Self-Designed Rocket

H-850-004 Rocket: Any self-designed rocket with wooden fins and cardboard body tubes. For self designed rockets only, please include a digital recorded copy of one flight. In the documentation, please include a description of stability testing before the rocket was flown. Scoresheet SF92

Drones

H-850-005 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"

H-850-006 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. State Fair selected videos should be submitted to Amy Timmerman at atimmerman2@unl.edu by August 15, 2022. Videos should also be uploaded to a video streaming application and exhibitors must provide a hard copy OR code for viewing.

DEPARTMENT H – COMPUTERS

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.

Purple $2.50, Blue $2.50, Red $2.00, White $1.50

Division 860 – Computers

Refer to Engineering General Information.

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. Each individual is limited to one exhibit per class. All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair.
3. Demonstration boards should include an overall title for the display, plus other necessary labeling.
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 sould 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. Please refer to the General Rules for the policy regarding use of copywritten images.

Team Entries: To qualify for entry at the Nebraska State Fair team materials entered in H-860-007 - Maker Space/Digital Fabrication is 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.

Scoresheets, forms, and additional resources can be found at http://go.unl.edu/ne4hcomputers.

Booting Up - Unit 1

H-860-901 Create a poster on a lesson learned in Unit 1. Examples might include: hardware, software programs, how to take care of a computer and operating systems.

Computer Mysteries - Unit 2

H-860-001 Computer Application Notebook

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 (8.5"x11") 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. Scoresheet SF277

H-860-002 Produce a Computer Slideshow Presentation

Using presentation software, a 4-H exhibitor designs a multimedia computer presentation on one topic related to youth. All slide shows for state fair should be emailed to Amy Timmerman, atimmerman2@unl.edu, before August 15. The presentation can also be uploaded to a video streaming application and exhibitors must provide a hard copy QR code for viewing. The presentation must be able to be played and viewed on a PC using Windows Media Player, Real Player, iTunes or QuickTime player. A notebook with a printout of all of the slides should be submitted. 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. Scoresheet SF276

Computer Mysteries - Unit 3

H-860-003 Produce an Audio/Video Computer Presentation

Using presentation software a 4-H exhibitor designs a multimedia computer presentation on one topic related to youth. All presentations for State Fair should be emailed to Amy Timmerman atimmerman2@unl.edu before August 15. OR the presentation can also be uploaded to a video streaming application and exhibitors must provide a hard copy QR code for viewing. The presentation must be able to be played and viewed on a PC using Windows Media Player, Real Player, iTunes or QuickTime Player. A notebook with a printout of all the slides should be submitted. 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. Scoresheet SF276

H-860-004 How to STEM (Science, Technology, Engineering and Math) Presentation

Youth design a fully automated 2 to 5 minute 4-H "how to" video. Submissions should incorporate a picture or video of the 4-Her, 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 or may be uploaded to a video streaming application and exhibitors can provide a hard copy QR code for public viewing. Any of the following formats will be accepted: .mpeg, .rm, .wmv, .mp4, .mov, .ppt, or .avi. Scoresheet SF276

H-860-005 Create a Website/Blog or App

Design a simple website/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 website, blog, or app isn't live include all files comprising the Website, Blog or App should be submitted on a flash drive in a plastic case along with the explanation of why the site was created or may be shared through a hard copy share link or QR code for viewing. If developed using a WIKI or other online tool include a link to the website in the explanation of why the site was created. Scoresheet SF275

H-860-006 3-D Printing

3D printing uses plastic or other materials to build a three-dimensional (3D) object from a digital design (including 3D Pen Creation). Youth may use original designs or someone else's they have redesigned 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. Must include design notebook that addresses the following questions:

1. What was the motivation for your design or the problem you were solving with your design? ie. is your item a functional or decorative piece?
2. Please include a picture of original design, citation of designer/website OR if design is completely original (you created it using CAD software), then state that it's original. If item was not completely original, indicate what you did to the original design to modify it to better meet the design problem stated in #1 above. Its design was modified multiple times, please indicate what change was made with each modification, and what prompted the need for the change. I.e. I printed it and the design was too fragile, so I resliced the print to make thicker external walls, or to have a denser infill.
3. Define your process for designing/printing. What software and/or hardware was used (indicate

type of 3D printer or if item was created with 3D pen)?
4. What materials were selected for your project?
5. If your final design has any moving parts, define how you determined appropriate allowance in your design.
6. Identify any changes that you would make to improve your design.

H-860-007 Maker Space/Digital Fabrication:

This project is a computer generated projected created using a laser cutter, vinyl cutter, heat press or CNC router. Vector or 3D based software such as Corel Draw 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: a) What motivated you to create this project, b) Software and equipment used, c) Directions on how to create the project, d) Prototype of plans, e) Cost of creating project, f) Iterations or modifications made to original plans, and g) Changes you would make if you remade the project. Scoresheet SF1051

Team Entry Option: To qualify for entry at the Nebraska State Fair team materials entered in H860007 - Maker Space/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.

Division 880 – Geospatial

Geospacial 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.

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. Each individual is limited to one exhibit per class.
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. Please refer to the General Rules for the policy regarding firearms, items with a blade, and other related items.
5. Please refer to the General Rules for the policy regarding use of copy written images.

Scoresheets, forms and additional resources can be found at http://go.unl.edu/ne4hgeo.

Youth enrolled in Geospatial or GEAR TECH 21 may exhibit in any class within this division.

H-880-001 Poster - Create a poster (not to exceed 14"x22") 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. Scoresheet SF299

H-880-002 4-H Favorite Places or Historical Site Poster - 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"x22". Scoresheet SF299

H-880-003 GPS Notebook - 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. Scoresheet SF300

H-880-004 Geocache - Assemble a themed geocache. Each geocache should be a watertight container. It should include a logbook and pencil for finders to log their visits and may include small trinket, geo-coins, 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, include a printout of its registry. The entry may include a photograph of the cache in its intended hiding place. Scoresheet SF301

H-880-005 Agriculture Precision Mapping - 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. Scoresheet SF302

H-880-006 4-H History Map - Preserve 4-H History: Nominate a Point of Interest for the 4-H History Map Project. Include a copy of submitted form in folder or notebook. To nominate a site for the 4-H history map please go to http://arcg.is/1bvGovV. 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) SF300

H-880-007 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 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", should include Title, Base Map, Neat Line, North Arrow, and Legend. Identify the source of your information on the back of map. SF302

DEPARTMENT H – PHYSICS/POWER OF WIND

Purple $2.50, Blue $2.50, Red $2.00, White $1.50

This category provides 4-H'ers a way to present their ideas about renewable energy resources. 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.

Division 900 – Physics/Power of Wind

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.
2. Each individual is limited to one exhibit per class.
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. Posters can be any size up to 28" by 22" when ready for display. Example: tri fold posterboards are not 28" by 22" when fully open for display.

H-900-001 Create and Compare Energy Resource Poster - Poster should explore 2 alternative/renewable energy resources. Compare and contrast the 2 resources including two of the following information: amount of energy created, cost of production, usability of the energy, pros/cons of environmental impacts, etc. Posters can be any size up to 28" x 22". Scoresheet SF307

H-900-002 Experiment Notebook - 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. Scoresheet SF305

H-900-003 Solar as Energy Display - 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 the sun. Examples include solar ovens, solar panels, etc. Scoresheet SF308

H-900-004 Water as Energy Display - 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 water. Scoresheet SF308

H-900-005 Wind as Energy Display - 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. Scoresheet SF308

H-900-006 Other Nebraska Alternative Energy - 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. Scoresheet SF306

Scoresheets, forms and additional resources can be found at http://go.unl.edu/ne4hphysics-powerofwind.

DEPARTMENT H – MODEL BUILDING

Purple $2.50, Blue $2.50, Red $2.00, White $1.50

Division 865 – Model Building

Model Building general requirements.

Read and study the information contained in the project manual. Use this information as a guide in constructing your model. A completed model information sheet must be exhibited with the model available at the Extension Office and on the web site. ALL MODELS MUST BE MOUNTED ON A FIRM BOARD OF WOOD, HEAVY CARDBOARD, ETC. OR IN AN ACRYLIC CASE. The board should be no larger than 1" around the model, not to exceed 24 x 24 inches. Dioramas must be on a board no larger than 24" x 24". Models may be exhibited only one year and must be completed in the current 4-H year. Models should be more complex in design than what was assembled in the previous year. NO metal models are acceptable for exhibit at the Dawson County Fair. Lego models may be constructed by any age 4-H member with judging based on complexity for age. Manufactures instruction sheets must be included with classes 902 to 906. If self-designed, please include assembly instructions and list of materials needed.

H-865-901 Level 1 Model Building. Build a simple model that is a snap together type or a model that requires limited glue or paint. Use only the parts furnished in the kit except for Lego models. Use only plastic or wood models. Decals are optional. Members who are 8 -10 years old may use Lego or Lego type model kits or an original design from basic bricks. No model information sheet needed for this Level 1 class.

H-865-902 Level 2 Model Building. Build a model that requires glued assembly and exterior painting except for Lego models. Use only the parts that are furnished with the kit except for Lego models. Decals are required if furnished with the kit. Complete a model information sheet from 4-H manual and include it with your model.

H-865-903 Level 3 Model Building. Build a model that is more complex than the previous year. This model should be glued construction and must be painted on all surfaces other than chrome, glass, and tires except for Lego models. Decals are required if furnished with the kit. Complexity elements might include moving parts such as hood and doors, sail rigging on boats, detailed painting, and camouflage on airplanes. You may add parts not furnished with the kit. Complete a model information sheet from the 4-H manual and include it with your project.

H-865-904 Level 4 Model Building. Build a model that demonstrates a high degree of skill and accuracy or construct a self-designed model of plastic or wood. You may add parts that are not included with the kit such as self-designed parts or parts from another kit. Decals or custom graphics are required. Lego models are exempt from painting and decals but complexity and design elements must be appropriate for this level, Design plans must be included for all self-designed models. Note: wooden bridge models are appropriate as level 3 & 4 exhibits. Live steam models will not be fired. They will be judged on appearance and construction techniques.

H-865-905 Diorama. Dioramas are allowed in Level 4 Model Building. A diorama consists of a model with a display theme around it. The overall diorama will be judged on accuracy of theme, appearance, construction, and audience appeal.

H-865-906 Radio Controlled Model. Radio controlled models are allowed in Level 4 Model Building. All radio controlled models are acceptable for this project. No preformed bodies or shells are allowed. Assembly of the body or shell is required. Transmitters and batteries are required but should be taken home after judging. No fuel is allowed in engine driven models.

DEPARTMENT H – ROBOTICS

Purple $2.50, Blue $2.50, Red $2.00, White $1.50

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. Involvement in Robotics gives participants a first-hand experience in modern technology.

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. Each individual is limited to one exhibit per class.
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. Posters can be any size up to 28" by 22" when ready for display. Example: tri fold poster boards are not 28" by 22" when fully open for display.

Scoresheets, forms and additional resources can be found at http://go.unl.edu/ne4hrobotics.

Division 861 – Robotics

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

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.

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. Videos should be uploaded to a video streaming application and exhibitors should provide a hard copy QR code for viewing.

H-861-001 Robotics Poster - Create a poster (28" x 22") communicating a robotics theme such as "Robot or Not", "Pseudocode", "Real World Robots", "Careers in Robots", or "Autonomous Robotics", "Precision Agriculture" or robotic topic of interest to the 4-H'er. Scoresheet SF236

H-861-002 Robotics Notebook - 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. Scoresheet SF237

H-861-004 Robotics/Careers Interview - 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. Scoresheet SF239

H-861-005 Robotics Sensor Notebook - Write pseudo code which includes at least one sensor activity. Include the code written and explain the code function. Scoresheet SF241

H-861-007 Kit Labeled Robot (cannot be programmed.) and Notebook - 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 notebook with the robot the youth has constructed. Included in the exhibit should be (1) a description of what the robot does, (2) pictures of programs the robot can perform, (3) why they chose to build this particular form, and (4) how they problem solved any issues they might have had during the building and programming. A picture story of assembly is recommended. If robot is more than 15" inches wide and 20" inches tall they may not be displayed in locked cases at State Fair. Scoresheet SF243

H-861-008 3D Printed Robotics Parts - 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. Scoresheet SF244

DEPARTMENT H – ELECTRICITY

Purple $2.50, Blue $2.50, Red $2.00, White $1.50

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.

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. Each individual is limited to one exhibit per class.
   - 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 23 7/8 inches is acceptable to allow for the saw kerf

(width) if two 24 in 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.

Scoresheet, forms and additional resources can be found at https://go.unl.edu/ne4helectricity.

Division 870 – Electricity

Refer to Engineering General Information.

Magic of Electricity - Unit 1

H-870-901 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. Board can be any size up to 14" x 22".

H-870-902 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. Board can be any size up to 14" x 22".

H-870-903 Conducting Things - Make 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. Board can be any size up to 14" x 22".

H-870-904 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. Board can be any size up to 14" x 22".

Investigating Electricity - Unit 2

H-870-905 Case of the Switching Circuit - Use the following items: two D cell batteries, two battery holders, light bulb, bulb holder, a 3" x 6" piece of cardboard, six brass paper fasteners, and approximately 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. Board can be any size up to 14"x 22".

H-870-906 The Off and On Case - Build a momentary switch and use it to communicate in Morse Code. Board can be any size up to 14" x 22".

H-870-907 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" x 4" x 1/8" plexiglass 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. Board can be any size up to 14" x 22".

Wire for Power - Unit 3

H-870-001 Electrical Tool/Supply Kit - 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. Scoresheet SF224

H-870-002 Lighting Comparison - Display studying the efficiency of various lighting (incandescent, fluorescent, halogen, Light Emitting Diodes, etc.). Exhibit could be a poster display, or an actual item. Scoresheet SF225

H-870-003 Electrical Display/Item - 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. Scoresheet SF226

H-870-004 Poster - Poster should exemplify one of the lessons learned in the Wired for Power Project. Posters can be any size up to 28" x 22". Scoresheet SF227

Entering Electronics - Unit 4

H-870-005 Electrical/Electronic Part Identification - 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. Scoresheet SF228

H-870-006 Electronic Display - Show an application of one of the concepts learned in the Electronics project. Examples include: components of an electronic device (refer to pg. 35 of the Electronic manual). Scoresheet SF229

H-870-007 Electronic Project - 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. Scoresheet SF230

H-870-008 Poster - Poster should exemplify one of the lessons learned in the Entering Electronics Project. Posters can be any size up to 28" x 22". Scoresheet SF231

DEPARTMENT H – 4-WHEELIN'

Purple $2.50, Blue $2.50, Red $2.00, White $1.50

Division 895 – 4-Wheelin'

H-895-901 4-Wheelin' Poster - Poster should exemplify one of the lessons learned in the 4-Wheelin' project. Posters can be any size up to 28" x 22".

DEPARTMENT H – WOODWORKING

Purple $3.00, Blue $3.00, Red $2.50, White $2.00

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

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. Each individual is limited to one woodworking exhibit per class.
3. Requirements: 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. 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. All plans used for making the article must be securely attached and protected by a clear plastic cover.
4. 4-H'ers must be in Unit 3 or Unit 4 for the exhibit to be considered for State Fair. All project must have an appropriate finish.
5. 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.
6. 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.

Scoresheets, forms and additional resources can be found at https://unl.box.com/s/leyyacbdu3ktky0i58id6mvgya1tvcc5.

Division 911 – Woodworking

Only one exhibit allowed per 4-H'er per class.

Woodworking - Measuring Up - Unit I

H-911-901 Woodworking Article - Item made using skills learned in the Measuring Up Project Guide. Examples include: flower box, letter or napkin holder, picture frame or other skill level appropriate item. Item should be entered with construction plans.

Woodworking - Making The Cut - Unit 2

H-911-902 Woodworking Article - Item made using skills learned in Making The Cut Project Guide.

Examples include: napkin/letter holder, birdhouse, foot stool or other skill level appropriate item. Item should be entered with construction plans.

Woodworking - Nailing It Together - Unit 3

H-911-001 Woodworking Article - Item should be made using either joints, hinges, dowels, or a dado joining made using skills learned in the Nailing It Together manual. Item is required to be appropriately finished. Examples include: bookcase, coffee table or end table. Item should be entered with construction plans. Scoresheet SF91

H-911-003 Recycled Woodworking Display - 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. Reason for article finish (What type of finish, how did you finish or why you choose this finish?)
6. Evaluate (How does your item solve the original need?)
7. Present results (How would you do this better next time?) Scoresheet SF95

H-911-004 Composite Wood Project - 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. Scoresheet SF96

H-911-005 Outdoor Wood Project made with Treated Wood - 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. Scoresheet SF97

Woodworking - Finishing Up - Unit 4

H-911-006 Woodworking Article - 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. Item should be entered with construction plans. Scoresheet SF91

H-911-008 Recycled Woodworking Display - 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 do 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?)

Scoresheet SF91

DEPARTMENT H – WELDING

Purple $2.50, Blue $2.50, Red $2.00, White $1.50

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 welding gives participants a first-hand experience in a skill that can be used for a lifetime.

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. Each individual is limited to one exhibit per class.
3. 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) wedler setting, 4) electrode/wire/rod size and 5) electrode/wire/rod ID numbers. Attach a wire to dispaly board so it can be hung like a picture frame. No picture frame hangers accepted.
4. Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays.
5. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.
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. If no plans are included with welding art, welding article, welding furniture, or composite weld project item will be disqualified.
8. 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.

Scoresheet, forms, and additional resources can be found at http://go.unl.edu/ne4hwelding.

Division 920 – Welding

H-920-001 Welding Joints - A display of one butt, one lap and one fillet weld. Scoresheet SF281

4-H Welding Project Tips and Suggestions for 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.

H-920-002 Position Welds - A display showing three beads welded in the vertical down, horizontal and overhead positions. Scoresheet SF281

4-H Welding Project Tips and Suggestions for 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" 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.

H-920-003 Welding Art (SF283) - any art created using tack welds to hold the metal pieces together (examples include horseshoe projects). Type of welder, welder settings, all plans, plan alternations, and a bill for material 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.

H-920-004 Welding Article - Any shop article or piece of furniture where welding is used in the construction. 60% of item must be completed by 4-H'er and notes regarding laser welding or machine welding must be included. Type of welder, welder settings, all plans, plan alternations, and a bill for material 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. Scoresheet SF281 4-H Welding Project Tips and Suggestions for class 3:

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.

H-920-005 Welding Furniture - 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. Type of welder, welder settings, all plans, plan alternations, and a bill for material 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. Scoresheet SF282

4-H Welding Project Tips and suggestions for class 4:

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 for materials should include a cost for all items used including steel, electrodes, paint, wheels, etc.

H-920-006 Plasma Cutter/Welder Design - Plasma cutters/welders allowed for detailed design(s) to butt cut into metal. 4-Hers will create a notebook describing the design process to create the "artwork" to butt cut into the metal. In the notebook include: a) A photo (front and back) of the finished project, b) Instructions on how the design was created (include software used), this allows for replication of the project, c) Lessons learned or improvements to the project, d) Steps to finish the project. Scoresheet SF279

H-920-007 Composite Weld Project - 60% of the project must be welded and 40% made from other materials such as wood, rubber, etc. Type of welder, welder setting, all plans, plan alternations, and a bill for material 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. Scoresheet SF280

DEPARTMENT F – OTHER 4-H PROJECTS

Purple $2.50, Blue $2.50, Red $2.00, White $1.50

Division 902 – Other 4-H Projects: (this class is for other 4-H projects not listed)

F-902-001 An educational presentation on some aspect of the project. This exhibit may be presented in poster 14" x 22", notebook, or display form. This class is for projects not listed.

DEPARTMENT F – CLOVER KIDS

Premiums: Clover-Kid Participation Ribbon and $2.00

Division 903 – Clover Kids (Age 5-8)

This class is for 4-H'ers who are enrolled in the Clover Kids 4-H program. Nebraska youth ages 5-7 years (by January 1 of the current year) may enroll in the Clover Kids Program. In other words, children turning 6, 7 or 8 during the calendar year are eligible for Clover Kids.

It is not the intent of the Nebraska Clover Kids program to duplicate the 8 to 19 year-old 4-H program, nor to create a "mini" 4-H concept. The Clover Kids program is designed with specific philosophies and educational objectives focused on youth ages 5-7. This program is designed to enhance the social development of the 5-7 year olds in a group setting with project activities organized by older youth and adults.

Youth enrolled in this program will be counted separately as a Clover Kids member. They will receive a completion certificate and a sticker for each year of participation in the program.

Clover Kids may sign-up for one (1) project. To show a Clover Kid bucket calf at fair, 4-H'er must be enrolled in the "Clover Kid Bucket Calf Project".