

SCIENCE, ENGINEERING, TECHNOLOGY AND AEROSPACE

GENERAL INFORMATION FOR DEPARTMENT H, DIVISIONS 850, 860, 861, 870, 880, 890, 900, 911, 920:

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

B. Each individual is limited to one exhibit per class.

C. 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 left width if two 24 inches boards are cut from one end of a 4' x 8' sheet of plywood. Nothing should be mounted within 3/4" of the top or bottom of the board. (Example: woodworking, and electricity)

D. Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays.

E. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.

F. Demonstration boards should include an overall title for the display, plus other necessary labeling.

G. 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.

DEPARTMENT H – AEROSPACE

Division 850 – Aerospace

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

Refer to General Information. 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. The rockets must be mounted vertically. Please do not attach sideboards or backdrops, figures, legos, etc. 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 rocket's engine mount to give added stability. 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. A report protected in clear plastic cover, must include: 1) rocket specification; 2) a flight record for each launching (weather, distance, flight height); 3) number of launchings; 4) flight pictures, 5) statistics, 6) objectives learned and 7) conclusions. 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 County or State Fair.

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.

Judging is based on display appearance, rocket appearance, workmanship, design or capabilities for flight, number of times launched and report. Three launches are required to earn the 9 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.

The 4-H'ers name, address, county, age, and years in rocket project should appear on the bottom of the base and on the report.

4-H'ers may visit with the judge on Wednesday, July 12th between 1:15 p.m. to 2:00 p.m. about their rocket.

4-H Rocket project levels are not intended to correspond to National Association of Rocketry model rocket difficulty ratings or levels.

Lift Off - Unit 2

H-850-001 Rocket: Any Skill Level 2 Rocket with wooden fins painted by hand or air brush.

Scoresheet SF92

H-850-002 Display: Display exemplifying one of the principles learned in the Lift Off Project. Examples include: display of rocket parts and purpose, interview of someone in the aerospace field, or kite terminology. Display can be any size up to 28" x 22". Scoresheet SF93

H-850-003 Rocket: Any Skill Level 2 Rocket with wooden fins painted using commercial application.

Example: commercial spray paint. Scoresheet SF92

Reaching New Heights - Unit 3

H-850-004 Rocket: Any Skill Level 3 Rocket with wooden fins painted by hand or air brush.

Scoresheet SF92

H-850-005 Display: Display exemplifying one of the principles learned in the Reaching New Heights Project. Examples include: airplane instrumentation, kite flying, or radio-controlled planes. Display can be any size up to 28" x 22". Scoresheet SF93

H-850-006 Rocket: Any Skill Level 3 Rocket with wooden fins painted using commercial application.

Example: commercial spray paint. Scoresheet SF92

Pilot in Command - Unit 4

H-850-007 Rocket: Any Skill Level 4 Rocket with wooden fins or any self-designed rocket. 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

H-850-008 Display: Display exemplifying one of the principles learned in the Pilot in Command Project.

Examples include: flying lessons, or careers in aerospace. Display can be any size up to 28" x 22".

Scoresheet SF93

Careers

H-850-020 Careers Interview - Interview someone who is working in the field of aerospace and research that career. 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

DEPARTMENT H – COMPUTERS

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

Division 860 – Computers

Refer to Engineering General Information.

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

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 should 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 x 11 inches) which should include a (1) 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, and (2) print out of your project. Project may be in color or black and white. Scoresheet SF278

H-860-002 Produce a Computer Slideshow Presentation

Using presentation software. The 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. All county fair projects with a printout should be saved on a CD Rom to be submitted for county fair. Slideshow should include a minimum of 10 slides and no more than 25. Incorporate appropriate slide layouts, graphics and animations and audio (music or voice and transition sounds do not count). Each slide should include notes for a presenter. All slide shows must be uploaded. Scoresheet SF277

Computer Mysteries - Unit 3

H-860-004 Produce an Audio/Video Computer Presentation

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. Scoresheet SF276

H-860-005 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. Any of the following formats will be accepted: .mpeg, .rm, .wmv, .mp4, .ov, .ppt, or .avi. Scoresheet SF276

H-860-006 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 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. Scoresheet SF275

H-860-007 3-D Printing Unique Items

3D printing uses plastic or other materials to build a 3 dimensional object from 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 complexity of the design and shape.

3D UNIQUE OBJECT: 3D objects printed for their own sake. May be an art design, tool, or other object.

3D printing will include a notebook with the following: a. Software used to create 3D design. b. Design or, if using a re-design, the original design and the youth's design with changes. c. Orientation on how the object was printed.

H-860-008 3D Printing

Prototypes:

3D printing uses plastic or other materials to build a 3 dimensional object from a digital design. Youth may use original designs or someone else's they have redesigned in a unique way. Exhibits will be judged based on the complexity of the design and shape.

3D objects printed as part of the design process for robot or other engineering project or cookie cutter, be creative. Must include statement of what design question the prototype was supposed to answer and what was learned from the prototype.

3D printing will include a notebook with the following: a) Software used to create 3D design, b) Design or, if using a re-design, the original design and the youth's design with changes. c) Orientation on how the object was printed.

Division 880 – Geospatial

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 SF272

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 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, 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 - 4H'ers 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-880-007 4-H History Map - 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/1bvGovV>. For more information about 4-H history go to <http://4hhistorypreservation.com/HistoryMap/>. 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)

Careers

H-880-010 Careers Interview - Interview someone who is working in a Geospatial field and include research of that career. 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

DEPARTMENT H – POWER OF WIND

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

Division 900 – Power of Wind

- H-900-001 Engineering Notebook - Your engineering notebook may include sketches of designs, notes of engineering questions you have, or answers to questions posed within the project manual, pictures as you complete exercises within this project, or big ideas you have while participating in this project. The notebook submitted in this class should be a working engineering notebook, not a scrapbook. Please include your name, county and age on the front cover. Scoresheet SF305
- H-900-002 Wind Poster - Poster should exemplify one of the lessons learned in the Power of Wind project. Posters can be any size up to 14" x 22". Scoresheet SF307
- H-900-003 Mini Turbine Blade Energy Display - Develop a pinwheel display that demonstrates the working power of wind. Follow guidelines on page 18 and 19 of your manual. Display should include a notebook description of the effectiveness of at least three different designs or materials. Please do not include pennies with your display. Scoresheet SF306
- H-900-004 Wind Art or Literature Written Piece - Item should illustrate or represent wind turbines, wind power or something from the power of wind curriculum, for example a pinwheel or item may be original story or poem written by the exhibitor about wind. Scoresheet SF304
- H-900-005 Wind as Energy Display - 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 wind. Scoresheet SF308
- H-900-006 - Alternative Energy - Poster should exemplify an alternative energy source besides wind. Posters can be any size up to 14" by 22". Scoresheet SF239

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. 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. Dioramas must be on a 24" x 24" board. 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 are limited to 8 & 9 year olds only.

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. Use only plastic or wood models. Decals are optional. Members who are 8 & 9 years old may use Lego or Lego type model kits or an original design from basic bricks.

H-865-902 Level 2 Model Building. Build a model that requires glued assembly and exterior painting. Use only the parts that are furnished with the kit. Decals are required if furnished with the kit. Complete a model information sheet 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. 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 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. Design plans must be included for all self-designed models. 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

Division 861 – Robotics

Youth enrolled in Virtual Robotics, Junk Drawer Robotics (Levels 1, 2, or 3) Robotics Platforms or GEAR TECH 21 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.

- H-861-001 Robotics Poster - Create a poster (14" 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-861-003 Robotics Video - 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. Scoresheet SF238
- 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-861-006 Build a Robot (may use kit) - Include a robot and notebook including the pseudo codes 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. State Fair recommend that you submit the project under class H861003 - Robotics Video. Scoresheet SF243
- H-861-007 Kit Labeled Robot (cannot be programmed.) - 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. State Fair recommend that you submit the project under class H861003 - Robotics Video. Scoresheet SF243

DEPARTMENT H – ELECTRICITY

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

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" 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. 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 should exemplify one of the lessons learned in the Wire 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 a 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

Careers

H-870-010 - Careers Interview - Interview someone who is working in the field of electricity and research that career. 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

DEPARTMENT H – 4-WHEELIN'

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

Division 895 – 4-Wheelin'

H-895-901 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 – SMALL ENGINES

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

Division 890 – Small Engines

Refer to Engineering General Information.

Small Engine - Crank It Up - Unit 1

H-890-901 Small Engine Display/Item - Show an application of one of the concepts learned in the

Crank It Up project. Examples include: identify the parts on a small engine, safety rules for starting a small engine, small engine repair tool identification.

Small Engines - Warm It Up - Unit 2

H-890-902 Small Engine Display/Item - Show an application of one of the concepts learned in the Warm

It Up project. Examples include: comparison of engine oil types, transmissions, or safety related to engines. Exhibit could be a poster display, or an actual item. Scoresheet SF222

Small Engines - Tune It Up - Unit 3

H-890-903 Engine Display/Item - Display/Item should exemplify one of the lessons learned in the Tune

It Up Project. Examples include: 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.) Scoresheet SF222

DEPARTMENT H – WOODWORKING

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

Division 911 – Woodworking

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.

Requirements: All articles exhibited must include a plan (with drawings or sketch or blueprint) 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 alterations 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-H'ers must be in Unit 3 or Unit 4 for the exhibit to be considered for State Fair.

Woodworking - Measuring Up - Unit 1

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 made using skills learned in the Nailing It Together manual.

Examples include: bookcase, coffee table or end table. Item should be entered with construction

plans. Scoresheet SF91

H-911-002 Woodworking Display - Display exemplifying one of the principles learned in the Nailing It Together Project. Examples include: measuring angles, wood lamination and joint types. Scoresheet SF91

H-911-003 Recycled Woodworking Display - Article made from recycled, reclaimed or composite wood. Article must be sanded and 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?) Scoresheet SF91

Woodworking - Finishing Up - Unit 4

H-911-004 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 should be entered with construction plans. Scoresheet SF91

H-911-005 Woodworking Display - Display exemplifying one of the principles learned in the Finishing It Up Project. Examples include: career opportunities, types of finishes, or dovetailing. Scoresheet SF91

H-911-006 Recycled Woodworking Display - Article made from recycled, reclaimed or composite wood. Article must be sanded and 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. 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?) Scoresheet SF91

Careers

H-911-010 - Careers Interview - Interview someone who is working in the field of woodworking and research that career. 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

DEPARTMENT H – WELDING

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

Division 920 – Welding

Refer to Engineering General Information. All metal welding process accepted. 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, Oty-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. If no plans are included with welding article or welding furniture item will be dropped one ribbon placing.

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.

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.

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

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 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. All plans, plan alterations and a bill for materials must be attached to the article. Protect plans with a cover. 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-920-004 Welding Furniture - any furniture with 75% welding is used in the construction. 60% of item must be completed by 4H'er and notes regarding laser welding or machine welding must be included. All plans, plan alterations, dimensions and a bill for materials must be attached to the article. Protect plans with a cover. 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.

Careers

H-920-005 - Careers Interview - Interview someone who is working in the field of welding and research that career. 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

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".

Nebraska 4-H recommends the use of appropriate and recommended Clover Kids curriculum. This curriculum utilizes age-appropriate, cooperative-based methods. It provides opportunities for learning through activities, emphasizing success for every child. Competition is inappropriate for this age level.

Clover Kids may exhibit no more than three total items (that would include a bucket calf). Exhibitors are limited to **ONE EXHIBIT PER EXHIBIT NUMBER**. The 4-H'er's name, address and age should be on the back of each item.

F-903-001 Item completed from a Clover Kids activity.

F-903-002 Item completed from a Clover Kids activity.

F-903-003 Item completed from a Clover Kids activity.

F-903-004 Clover Kid bucket Calf Project - This non-competitive project has been designed for Clover Kid 4-H'ers (5-7 years of age as of January 1). The purpose of this project is to give Clover Kid 4-H'ers experience in caring and showing a bucket calf. Between January 1 and June 1, an orphan or newborn calf less than 2 weeks old and of either sex should be selected to be fed by bucket or bottle by the 4-H'er. The calf may be dairy, beef, or a cross. 4-H'ers must own their bucket calf. No official 4-H tag or ID sheet is required. Any numbered eartag may be used. Calves will be shown in a rope halter. The calf should be cleaned and brushed. No fitting, clipping or show sticks. 4-H'ers will receive a Clover Kid participation ribbon and \$2.00 premium.

DEPARTMENT H – STATE FAIR PREMIER 4-H SCIENCE AWARD

The Premier 4-H Science Award Application is due August 1st in the Dawson County Extension Office.

H-101-001 State fair Premier 4-H Science Award

Objective: Recognize 4-H youth static exhibits incorporating or demonstrating concepts from the areas of 4-H Science (science, technology, engineering, or applied math) at the Nebraska State Fair. Exhibits in all curriculum areas will be considered for the award.

Curriculum Areas Targeted: Animal Science, Communications/Expressive Arts, Consumer & Family Sciences, Environmental Education and Earth Science, Healthy Lifestyles, Leadership & Citizenship, Plant Sciences, Science Engineering & Technology. (SET).

Exhibit Entry: Youth will identify one exhibit to be considered for the Premier 4-H Science Award. The Premier 4-H Science Award Application must be submitted along with a photograph of the exhibit to the County Extension Office by the county's entry deadline (August 1st). The photograph will not be used for judging, only to locate it at the State Fair should we need additional information. The Extension Office will enter exhibit into its original State Fair class and the Premier 4-H Science Award class (H-101-01). **Only one exhibit per youth will be eligible for the Premier 4-H Science Award.**

Check-In: During static exhibit check-in at State Fair, Premier 4-H Science Award applications along with a photograph of the exhibit will be dropped off at the Science, Engineering, and Technology Department area. The original exhibit will be dropped off to its department area.

Judging: Members of the 4-H Science work-group will serve as judges for the award. A scoresheet will be used to judge each exhibit. Exhibits which do not have a completed application or photograph can be disqualified at the discretion of the judge.

Recognition:

- All projects entered in this class will be recognized with a certificate. Exhibits will be displayed within their original class.
- Up to 5 top 4-H Science exhibits will be chosen from all curriculum areas and will receive a cash award sponsored by the Nebraska 4-H Foundation.

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SPECIAL 4-H AWARDS

4-H PUBLIC SPEAKING

March 20, 2017. Date and location of the contest will be announced after January 1 next year. Purple, Blue, Red and White ribbons will be awarded in the Dawson County Public Speaking Contest by state sponsor, KRVN. The Dawson County Banks will award \$10.00 to each 4-H Public Speaking Contestant. A radio goes to the top contestant in each of the three speech divisions, courtesy of county sponsor, KRVN. KRVN will present a radio to the top 4-H'er in each of these divisions: Senior 14 to 18 years old; Intermediate 11 & 13 years old; and Junior 8 to 10 years old. A 4-H member is limited to winning only one radio in the 8-13 year old groups. A Senior is limited to winning only one radio in the senior division. 4-H'ers may be a repeat county winner for the Regional Contest. Two \$5.00 bills, courtesy of the 4-H Foundation, will be presented to the two high individuals in the PSA (Public Service Announcement) category.

NEBRASKA 4-H CONFERENCES/CAMPS/EDUCATIONAL EVENTS

A Nebraska 4-H Conference/Camp trip registration will be provided to 4-H members in the following areas: Cozad area by Security First Bank; Gothenburg area by Landmark Implement, Inc.; Lexington & Overton area by Lexington Chamber of Commerce; Eddyville & Sumner area by Tubs Pub and Beattie Family; and the Peterson Family of Gothenburg.

These members will be selected by the 4-H Council in October from Award Application forms. The 4-H member must be 13 years old by January 1 the year of the trip. A 4-H member cannot receive one of these trips if they have been to Nebraska 4-H Conference/Camp before or 12 months after their graduation from high school.

PRESENTATION CONTEST

The Dawson County Banks will award \$10.00 to each 4-H demonstrator in the county contest.

Dawson County Farm Bureau will provide a plaque to be exhibited in the 4-H building to the top Agriculture and top Family & Consumer Science 4-H Club at the Pre-Fair Presentation Contest. The club to be selected from their individual or team demonstrations based on P-4 points; B-3 points; R-2 points; W-1 point. 4-H members listed on the individual club enrollment sheet will constitute a club. Ties will be broken with the club which has the most purple or most blue ribbons.

FASHION SHOW FAIR DELEGATES

Dawson County 4-H Foundation provides a Fashion Revue plaque at the 4-H Building which will carry the names of the 4-H'ers selected to represent Dawson County at the Nebraska State Fair. These 4-H'ers will also receive appropriate individual trophies from Prairie Point Junction Quilt Shop, Cozad.

MEATS TEAM

The Ben Menke family will provide an Alan Menke 4-H Memorial plaque to be exhibited in the 4-H Building to the high Meats Club team of three members in the county contest. The first, second and third high individuals in the Meats Contest will receive gold, silver, and bronze medals. Each club may enter one or more teams of four with the high three of the four making up the team score.

LIVESTOCK JUDGING TEAMS

The Ben Menke family provides an Alan Menke 4-H Memorial plaque to be exhibited in the 4-H Building to the high senior and high junior livestock judging teams. Junior teams must be under 14 years of age January 1. Each club may enter one or more teams of four with the high three of the four making up the team score. The first, second and third high individuals in the junior and senior divisions will receive gold, silver and bronze medals.

JACK REED MEMORIAL JUDGING

The family of Jack Reed will present trophies at the 4-H Achievement Barbecue to the top Dawson County junior and senior livestock judges and the top junior and senior meats judges. Winners will be selected from those 13 and under and those 14 and over, based on their ranking at the State contests held during the Premier Annual Science Event in Lincoln.

SHOWMANSHIP

Appropriate 4-H trophies are being provided the top showman by the following individuals or firms:
Junior Beef Showmanship.....Joe Jeffrey Family
Intermediate Beef Showmanship.....Dennis Berke Family