

- H861001 **Robotics Poster (Scoresheet SF236)**
Create a poster (28" x 22") communicating a robotics theme such as "Robot or Not", "Pseudocode", "Real World Robots", "Careers in Robots", "Autonomous Robotics", "Precision Agriculture" or a robotic topic of interest to the 4-H'er.
- H861002 **Robotics Notebook (Scoresheet SF237)**
Explore a robotics topic in-depth and present your findings in a notebook. Documentation should include any designs, research, notes, pseudocode, data tables or other evidence of the 4-H'ers learning experience. The notebook should contain at least three pages. Topics could include a programming challenge, programming skills, calibration, sensor exploration, or any of the topics suggested in Class 1.
- H861004 **Robotics/Careers Interview (Scoresheet SF239)**
Interview someone who is working in the field of robotics and research the career in robotics. Interviews can either be written or in a multimedia format (CD/DVD). Written interviews should be in a notebook. Written reports should be 3 to 5 pages, double spaced, 12-point font, and 1" margins. Multimedia reports should be between 3 to 5 minutes in length.
- H861005 **Robotics Sensor Notebook (Scoresheet SF241)**
Write pseudo code which includes at least three sensor activities. Include the code written and explain the code function.
- H861007 **Kit Labeled Robot (cannot be programmed) and Notebook (Scoresheet SF243)**
This class is intended for explorations of robotic components such as arms or vehicles OR educational kits marketed as robots that do not have the ability to be programmed to "sense, plan and act." The exhibit should include a notebook with the robot the youth has constructed. Included in the notebook 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 building and programming. A picture story of assembly is recommended. If the robot is more than 15 inches wide and 20 inches tall they may not be displayed in locked cases (at State Fair).
- H861008 **3D Printed Robotics Parts (Scoresheet SF244)**
This class is intended for youth to create parts through 3D printing that help create their robot or aid the robot in completing a coded function. Project should include notebook describing the process used to create the project, describe the success of your designed piece (did it work), intended use of the product and the modifications made to the item.
- **H861901 **Junk Drawer Robotics Exhibit** – Not eligible for State Fair.
- **H861902 **County Only Robotics Exhibit** – This exhibit does not fall into any of the State Fair Classes.

ROPE

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

ROPE CLASSES (Denotes NOT State Fair Eligible)**

PREMIUMS: Purple, \$2.25; Blue, \$1.60; Red, \$1.20; and White, \$.60

H898901 **Rope Display – Scoresheet CF223

At least 10 and not more than 12 knots, hitches, and splices (include two splices) made of 3/8" rope. Include appropriate board title and item labels. The end of all ropes must be whipped.

H898902 **Single Loop or Double Loop Halter – Scoresheet CF70579

Sheep and goats use 3/8" rope. See above requirements for halter exhibits.

H898903 **Single Loop or Double Loop Halter – Scoresheet CF70579

Cattle and horses use 5/8" or 3/4" rope. See above requirements for halter exhibits.

VETERINARY SCIENCE

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

RULES:

1. A Veterinary Science exhibit may consist of a poster, notebook, or a display. The exhibit may represent material from any of the Veterinary Science projects including entry level exhibits from Unit 1.
2. If photographs are to be part of the exhibit, remember that they will be viewed by the public. Make sure that the photographs used are in good taste and will not be offensive to anyone. Graphic photographs of excessive bleeding, trauma or painful procedures are not appropriate. For exhibits related to veterinary surgical procedures, aseptic techniques need to be shown, for example, use of drapes, use of sterile procedures, wearing of gloves and other appropriate veterinary medical practices.
3. **First-Aid Kits:** Because of public safety concerns and risk of theft of first-aid kit contents (veterinary drugs/equipment) with perceived potential for drug abuse, **animal first aid kits containing any drugs or medications will be immediately disqualified and not displayed. First Aid kits wishing to include medication information should instead utilize written descriptions, photographs, drawings, computer generated printouts or empty packaging of pharmaceuticals.**
4. **Veterinary Science Posters** - This exhibit presents the viewer with a design that is simple and direct, unlike a display that usually presents more information. A poster should not exceed 22" x 28" and may be either vertical or horizontal.
5. **Veterinary Science Displays** - A display may include but is not limited to: a 3-dimensional exhibit, a scale model, the actual product (for example: skeleton; teeth; samples of leather, fur, or dried skin damaged by disease or parasites) or a notebook. A display is not a poster. A display may be mounted on poster board not to exceed 22" x 28" or on 1/4" plywood or equivalent that does not exceed 24" high or 32" wide or in a three-ring binder or another bound notebook format.
6. Appropriate Veterinary Science Topics:
 - Maintaining health
 - Specific disease information
 - Photographic display of normal and abnormal characteristics of animals
 - Animal health or safety
 - Public health or safety
 - Proper animal management to ensure food safety & quality
 - Efficient and safe livestock working facilities
 - Or a topic of the exhibitors choosing related to veterinary medicine or veterinary science
7. **Remember, since these are science displays, all references and information need to be properly cited.** Proper sources include but are not limited to: Professional journals and publications, professional AVMA accredited websites, interviews with Veterinarians and excerpts from Veterinary Educational Literature. *Plagiarism will result in a disqualification. Please study your topic and present the information to your audience in your own words.*

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair. Premier 4-H Science Award is available in this area. See General Information for more details. Scoresheets can be found at <https://go.unl.edu/ne4hvetscience>.

VETERINARY SCIENCE CLASSES (Scoresheet SF119)

PREMIUMS: Purple, \$2.25; Blue, \$1.60; Red, \$1.20; and White, \$.60

H840001 **4-H Veterinary Science Large Animal Poster, Notebook, or Display.**

H840002 **4-H Veterinary Science Small Animal/Pet Poster, Notebook, or Display**

WELDING

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

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. All welds exhibited in class 1 or 2 must be mounted on a 12" high x 15" long display board of thickness not to exceed 3/8". Attach each weld on a wire loop hinge or equivalent, so the judge can

look at the bottom side of the weld when necessary. Each weld should be labeled with information stated 1) type of welding process (stick, MIG, TIG, Oxy-Acetylene, etc.) 2) kind of weld, 3) welder setting, 4) electrode/wire/rod size, and 5) electrode/wire/rod ID numbers. **Attach a wire to display board so it can be hung like a picture frame. No picture frame hangers accepted.**

3. Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays.
4. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit.
5. 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 include 4-Her name and county, be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.
6. If no plans are included with welding art, welding article, welding furniture or composite weld project item will be disqualified.
7. 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 sting, zip ties, etc.

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair. Scoresheets can be found at <https://go.unl.edu/ne4hwelding>.

Each 4-H member may exhibit two (2) items.

Class 1: 4-H Welding Project Tips and Suggestions

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 a chipping hammer and wire brush. Apply a coat of light oil (penetrating oil) to the metal to prevent rusting. Wipe off excess oil.
4. It is suggested that all welds be of the same size and thickness as 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 a new cold rolled strap iron and cut it 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- $\frac{1}{4}$ " if using $\frac{1}{8}$ " rod. Suggested rod-AC and DC straight or reverse polarity- first E-7014, second E-6013.
6. MIG welding: Suggested coupon thickness-- $\frac{1}{4}$ " if using .035 wire and $\frac{1}{8}$ " if using .023 wire.
7. Oxy-Acetylene: Suggested coupon thickness- $\frac{1}{8}$ ". Suggested rod- $\frac{1}{8}$ " mild steel rod.

Class 2: 4-H Welding Project Tips and Suggestions

1. It is suggested that all welds be of the same size and thickness of metal. These pieces are referred to as coupons. The welds can be on one coupon that is about 4"x4" or on individual coupons that are about 2"x4" inch and $\frac{1}{4}$ " 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.

Classes 3 & 4: 4-H Welding Project Tips and Suggestions

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

WELDING CLASSES

PREMIUMS: Purple, \$2.25; Blue, \$1.60; Red, \$1.20; and White, \$.60

H920001 **Welding Joints (Scoresheet SF281)** -a display of one butt, one lap and one fillet weld.

H920002 **Position Welds (Scoresheet SF281)** -a display showing three beads welded in the vertical down, horizontal and overhead positions.

PREMIUMS: Purple, \$3.50; Blue, \$2.75; Red, \$1.80; and White, \$.90

H920003 **Welding Art (Scoresheet 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.

H920004 **Welding Article (Scoresheet SF281)**

Any shop article where welding is used in the construction. 60% of the 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.

PREMIUMS: Purple, \$6.00; Blue, \$4.50; Red, \$3.00; and White, \$1.50

H920005 **Welding Furniture (Scoresheet SF282)**

Any furniture with 75% welding is used in the construction. 60% of the 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.

PREMIUMS: Purple: \$2.25; Blue: \$1.60; Red: \$1.20; White, \$.60

H920006 **Plasma Cutter/Welder Design (Scoresheet SF279)** – Plasma cutters/welders allowed for detailed design(s) to butt cut into metal. 4-H members will create a notebook describing the design process to create the “artwork” to butt cut into the metal. In the notebook include:

- A photo (front and back) of the finished project.
- Instructions on how the design was created (include software used), this allows for replication of the project.
- Lessons learned or improvements to the project.
- Steps to finish the project.

PREMIUMS: Purple: \$5.00; Blue: \$3.75; Red: \$2.50; White, \$1.25

H920007 **Composite Weld Project (Scoresheet SF280)**

60% of the project must be welded and 40% made from other materials such as wood, rubber, etc. 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 an appropriate outdoor finish because project may be displayed outside.

WOODWORKING

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

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. **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 and 4-Her's name and county.**
 - **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.

3. 4-H'ers must be in Unit 3 or Unit 4 for the exhibit to be considered for State Fair. All projects must have appropriate finish.
4. If the project (i.e., picnic tables, wishing wells, swings, chairs, bridges, doghouses, etc.) is designed to be used outside, it will be displayed outside at the State Fair.
5. 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.

All static exhibits must have received a purple ribbon at the county fair to advance to the State Fair. Scoresheets can be found at <http://go.unl.edu/ne4hwoodworking>.

A 4-H member may exhibit two (2) items in each project he/she is enrolled in at County Fair and only one (1) exhibit is allowed per 4-Her per class at State Fair.

PREMIUMS: Purple, \$2.50; Blue, \$1.75; Red, \$1.40; and White, \$.70 (**Denotes NOT State Fair Eligible)

WOODWORKING, MEASURING UP-UNIT 1

****H911901 Woodworking Article (Scoresheet SF91)**

Item made using skills learned in the Measuring Up project. Examples include recipe holder, stilts or other skill level appropriate item.

PREMIUMS: Purple, \$3.50; Blue, \$2.75; Red, \$1.80; and White, \$.90

WOODWORKING, MAKING THE CUT-UNIT 2

****H911902 Woodworking Article (Scoresheet SF91)**

Item made using skills learned in the Making the Cut project. Examples include birdhouse; foot stool; napkin or letter holder.

PREMIUMS: Purple, \$6.00; Blue, \$4.50; Red, \$3.00; and White, \$1.50

WOODWORKING, NAILING IT TOGETHER-UNIT 3

H911001 Woodworking Article (Scoresheet SF91)

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.

PREMIUMS: Purple, \$6.00; Blue, \$4.50; Red, \$3.00; and White, \$1.50

H911003 Recycled Woodworking Display (Scoresheet SF95)

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. General 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 chose this finish?)
6. Evaluate (How does your item solve the original need?)
7. Present results (How would you do this better next time?)

PREMIUMS: Purple, \$6.00; Blue, \$4.50; Red, \$3.00; and White, \$1.50

H911004 Composite Wood Project (Scoresheet SF96)

60% of the project must be wood and 40% made from other materials such as metal, rubber,

resin, etc. All plans and plan alternations must be attached to the article. Protect plans with a cover. If project is designed to be outside, it is required to have appropriate outdoor finish because project may be displayed outside.

PREMIUMS: Purple, \$6.00; Blue, \$4.50; Red, \$3.00; and White, \$1.50

H911005 **Outdoor Wood Project Made with Treated Wood (Scoresheet SF97)**

Treated wood projects DO NOT have to have a finished coating. All plans and plan alternations must be attached to the article. Protect plans with a cover if project is designed to be outside. Examples include: picnic tables, planters, outdoor furniture, etc.

WOODWORKING, FINISHING UP-UNIT 4

PREMIUMS: Purple, \$6.00; Blue, \$4.50; Red, \$3.00; and White, \$1.50

H911006 **Woodworking Article (Scoresheet SF91)**

Item made using skills learned in the Finishing Up project. Examples include: dovetailing, making a pen using lathe, overlays, using a router, etc. Item is required to be appropriately finished.

PREMIUMS: Purple, \$6.00; Blue, \$4.50; Red, \$3.00; and White, \$1.50

H911008 **Recycled Woodworking Display (Scoresheet SF95)**

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 engineering design process was used to develop the woodworking plan.**

Engineering Design Process:

1. State the problem (Why did you need this item?)
2. General possible solutions (How have others solved the problem? What other alternatives or designs were considered?)
3. Select a solution (How does your solution compare on the basis of cost, availability, and functionality?)
4. Reason for article finish (What type of finish, how did you finish or why you chose 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?)

DEPARTMENT K - CLOVER KID

Clover Kid is the officially recognized program in Nebraska for children under the age of 8. The program is designed to provide 5- to 7-year-olds a variety of educational and recreational experiences in a non-competitive environment. Clover Kid provides an excellent opportunity for youth to achieve his/her highest potential because early life experiences affect future development. The primary goal is to promote the child's stages of development – intellectually, physically, socially and emotionally: Develop Self-Esteem; Decision-Making Skills (making positive choices); Comprehensive Skills (learning how to learn; positive attitudes toward learning); Mastering Physical Skills (enjoying constructive and creative play); Social-Interaction Skills (getting along with others); Diversity Skills (acceptance of others; exploring family and community relationships).

All exhibits receive participation ribbons. There will be the opportunity for exhibits to be interviewed judged at check-in time.

PREMIUM: Participation Ribbon, \$1.00

CLOVER KID, ACTIVITIES

K100901 **Public Speaking** - Length of Speech: under 1 minute; Read a poem, story or speech.

K100903 **Presentation Contest** - "Show and Tell", length 1 to 3 minutes

K100904 **Food Revue Contest**

K100905 **Horticulture Judging Contest**