light Emitting Diodes, etc.). Exhibit could be a poster display, or an actual item.

SF-H870003 - Electrical Display/Item – (SF226) - Show an application of one of the concepts learned in the Wired for Power project. Examples include: re-wiring or building a lamp, re-wiring or making a heavy duty extension cord or developing an electrical diagram of a house. Exhibit could be a poster display, or an actual item.

SF-H870004 - Poster – (SF227) - Poster should exemplify one of the lessons learned in the Wired for Power Project. Posters can be any size up to 28" by 22".

CF-H870909 - Electricity Unit 3 - Other – Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

ELECTRONICS - UNIT 4

SF-H870005 - Electrical/Electronic Part Identification – (SF228) - Display different parts used for electrical/electronic work. Exhibit should show the part (either picture or actual item) and give a brief description, including symbol of each part and its function. Display should include a minimum of 10 different parts.

SF-H870006 - Electronic Display – (SF229) - Show an application of one of the concepts learned in the Electronics project. Examples include: components of an electronic device (refer to p. 35 of the Electronic manual).

SF-H870007 - Electronic Project –(SF230) - Exhibit an electronic item designed by the 4-H'er or from a manufactured kit that shows the electronic expertise of the 4-H'er. Examples include: a radio, a computer, or a volt meter.

SF-H870008 – Poster – (SF231) - Poster should exemplify one of the lessons learned in the Entering Electronics Project. Posters can be any size up to 28" by 22".

CF-H870910 - Electricity Unit 4 - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

DEPARTMENT H - ROBOTICS

This category involves the many different aspects of Robotics. Participants will learn more about how robots are designed and developed as well as the mechanical and electronic elements of robots. Involvements in SET Robotics gives participants a first-hand experience in modern technology. For more resources and materials in this category refer to the resource section.

Rules

1. The name and county of each exhibitor should appear separately on the back of each board, poster, or article and on the front cover of the notebooks so the owner of the exhibit may be identified if the entry tag is separated from the exhibit.
2. Several classes require a display board which should be a height of 24 inches and not to exceed 1/4-inch thickness. A height of 24 7/8 inches is acceptable to allow for the saw kerf (width) if two 24 inch boards are cut from one end of a 4 foot by 8-foot sheet of plywood. Nothing should be mounted within 3/4 inch of the top or bottom of the board. (Example: Woodworking & Electricity.)
3. Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays.
4. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.
5. Demonstration boards should include an overall title for the display, plus other necessary labeling.

6. Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations, Results: what you learned. All reports should be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.

For general rules see the [General Rules and Regulations Section of the Fair Book](#)

Eligibility

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.

Quota

County Fair Quota - For general rules see the [General Rules and Regulations Section of the Fair Book](#)

State Fair Quota - Refer to general rules for information regarding quota
<https://4h.unl.edu/fairbook/general/rules>

Scoresheets, Forms, and Contest Study Materials

Scoresheets, forms, contest study materials, and additional resources can be found at <http://go.unl.edu/ne4hrobotics>.

Special Awards

Premier 4-H Science Award is available in this area. Visit here for more details
<https://4h.unl.edu/fairbook/premier-science-award>

Resources

To find the youth and leader resources associated with this project area go to <https://4hcurriculum.unl.edu/>. Use the search box to search by curriculum area.

DIVISION 861 - ROBOTICS CLASSES

Exhibit Rules

1. Youth enrolled in Virtual Robotics, Junk Drawer Robotics (Levels 1, 2, or 3), or Robotics Platforms may exhibit in any class within this division.

2. Team Entries: To qualify for entry at the Nebraska State Fair team materials entered in robotics classes that are clearly the work of a team instead of an individual must have at least 50% of all team members enrolled in 4-H. Additionally, all enrolled 4-H members on the team should complete and attach an entry tag to the materials. A supplemental page documenting the individual contributions to the project should be included. The entry will be judged as a team, with all team members receiving the same ribbon placing.

3. Creating a video of your robot in action would be helpful for the judges but is not mandatory. Present as a CD Rom with your robot entry.

SF-H861001 - Robotics Poster – (SF236) - Create a poster (14" X 22") communicating a robotics theme such as "Robot or Not", "Pseudocode", "Real World Robots", "Careers in Robots", "Autonomous Robotics", "Precision Agriculture" or a robotic topic of interest to the 4-H'er

SF-H861002 - Robotics Notebook – (SF237) - Explore a robotics topic in-depth and present your findings in a notebook. Documentation should include any designs, research, notes, pseudocode, data tables or other evidence of the 4-H'ers learning experience. The notebook should contain at least three pages. Topics could include a programming challenge, a programming skill, calibration, sensor exploration, or any of the topics suggested in Class 1.

SF-H861003 - Robotics Video – (SF238) - This class should be displayed in a notebook. The notebook should include a video clip on a CD/DVD that demonstrates the robot performing the programmed function. Include your pseudo code and screenshots of the actual code with a written description of the icon/command functions. All videos for state fair should be emailed to Amy Timmerman atimmerman2@unl.edu before August 15. Files must be saved in a PC compatible format with county name and last name of participant before emailing.

SF-H861004 - Robotics /Careers Interview – (SF239) - Interview someone who is working in the field of robotics and research the career in robotics. Interviews can either be written or in a multimedia format (CD/DVD). Written interviews should be in a notebook. Written reports should be 3 to 5 pages, double spaced, 12 point font, and 1" margins. Multimedia reports should be between 3 to 5 minutes in length.

SF-H861005 - Robotics Sensor Notebook – (SF241) - Write pseudo code which includes at least one sensor activity. Include the code written and explain the code function.

SF-H861006 - Build a Robot (may use kit) – (SF243) - Include a robot and notebook including the pseudocodes for at least one program you have written for the robot, the robots purpose, and any challenges or changes you would make in the robot design or programming. If robot is more than 15” inches wide and 20” inches tall they may not be displayed in locked cases at State Fair. We recommend that you submit the project under SF-H861003 - Robotics Video. Junk Drawer Robotics do not qualify.

SF-H861007 - Kit Labeled Robot (cannot be programmed.) - (SF243) - This class is intended for explorations of robotic components such as arms or vehicles OR educational kits marketed as robots that do not have the ability to be programmed to “sense, plan and act.” The exhibit should include a project the youth has constructed, a description of what it does and an explanation of how it is similar to and different from a robot. If robot is more than 15” inches wide and 20” inches tall they may not be displayed in locked cases at State Fair. We recommend that you submit the project under SF-H861003 – Robotics Video.

SF-H861008 - 3D Printed Robotics Parts - (SF244) - This class is intended for youth to create parts through 3D printing, that help create their robot or aid the robot in completing a coded function. Project should include notebook describing the process used to create the project, describe the success of your designed piece (did it work), intended use of the product and the modifications made to the item.

CF-H861900 - Robotics - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

DEPARTMENT H - GEOSPATIAL

SET Geospatial is a diverse category that includes a variety of exhibits 4-H'ers can get involved in. Through participation in this category 4-H'ers will gain more knowledge about Nebraska's rich history and diverse geography. Take close note of the rules to ensure your exhibit qualifies. For more resources and materials in this category refer to the resource section.

Rules

1. The name and county of each exhibitor should appear separately on the back of each board, poster, or article and on the front cover of the notebooks so owner of the exhibit may be identified if the entry tag is separated from the exhibit.
2. Several classes require a display board which should be a height of 24 inches and not to exceed 1/4-inch thickness. A height of 24 7/8 inches is acceptable to allow for the saw kerf (width) if two 24 inch boards are cut from one end of a 4 foot by 8-foot sheet of plywood. Nothing should be mounted within 3/4 inch of the top or bottom of the board. (Example: Woodworking & Electricity.)
3. Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays.
4. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.
5. Demonstration boards should include an overall title for the display, plus other necessary labeling.
6. Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations, Results: what you learned. All reports should be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.
7. Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations. Results: What you learned. All reports should be computer generated and enclosed in a clear, plastic cover. The reports should be attached securely to the display.

For general rules see the [General Rules and Regulations Section of the Fair Book](#)

Eligibility

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.

Quota

County Fair Quota - For general rules see the [General Rules and Regulations Section of the Fair Book](#)

State Fair Quota - Refer to general rules for information regarding quota
<https://4h.unl.edu/fairbook/general/rules>

Scoresheets, Forms, and Contest Study Materials

Scoresheets, forms, contest study materials, and additional resources can be found at <https://go.unl.edu/ne4hgeo>.

Special Awards

Premier 4-H Science Award is available in this area. Visit here for more details
<https://4h.unl.edu/fairbook/premier-science-award>.

Resources

To find the youth and leader resources associated with this project area go to <https://4hcurriculum.unl.edu/>. Use the search box to search by curriculum area.

DIVISION 880 - GPS CLASSES

Exhibit Rules

1. Youth enrolled in Geospatial may exhibit in any class within this division.

SF-H880001 - Poster – (SF299) - Create a poster (not to exceed 14" x 22") communicating a GPS theme such as How GPS or GIS works, Careers that use GPS or GIS, How to use GPS, What is GIS, GPS or GIS in Agriculture, Precision Agriculture, or a geospatial topic of interest.

SF-H880002 - 4-H Favorite Places or Historical Site Poster – (SF272) - The 4-H exhibitor identifies a favorite place or historical site (including grave sites) in Nebraska. Exhibit should include latitude and longitude, digital picture, and local area map. Poster size should not exceed 14" X 22".

SF-H880003 - GPS Notebook – (SF300) - Keep a log of at least 5 places visited using a GPS enabled device. At least one site should be from a community other than where you live. For each site, record the latitude, longitude and elevation. Also include a description of the site, a paragraph explaining what was interesting about the site or finding it. Photos of each site and/or cache are optional but encouraged.

SF-H880004 - Geocache - . (SF301) - Assemble a themed geocache. Each geocache should be a water-tight container. It should include a log book and pencil for finders to log their visits and may include small trinket, geocoins, etc. for the finders to trade. Documentation should include a title, teaser description and the geographic coordinates of intended placement. **Register the site at geocaching.com, geocaching.com, include a print-out of its registry.** The entry may include a photograph of the cache in its intended hiding place

SF-H880005 - Agriculture Precision Mapping – (SF302) - 4-Hers will assemble a notebook that will include a minimum of 2 digital copies of various data layers that can be used in precision agriculture to identify spatial patterns and/or correlations (printed copies of websites were applications can be purchased is acceptable) A report of how the analysis of the various data will be used to make a management decision.

SF-H880006 - 4-H History Map/Preservation - Preserve 4-H History: Nominate a Point of Interest for the 4-H History Map Project. Include copy of submitted form in folder or notebook. To nominate a site for the 4-H history map please go to: <http://arcg.is/1bvGogV>. For more information about 4-H history go to http://4hhistorypreservation.com/History_Map/. For a step by step video on nominating a point, please go to this link: <http://tinyurl.com/nominate4h> Write a brief description of historical significance of 4-H place or person (a minimum of one paragraph).

SF-H880007 - GIS Thematic Map – Using any GIS software, create a thematic map. Thematic maps can utilize any subject of interest to the 4-H'er. Example map would be Amelia Earhart's or Sir Francis Drake's voyage population density maps, water usage "x 11" maps or 4-H project in Nebraska. Create GIS Map using data from books, and or internet. Use reliable data, (U.S. Center or U.S. Census Bureau etc.) Map any size from 8.5" x 11" up to 36" x 24", which should include Title, Base Map, Neat Line, North Arrow, and Legend. Identify the source of your information on the back of the map.

SF-H880900 - Geospatial - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

DEPARTMENT H – SET PHYSICS/POWER OF WIND

This category provides 4-H'ers a way to present their ideas about energy. Through participation in this category 4-H'ers will learn more about physics, friction, energy, and elasticity. In addition, participants will make a display to go along with their findings. For more resources and materials in this category refer to the resource section. For help getting started with this project contact your county 4-H office.

Rules

1. The name and county of each exhibitor should appear separately on the back of each board, poster, or article and on the front cover of the notebooks so owner of the exhibit may be identified if the entry tag is separated from the exhibit.
2. Several classes require a display board which should be a height of 24 inches and not to exceed 1/4-inch thickness. A height of 24 7/8 inches is acceptable to allow for the saw kerf (width) if two 24 inch boards are cut from one end of a 4 foot by 8-foot sheet of plywood. Nothing should be mounted within 3/4 inch of the top or bottom of the board. (Example: Woodworking & Electricity.)
3. Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays.
4. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.
5. Demonstration boards should include an overall title for the display, plus other necessary labeling.
6. Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations, Results: what you learned. All reports should be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.

For general rules see the [General Rules and Regulations Section of the Fair Book](#)

Eligibility

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.

Scoresheets, Forms, and Contest Study Materials

Scoresheets, forms, contest study materials, and additional resources can be found at <https://go.unl.edu/ne4hphysics-powerofwind>.

Special Awards

Premier 4-H Science Award is available in this area. Visit here for more details <https://4h.unl.edu/fairbook/premier-science-award>

Resources

To find the youth and leader resources associated with this project area go to <https://4hcurriculum.unl.edu/>. Use the search box to search by curriculum area

DIVISION 900 – PHYSICS/POWER OF WIND CLASSES

SF-H900001 - Create and Compare Energy Resources Poster – (SF307) - Poster should explore 2 alternative/renewable energy resources. Compare and contrast the 2 resources including two of the following information: amount of energy created, costs of production, usability of the energy, pros/cons of environmental impacts, etc. Posters can be any size up to 28" by 22."

SF-H900002 - Experiment Notebook – (SF305) - Notebook will explore the scientific method involving alternative/renewable energy sources. Information required. 1.) Hypothesis 2.) Research 3.) Experiment 4.) Measure 5.) Report or Redefine Hypothesis.

SF-H900003 - Solar as Energy Display – (SF308) - Item should be the original design of the 4-Her. Include the item, or a picture if item is in excess of 6' tall or 2' X 2'. Include a notebook of why the item was designed and how it harnesses the power of sun. Examples include solar ovens, solar panels, etc.

SF-H900004 - Water as Energy Display – (SF308) - Item should be the original design of the 4-Her. Include the item, or a picture if item is in excess of 6' tall or 2' X 2'. Include a notebook of why the item was designed and how it harnesses the power of water.

SF-H900005 - Wind as Energy Display – (SF308) - Item should be the original design of the 4-H'er. Include the item, or a picture if item is in excess of 6' tall or 2' X 2'. Include a notebook of why the item was designed and how it harnesses the power of wind.

SF-H900006 - Other Nebraska Alternative Energy- (SF306) - Notebook should explore Nebraska an alternative energy source besides wind, water, and solar power. Include information on type of power chosen, infrastructure for distribution, what resources are needed to create this alternative resource, cost of production, and potential uses of bio-products.

CF-H900900 - Alternative/Renewable Energies - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit. Examples include wind poster, mini turbine blade energy display, wind art or literature written piece, etc.

DEPARTMENT H – WOODWORKING

In this category 4-H'ers have the opportunity to create exhibits about varying levels of woodworking. In addition, participants can also create informational exhibits about their woodworking projects. Through involvement in this category 4-H'ers will be better educated about the topic and better their woodworking skills. For more resources and materials in this category refer to the resource section.

Rules

1. The name and county of each exhibitor should appear separately on the back of each board, poster, or article and on the front cover of the notebooks so owner of the exhibit may be identified if the entry tag is separated from the exhibit.
2. Several classes require a display board which should be a height of 24 inches and not to exceed 1/4-inch thickness. A height of 24 7/8 inches is acceptable to allow for the saw kerf (width) if two 24 inch boards are cut from one end of a 4 foot by 8-foot sheet of plywood. Nothing should be mounted within 3/4 inch of the top or bottom of the board. (Example: Woodworking & Electricity.)

3. Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays.
4. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.
5. Demonstration boards should include an overall title for the display, plus other necessary labeling.
6. Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations, Results: what you learned. All reports should be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.

Eligibility

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.

Quota

County Fair Quota - For general rules see the [General Rules and Regulations Section of the Fair Book](#)

State Fair Quota - Refer to general rules for information regarding quota
<https://4h.unl.edu/fairbook/general/rules>

Scoresheets, Forms, and Contest Study Materials

Scoresheets, forms, contest study materials, and additional resources can be found at <http://go.unl.edu/ne4hwoodworking>.

Special Awards

Premier 4-H Science Award is available in this area. Visit here for more details
<https://4h.unl.edu/fairbook/premier-science-award>

Resources

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DIVISION 911 - WOODWORKING CLASSES

MEASURING UP - UNIT 1

CF-H911900 - Woodworking Article - Unit 1 - Item made using skills learned in the Measuring Up Project Guide. Examples include: recipe holder, stilts or other skill level appropriate item. Items should be entered with construction plans.

CF-H911901 - Woodworking - Unit 1 - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

MAKING THE CUT - UNIT 2

CF-H911902 - Woodworking Article – Unit 2 - Item made using skills learned in the Making The Cut project guide. Examples include birdhouse, foot stool, napkin or letter holder. Items should be entered with construction plans.

CF-H911903 - Woodworking - Unit 2 - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

NAILING IT TOGETHER - UNIT 3

Exhibit Rules

1. The ability to build objects as designed by another person is an important life skill. Professional woodworkers often are hired to build objects to exacting specifications as laid out in a written plan.

2. Requirements:

- a. All articles exhibited must include a plan (with drawings or sketch or blueprints) stating dimensions and other critical instructions a builder would need to know how to build the project.
- b. Plans may include narrative instructions in addition to the dimension drawings and include any alternations to the original plan. Part of the score depends on how well the project matches the plans. If the plans are modified, the changes from the original need to be noted on the plans.
- c. All plans used for making the article must be securely attached and protected by a clear plastic cover.

- d. 4-H'ers must be in Unit 3 or Unit 4 for the exhibit to be considered for State Fair.
- e. All projects must have appropriate finish. If the project (i.e. picnic tables, wishing wells, swings, chairs, bridges, doghouses, etc.) is designed to be used outside, it will be displayed outside.

All outside projects MUST have entry tag and supporting information placed in a protective bag to prevent damage from weather events such as rain and be ATTACHED to projects with string, zip ties, etc.

SF-H911001 - Woodworking Article – (SF91) - Item should be made using either joints, hinges, dowels, or a dado joining and using skills learned in the Nailing It Together manual. Item is required to be appropriately finished. Examples include: bookcase, coffee table or end table.

SF-H911002 - Woodworking Display - (SF91) - Display exemplifying one of the principles learned in the Nailing It Together Project. Examples include: measuring angles, wood lamination and joint types.

SF-H911003 - Recycled Woodworking Display (SF91) - Article made from recycled, reclaimed or composite wood. Article must be **appropriately finished and/or sealed** and utilize one or more woodworking techniques **from page 2 of the Unit 3 manual**. Exhibit must include the woodworking plan and a minimum one page report of how the engineering design process was used to develop the woodworking plan.

Engineering Design Process

1. State the problem (Why did you need this item?)
2. Generate possible solutions (How have others solved the problem? What other alternatives or designs were considered?)
3. Select a solution (How does your solution compare on the basis of cost, availability, and functionality?)
4. Build the item (What was your woodworking plan, and what processes did you use to build your item?)
5. Evaluate (How does your item solve the original need?)
6. Present results (How would you do this better next time?)

SF-H911004 - Composite Wood Project - (SF96) - 60% of the project must be wood and 40% made from other materials such as metal, rubber, resin, etc. All plans and plan alternations must be attached to the article. Protect plans with a cover. If project is designed to be outside, it is required to have appropriate outdoor finish because project may be displayed outside.

SF-H911005 - Outdoor Wood Project made with Treated Wood - (SF97) - Treated wood projects DO NOT have to have a finished coating. All plans and plan alternations must be attached to the article. Protect plans with a cover. If project is designed to be outside. Examples include picnic tables, planters, outdoor furniture, etc.

CF-H911904 - Woodworking Unit 3 - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

FINISHING UP - UNIT 4

Exhibit Rules

1. The ability to build objects as designed by another person is an important life skill. Professional woodworkers often are hired to build objects to exacting specifications as laid out in a written plan.
2. **Requirements:**
 - a. All articles exhibited must include a plan (with drawings or sketch or blueprints) stating dimensions and other critical instructions a builder would need to know how to build the project.
 - b. Plans may include narrative instructions in addition to the dimension drawings and include any alternations to the original plan. Part of the score depends on how well the project matches the plans. If the plans are modified, the changes from the original need to be noted on the plans.
 - c. All plans used for making the article must be securely attached and protected by a clear plastic cover.
3. 4-H'ers must be in Unit 3 or Unit 4 for the exhibit to be considered for State Fair. All projects must have appropriate finish.
4. If the project (i.e. picnic tables, wishing wells, swings, chairs, bridges, doghouses, etc.) is designed to be used outside, it will be displayed outside.

SF-H911006 - Woodworking Article – (SF91) - Item made using skills learned in the Finishing It Up Project. Examples include: dovetailing, making a pen using lathe, overlays, using a router, etc. Item is required to be appropriately finished.

SF-H911007 - Woodworking Display – (SF91) - Display exemplifying one of the principles learned in the Finishing It Up Project. Examples include: career opportunities, types of finishes, or dovetailing.

SF-H911008 - Recycled Woodworking Display – (SF91) - Article made from recycled, reclaimed or composite wood. Article must be appropriately finished and/or sealed and utilize one or more woodworking techniques from page 2 of the Unit 4 manual. Exhibit must include the woodworking plan and a minimum one-page report of how the design and engineering process was used to develop the woodworking plan. 1. State the problem (Why did you need this item?) 2. Generate possible solutions (How have others solved the problem? What other alternatives or designs were considered?) 3. Select a solution (How does your solution compare on the basis of cost, availability, and functionality?) 4. Reason for article finish (What type of finish, how did you finish or why you choose this finish?) 5. Build the item (What was your woodworking plan, and what processes did you use to build your item?) 6. Evaluate (How does your item solve the original need?) 7. Present results (How would you do this better next time?)

CF-H911905 - Woodworking Unit 4 - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

DEPARTMENT H - WELDING

This category helps 4-H'ers learn the basics of welding. In addition, 4-H'ers get the opportunity to present their knowledge on the topic and display what they have made. Involvement in SET Welding gives participants a first-hand experience in a skill that can be used for a lifetime. For help getting started with this project contact your county 4-H office.

Rules

1. The name and county of each exhibitor should appear separately on the back of each board, poster, or article and on the front cover of the notebooks so owner of the exhibit may be identified if the entry tag is separated from the exhibit.
2. Several classes require a display board which should be a height of 24 inches and not to exceed 1/4-inch thickness. A height of 24 7/8 inches is acceptable to allow for the saw kerf (width) if two 24 inch boards are cut from one end of a 4 foot by 8-foot sheet of plywood. Nothing should be mounted within 3/4 inch of the top or bottom of the board. (Example: Woodworking & Electricity.)
3. Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays.
4. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.
5. Demonstration boards should include an overall title for the display, plus other necessary labeling.
6. Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations, Results: what you learned. All reports should be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.

For general rules see the [General Rules and Regulations Section of the Fair Book](#)

Eligibility

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.

Quota

County Fair Quota - For general rules see the [General Rules and Regulations Section of the Fair Book](#)

State Fair Quota - Refer to general rules for information regarding quota
<https://4h.unl.edu/fairbook/general/rules>

Scoresheets, Forms, and Contest Study Materials

Scoresheets, forms, contest study materials, and additional resources can be found at <http://go.unl.edu/ne4hwelding>.

Special Awards

Premier 4-H Science Award is available in this area. Visit here for more details
<https://4h.unl.edu/fairbook/premier-science-award>

Resources

To find the youth and leader resources associated with this project area go to <https://4hcurriculum.unl.edu/>. Use the search box to search by curriculum area.

DIVISION 920 - WELDING CLASSES

Exhibit Rules

1. All welds exhibited in class 1 or 2 must be mounted on a 12" high x 15" long display board of thickness not to exceed 3/8". Attach each weld on a wire loop hinge or equivalent, so the judge can look at the bottom side of the weld when necessary. Each weld should be labeled with information stated 1) type of welding process (stick, MIG, TIG, Oxy-Acetylene, etc.) 2) kind of weld, 3) welder setting, 4) electrode/wire/rod size, and 5) electrode/wire/rod ID numbers. **Attach a wire to display board so it can be hung like a picture frame. No picture frame hangers accepted.** If no plans are included with welding article or welding furniture, item will be disqualified.

2. 4-H Welding Project Tips and Suggestions: Class 1

1. All welds should be made with the same electrode/wire/rod size and number.
2. Welds should be made only on one side of metal so penetration can be judged.
3. Welds should be cleaned with chipping hammer and wire brush. Apply a

coat of light oil (penetrating oil) to the metal to prevent rusting. Wipe off excess oil.

4. It is suggested that all welds be on the same size and thickness of metal. These pieces, referred to as coupons, should be 1.5 to 2 inches wide and 3.5 to 4 inches long. A good way to get this size is to buy new cold rolled strap iron and cut to length. The extra width is needed to provide enough metal to absorb the heat from the welding process and prevent the coupons from becoming too hot before the bead is completed. Narrower coupons will become very hot, making an average welder setting too cold at the bead start, just about right in the middle, and too hot at the end. The correct way to weld narrow strips is to make short beads and allow time to cool, however this project requires a full length bead.

5. Stick welding: Suggested coupon thickness - 1/4" if using 1/8" rod. Suggested rod-AC and DC straight or reverse polarity- first E-7014, second E-6013

6. MIG welding: Suggested coupon thickness - 1/4" if using .035 wire and 1/8" if using .023 wire

7. Oxy-Acetylene: Suggested coupon thickness - 1/8". Suggested rod- 1/8" mild steel rod 4-H

3. Welding Project Tips and Suggestions: Class 2

1. It is suggested that all welds be on same size and thickness of metal. These pieces are referred to as coupons. The welds can be on one coupon that is about 4" x 4" or on individual coupons that are about 2" x 4" inch and 1/4" thick. Suggested rods for this class of position welds for AC and DC straight or reverse polarity is, first E-6013, second E-7014 and E-6010 for DC reverse polarity only.

2. Welds should be cleaned with a chipping hammer and wire brush. Apply a coat of light oil (penetrating oil) to the metal to prevent rusting. Wipe off excess oil.

4 Welding Project Tips and Suggestions: Class 3 & 4

1. All welds should be cleaned and protected from rust with paint or light oil. Plans are to be complete enough that if they were given to a welding shop, the item could be made without further instructions. Bill of materials should include a cost for all items used including steel, electrodes, paint, wheels, etc.

All outside projects MUST have entry tag and supporting information placed in a protective bag to prevent damage from weather events such as rain and be ATTACHED to projects with string, zip ties, etc.

SF-H920001 - Welding Joints – (SF281) - A display of one butt, one lap and one fillet weld.

SF-H920002 - Position Welds – (SF281) - A display showing three beads welded in the vertical down, horizontal, and overhead positions.

SF-H920003 - Welding Article – (SF281) - Any shop article or piece of furniture where welding is used in the construction. 60% of item must be completed by 4-Her and notes regarding laser welding or machine welding must be included. All plans, plan alternations, and a bill for materials must be attached to the article. Protect plans with a cover. If project is designed to be outside it is required to have appropriate outdoor finish because project may be displayed outside.

SF-H92004 Welding Furniture – (SF281) - Any furniture with 75% welding is used in the construction. 60% of item must be completed by 4-Her and notes regarding laser welding or machine welding must be included. All plans, plan alternations, dimensions and a bill for materials must be attached to the article. Protect plans with a cover. If project is designed to be outside, it is required to have appropriate outdoor finish because project may be displayed outside.

SF-H920005 - Plasma Cutter/Welder Design – (SF279) - Plasma cutters/welders allowed for detailed design(s) to butt cut into metal. 4Hers will create a notebook describing the design process to create the “artwork” to butt cut into the metal. This exhibit does not come to the State Fair.

In the notebook include:

- A photo (front and back) of the finished project. Also include detailed photographs of the project to allow judges to examine cuts.
- Instructions on how the design was created, this allows for replication of the project.
- Lessons learned or improvements to the project.

SF-H92006 - Composite Weld Project - (SF280) - 60% of the project must be welded and 40% made from other materials such as wood, rubber, etc. All plans, plan alternations, and a bill for materials must be attached to the article. Protect plans with a cover. If project is designed to be outside, it is required to have appropriate outdoor finish because project may be displayed outside.

CF-H920900 - Welding - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

DEPARTMENT H - ENTOMOLOGY

Entomology exhibits give 4-H'ers the opportunity to demonstrate their knowledge about insects and insect displays. This category has multiple projects that allows 4-H'ers to progress over numerous years. For help getting started with this project contact your county 4-H extension office.

Rules

1. Specimens in display collections should be mounted properly and labeled with location, date of collection, name of collector, and order name. Follow mounting and labeling instructions in the Nebraska 4-H Entomology Manual. Boxes are preferred to be 12" high X 18" wide, and landscape orientation, so they fit in display racks. Purchase of commercially-made boxes is allowed. All specimens must be from the collector.

Eligibility

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.

Exhibitors may, and should, correct and update collections for competition at the State Fair.

Quota

County Fair Quota - For general rules see the [General Rules and Regulations Section of the Fair Book](#)

State Fair Quota - Refer to general rules for information regarding quota
<https://4h.unl.edu/fairbook/general/rules>

Scoresheets, Forms, and Contest Study Materials

Scoresheets, forms, contest study materials, and additional resources can be found at <https://go.unl.edu/ne4hentomology>.

Special Awards

Premier 4-H Science Award is available in this area. Visit here for more details
<https://4h.unl.edu/fairbook/premier-science-award>

Resources

To find the youth and leader resources associated with this project area go to <https://4hcurriculum.unl.edu/>. Use the search box to search by curriculum area.

DIVISION 800 - ENTOMOLOGY CLASSES

CF-H800900 - Killing Jar - relaxing jar and net (1st year only)

SF-H800001 - Entomology Display - 1st Year Project - (SF186) - Collection to consist of 25 of more different kinds (species) of insects representing at least 6 orders. Limit of one box.

SF-H800002 - Entomology Display - 2nd Year Project - (SF186) - Collection to consist of a minimum of 50 kinds (species) of insects representing at least 8 orders. Replace damaged or poorly mounted specimens. **At least 25 species must** be present from July 1 of the previous year. Limit 2 boxes.

SF-H800003 - Entomology Display - 3rd Year or More Project - (SF186) - Collection to consist of a minimum of 75 kinds (species) of insects representing at least 10 orders. Replace damaged or poorly mounted specimens. **At least 25 species must** be present from after July 1 of the previous year. Limit of 3 boxes.

SF-H800004 - Special Interest or Advanced Insect Display - (SF187) - Educational display developed according to personal interests and/or advanced identification capability. This also is an opportunity to highlight favorite insects in a creative arrangement. Insects should conform to pinning and mounting standards as in Classes 1-3 and be protected in an insect box. **Each** specialty display should include names of the insects, interesting information about them, and why the display was made. Advanced identification collections should have insects grouped with labels that correspond with identification level (e.g. family, genus, species). A specialty collection may consist of insects by **taxonomic** group (e.g. butterflies, grasshoppers, dragonflies, scarab beetles) or by **host, subject** or **habitat** (e.g. insect pests of corn, aquatic insects, insect mimicry, insect galls, insects from goldenrod, insect pollinators, etc.).

SF-H800005 - Insect Habitats - (SF186) - Habitats consist of any hand-crafted objects, made of natural or artificial material which are placed outdoors, and which promote or conserve insects in the environment. Insects may include bee pollinators, butterflies, beneficial insects, etc. A one-page report describing activities must accompany the exhibit.

SF-H800006 - Macrophotography – (SF189) - Subjects should be insects, spiders or other arthropods, or any nests, webs, or constructions they make. All exhibit prints should be either 8" x 10" or 8½" x 11" and mounted on rigid, black 11" X 14" poster or black matt board. Either orientation is acceptable. No frames or mat boards framing is allowed. A caption of a few sentences should explain the subject, and be printed on white paper and glued below the print on the poster or board.

SF-H800007 - Insect Poster/Display Exhibits – (SF190) - Exhibits can be posters or three-dimensional displays, and artistic creativity is encouraged. Posters should be no larger than 22" x 28". They should be instructional and can be attractive and have pictures, drawings, charts, or graphs. Posters and displays may show any aspect of insect life, habitat, or related conservation or management. Examples include life history and other facts about an insect; insect anatomy; how to manage insects in a farm, home, lawn, or garden setting; experiences rearing one kind of insect; survey of an important insect; insect behavior (ex. nesting, finding food, mobility, defenses, etc.); habitats (.e.g. forests, grasslands, wetlands, rivers, or lakes) and what insects are found there, etc. Three-dimensional displays, such as dioramas, sculptures, models or decorative boxes should have a page of explanatory information accompanying them and fit within a 22" x 28" area.

SF-H800008 - Reports or Journals – (SF191) - Reports and journals should be in a 3-ring binder. A report may be informational, that is, an original article about a favorite insect, a history of insect outbreaks, diseases caused by insects, insects as food, etc. Or, it may be a research report about an investigation or experiment done in a scientific manner. It then should have a basic introduction of the insect studied, methods used, observations, and results of the project. Tables, graphs and images are helpful to include. A journal is an observational study over a period of time with personal impressions. It may cover watching changes in kinds of butterflies over the summer, rearing a specific insect from egg to adult, managing a bee hive, observations of insects in a specific habitat, accounts of insect behavior in a forest or flower garden, etc.

CF-H800901 - Entomology - Other - Exhibit needs to relate to project area. You can add any additional information that you want the judge to know about your exhibit.

DEPARTMENT H - VETERINARY SCIENCE

The purpose of a Veterinary Science exhibit is to inform the public about a common health problem of animals or a veterinary science principle. Do not confuse veterinary science exhibit topics with animal husbandry or production topics.

Rules

1. A Veterinary Science exhibit may consist of a poster, notebook, or a display. The exhibit may represent material from any of the Veterinary Science projects including entry level exhibits from Unit I.
2. If photographs are to be part of the exhibit, remember that they will be viewed by the public. Make sure that the photographs are in good taste and will not be offensive to anyone. Graphic photographs of excessive bleeding, trauma or painful procedures are not appropriate. For exhibits related to veterinary surgical procedures, aseptic techniques need to be shown, for example, use of drapes, use of sterile procedures, wearing of gloves and other appropriate veterinary medical practices.
3. **First-Aid Kits:** Because of public safety concerns and risk of theft of first-aid kit contents (veterinary drugs/equipment) with perceived potential for drug abuse, **animal first aid kits containing any drugs or medications will be immediately disqualified and not displayed. First Aid kits wishing to include medication information should instead utilize written descriptions, photographs, drawings, computer generated print-outs or empty packaging of pharmaceuticals.**
4. **Veterinary Science Posters** - This exhibit presents the viewer with a design that is simple and direct, unlike a display that usually presents more information. A poster should not exceed 22" x 28" and may be either vertical or horizontal.
5. **Veterinary Science Displays** - A display may include but is not limited to: a 3-dimensional exhibit, a scale model, the actual product (for example: skeleton; teeth; samples of leather, fur, or dried skin damaged by disease or parasites) or a notebook. A display is not a poster. A display may be mounted on poster board not to exceed 22" x 28" or on 1/4" plywood or equivalent that does not exceed 24" high or 32" wide or in a three ring binder or another bound notebook format.

Eligibility

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.

Quota

County Fair Quota - For general rules see the [General Rules and Regulations Section of the Fair Book](#)

State Fair Quota - Refer to general rules for information regarding quota
<https://4h.unl.edu/fairbook/general/rules>

Scoresheets, Forms, and Contest Study Materials

Scoresheets, forms, contest study materials and additional resources can be found at <https://go.unl.edu/ne4hvetscience>.

Special Awards

Premier 4-H Science Award is available in this area Visit here for more details
<https://4h.unl.edu/fairbook/premier-science-award>

Resources

To find the youth and leader resources associated with this project area go to <https://4hcurriculum.unl.edu/>. Use the search box to search by curriculum area.

DIVISION 840 - VETERINARY SCIENCE CLASSES

Exhibit Rules

1. Appropriate Veterinary Science Topics:
 - Maintaining health
 - Specific disease information
 - Photographic display of normal and abnormal characteristics of animals
 - Animal health or safety
 - Public health or safety
 - Proper animal management to ensure food safety & quality
 - Efficient and safe livestock working facilities
 - Or a topic of the exhibitors choosing related to veterinary medicine or veterinary science

*Remember, since these are science displays, all references and information needs to be properly cited. Proper sources include but are not limited to: Professional journals and publications, professional AVMA accredited websites, interviews with Veterinarians and excerpts from Veterinary Educational Literature. *Plagiarism will*

result in a disqualification. Please study your topic and present the information to your audience in your own words.

SF-H840001 - 4-H Veterinary Science Large Animal Poster, Notebook or Display – (SF119)

SF-H840002 - 4-H Veterinary Science Small Animal/Pet Poster, Notebook or Display – (SF119)

CF-H840901 - Veterinary Science - Other - State where (page number) in the project manual that you got your idea for this project.