

DEPARTMENT H - SCIENCE & TECHNOLOGY

DEPARTMENT H – CLOVER KIDS

- ⇒ 4-H'ers that are 6, 7, or 8 are considered clover kids. Refer to the General Rules and Regulations for additional information.
- ⇒ 4-H'ers will only be allowed to choose a maximum of 3 projects under Department H. They may choose from any classes under Engineering, Model Rocketry/Aerospace, Model Building, Computers, Electricity, 4 Wheelin', Small Engines, Restored Vehicle, Woodworking, Welding, Entomology or Veterinary Science but may only choose 3 classes total under this department. High School Agricultural Mechanics Shop Projects and School Enrichment will be handled separately.
- ⇒ When filling out the entry forms please indicate the clover kid project with the appropriate division and a CK before the class number. Also please include the class name (bold) for reference.
- ⇒ Clover Kids will receive \$1.00 premium per class that they enter/complete, unless specified otherwise.

DEPARTMENT H - ENGINEERING

GENERAL INFORMATION:

- A. The name and county of each exhibitor should appear separately on the back of each board, poster or article and on the front 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" and not to exceed 1/4" in thickness. A height of 23 7/8" is acceptable to allow for the saw kerf if two 24 inch boards are cut from one end of a 4' x 8' sheet of plywood. Nothing should be mounted within 3/8" of the top or bottom of the board.
- D. Fabricated boards 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 wood-working exhibit.
- F. Demonstration boards should include an overall title for the display, plus other necessary labeling.
- G. All reports should be clearly written or typed and enclosed in a clear, plastic cover. The reports should be attached securely to the display.

DEPARTMENT H - MODEL ROCKETRY/AEROSPACE

GENERAL INFORMATION:

- Rockets must be supported substantially to protect the rocket from breakage. Rockets are to be mounted on 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 to the displays. In addition a used engine or length of dowel pin is to be glued and/or screwed into the board and extended up into the rockets engine mount to give added stability.
- 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 a clear plastic cover must include 1) rocket specifications 2) a flight record for each launching (weather, distance, flight height). 3) number of launchings, 4) flight pictures. The flight record should describe engine used, what the rocket did in flight and recovery success. Points will not be deducted for launching, flight and recovery failures described. This includes any damage that may show on the rocket.
- Complete factory assembled rockets (i.e. plastic fins) will not be accepted.
- Judging is based upon display appearance, rocket appearance, workmanship, design or capabilities for flight, and number of times launched. **Three** launches are required to earn the 25 launch points given on the score sheets. Only actual launches count, misfires will not count towards one of the required three launches.
- For self-designed rockets only, please include a VHS tape or digital recorded copy of one flight. In the documentation please include a description of stability testing before the rocket was flown.
- NOTE: You must be in your third year of a rocket project to exhibit rockets at the State Fair.

DIVISION 850 - PRE-FLIGHT - UNIT 1 - Not eligible for State Fair

AWARDS: Purple - \$2.00 Blue - \$1.50 Red - \$1.25 White - \$1.00

CLASS:

- C1 **Space Buggy** - Design and make a spacecraft from household items or items that could be reused instead of being thrown away. Material list: scissors, glue, assorted clean household materials such as; paper towel tubes, tissue boxes, plastic bottles, etc...Draw a picture of your buggy on a sheet of paper. On another separate sheet of paper briefly explain the job/jobs your space buggy can do.

- C2 **Space Station.** Draw a design of what you think an International Space Station of the future might look like. Using household items build a model of that station. On a sheet of paper briefly describe how scientists would use your Space Station.
- C3 **Rocket:** Any skill level 1 rocket with wooden fins.
- C4 **Rocket:** Any skill level rocket with plastic fins.

DIVISION 850 - LIFT OFF - UNIT 2 - Must be the 3rd year in the project to be eligible for State Fair

AWARDS: Purple - \$2.00 Blue - \$1.50 Red - \$1.50 White - \$1.00

CLASS:

- 1 **Rocket** - Any skill level 2 rocket with wooden fins painted by hand or air brush.
- 2 **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" by 22"
- 3 **Rocket** - Any Skill Level 2 Rocket with wooden fins painted using commercial application (example – commercial spray paint).

DIVISION 850 - REACHING NEW HEIGHTS - UNIT 3

AWARDS: Purple - \$3.00 Blue - \$2.00 Red - \$1.50 White - \$1.00

CLASS:

- 5 **Rocket** - Any Skill Level 3 Rocket with wooden fins painted by hand or air brush.
- 6 **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" by 22".
- 7 **Rocket** - Any Skill Level 3 Rocket with wooden fins painted using commercial application (example – commercial spray paint).

DIVISION 850 - PILOT IN COMMAND - UNIT 4

AWARDS: Purple - \$3.00 Blue - \$2.00 Red - \$1.25 White - \$1.00

CLASS:

- 10 **Rocket** - Any Skill Level 4 Rocket with wooden fins or any self designed rocket.
- 11 **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" b 22"

DEPARTMENT H - MODEL BUILDING (County Project)

GENERAL INFORMATION:

- Exhibitors limited to two entries.
- Assembly instructions and any other records must accompany the entry.

DIVISION 780 - MODEL BUILDING

AWARDS: Purple - \$2.00 Blue - \$1.50 Red - \$1.25 White - \$1.00

CLASS:

- C1 **Self Designed Model** utilizing preformed building materials (Legos, etc.)
- C2 **Model made with plastic** snap kits
- C3 **Model** made from plastic glue kits
- C4 **Model** from all wood kits
- C5 **Model** from a pattern, no kit material
- C6 **Model** from exhibitor's self design, no pre-made pattern or kit
- C7 **Model** in a 12" x 18" box diorama, scene connected with main model theme (i.e. army tank - battle field; car - race track; plane - runway, airport)
- C8 **Self propelled** or remote model

DEPARTMENT H – COMPUTERS

4-H'er needs to turn in projects the same time they turn in their pre-fair entry forms, on July 6, 2009.

DIVISION 860 - COMPUTER MYSTERIES - BOOTING UP UNIT I

AWARDS: Purple - \$2.00 Blue - \$1.50 Red - \$1.25 White - \$1.00

CLASS:

- C1 **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.
- C2 **Commercial Software Utilization** - Exhibit will be notebook of the documentation and print-outs using each section of the commercial program (i.e. Microsoft Works; Word processor, Database, Spreadsheet). The notebook will consist of the

following areas: 1) cover page, 2) print-outs of each of the sections offered by the software and 3) a paragraph explaining how each section can be used.

- C3 **Computer Art Poster (Black and White)** - Exhibit should be created on at least an 8 ½ " x 11" page using a commercially available graphics software package and a single color printer/plotter. No theme required.
- C4 **Computer Art Poster (Color)** - Exhibit should be created on at least an 8 ½" x 11" page using a commercially available graphics software package and color printer/plotter. No theme required.
- C5 **Computer Designed Greeting Card** - Exhibit will consist of six (6) greeting cards, each for a different occasion/holiday. Cards should be created on an 8 ½" x 11" page using commercially available graphics program and either single color or color printer/plotter. The cards should vary in folds and design. Tell which software program was used. Prefabricated cards from commercially available card programs will NOT be accepted. No theme required. Put cards in some type of protective cover.
- C6 **4-H Promotional Flier** - Exhibit should be created on 8 ½" x 11" page using a commercially available software package. Flier can be color or black & white. Fliers can be a whole page or a folded flier. Put exhibit in protective cover.

DIVISION 860 - COMPUTER MYSTERIES - UNIT II

4-H'er needs to turn in projects the same time they turn in their pre-fair entry forms, on July 6, 2009.

AWARDS: Purple - \$2.00 Blue - \$1.50 Red - \$1.25 White - \$1.00

CLASS:

- 1 **Computer Application Demonstration** – 4-H exhibitor demonstrates how to accomplish a task using a computer application software such as a spreadsheet, database, publishing, graphic design, accounting or precision farming program. This exhibit consists of a notebook (8.5x11 inches) which should include a (1) cover page, (2) 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 and (d) other tasks that can be accomplished using the computer application software and (3) print out of your project. Examples: design a logo for your school; enhance a digital image for a newspaper story; manage a checking account; create a poster to publicize an event; or to design scrapbook pages, or other.
- 2 **Produce a Computer Slideshow Presentation** – Using presentation software like Microsoft PowerPoint and following the *Checklist for Creating Your Next PowerPoint Presentation* located at <http://cit.information.unl.edu/info0806.htm> the 4-H exhibitor develops a slideshow about a topic related to youth. The slideshow should include a minimum of 10 slides and no more than 25. Incorporate appropriate slide layouts, graphics and animations. Each slide should include notes for a presenter. The exhibit includes a copy of the presentation saved to a CD-ROM along with a printout of the notes pages in a clear plastic cover. Slide presentation should relate to one topic.
- 3 **Teach an Adult** – The 4-H exhibitor writes a report between 1 and 3 pages describing a situation in which he or she has taught an adult(s) a computer skill. The report should include pictures of the 4-H'er working with the adult(s). The report should be in a clear plastic cover.

DIVISION 860 - COMPUTER MYSTERIES - UNIT 3

4-H'er needs to turn in projects the same time they turn in their pre-fair entry forms, on July 6, 2009.

AWARDS: Purple - \$2.00 Blue - \$1.50 Red - \$1.25 White - \$1.00

CLASS:

- 5 **Produce a 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.
- 6 **Build a Web Site** – Design a simple Web site for providing information about a topic related to youth using multiple computer application software programs such as an HTML editor like Microsoft's FrontPage or Macromedia's Dreamweaver, and image editor like IrfanView or GIMP. All files comprising the Web site should be included on a CD-ROM and able to be viewed using both Internet Explorer and Mozilla. Exhibit CD in a plastic case.
- 7 **Build Your Own Computer** (one component only)– Exhibit will be a notebook (8.5x11 inches) that includes a (1) cover page, (2) detailed report (2-3 pages) describing a specific computer component, (a) describe the component's purpose (b) how it is used, (c) the location (d) why components were chosen (e) cost of component from more than one source, and (3) pictures and supporting materials.
- 8 **Write A Software Program** – This project allows a 4-H'er to demonstrate his or her skills in writing a computer program using a common programming language. The program must demonstrate the use of data files and subroutines. It should demonstrate a high degree of organization and quality suitable for distribution to the general public. This exhibit consists of a notebook (8.5x11) which should include these parts: (1) a cover page, (2) a report including: (a) what the software can do, (b) why you wrote the software, (c) what features are included in the software, (d) how you will use the program in the future, (3) a flow chart in block diagram form, and (4) an example of input and output.

DEPARTMENT H - ELECTRICITY

DIVISION: 870 - ELECTRICITY - MAGIC OF ELECTRICITY - UNIT 1

AWARDS: Purple - \$2.00 Blue - \$1.50 Red - \$1.25 White - \$1.00

CLASS:

- C1 **Bright Lights.** Create your own flash light using items found around your house. Flash lights should be made out of items that could be recycled or reused.
- C2 **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.
- C3 **Conducting Things.** Make a circuit with a switch and a light bulb that can be used to test different household items for their ability to act as an insulator or conductor. You must find five items that are conductors and five items that are insulators. Create a table that illustrates your results.
- C4 **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.

DIVISION 870 - INVESTIGATING ELECTRICITY - UNIT 2

AWARDS: Purple - \$2.00 Blue - \$1.50 Red - \$1.25 White - \$1.00

CLASS:

- C5 **Case of Switching Circuit.** Use the following items: two D cell batteries, two battery holders, light bulb, bulb holder, a 3 inch by 6 inch piece of cardboard, six brass paper fasteners and approx. two feet of 24 gauge insulated wire to build a three way switch. Write a short essay or create a poster that illustrates how three way switches function.
- C6 **Rocket Launcher.** Construct a rocket launcher out of the following materials: a plastic pencil box that is at least 4 inches by 8 inches, single pole switch, single throw switch.
- C7 **Stop the Crime.** Build an ALARM using the following materials: On-off push button switch, mercury switch, buzzer-vibrating or piezoelectric, 9-volt battery, 9-volt battery holder, 4 inch by 4 inch by 1/8 inch Plexiglas board to mount circuit on; rosin core solder, soldering gun/iron, two feet of 22 gauge wire, wire strippers, hot glue sticks, hot glue gun and a plastic box with a lid to mount your alarm circuit on. Create a poster using photographs to show the "step by step process" you used to build your alarm.

DIVISION 870 - WIRED FOR POWER - UNIT 3

AWARDS: Purple - \$4.00 Blue - \$3.00 Red - \$2.00 White - \$1.00

CLASS:

- 1 **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.
- 2 **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.
- 3 **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.
- 4 **Poster** should exemplify one of the lessons learned in the Wired for Power project. Posters can be any size up to 28" by 22".

DIVISION 870 - ELECTRONICS - UNIT 4

AWARDS: Purple - \$4.00 Blue - \$3.00 Red - \$2.00 White - \$1.00

CLASS:

- 5 **Electrical/Electronic Part Identification:** Display different parts used for electrical/electronics 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.
- 6 **Electronic Display:** Show an application of one of the concepts learned in the Electronics project. Examples include components of an electronic device (refer to p. 35 of the Electronic manual).
- 7 **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.
- 8 **Poster** should exemplify one of the lessons learned in the Entering Electronics project. Posters can be any size up to 28" by 22".

DEPARTMENT H - 4 WHEELIN'

DIVISION 880 - 4-WHEELIN'

AWARDS: Purple - \$3.00 Blue - \$2.00 Red - \$1.50 White - \$1.00

CLASS:

- C1 **Tool Box** - put together using guidelines from the 4 Wheelin' manual. Include a description of the kit's purpose and a list of individual contents.
- C2 **Track or Course Design Drawing** - Scale drawing to actual track or course design. Indicate the direction the course is used with arrows. Display on a 14" x 22" poster.

DEPARTMENT H - SMALL ENGINES

DIVISION 890 - SMALL ENGINES - CRANK IT UP - UNIT 1

AWARDS: Purple - \$3.00 Blue - \$2.00 Red - \$1.50 White - \$1.00

CLASS:

- C1 **Small Engine Display** - Show an application of one of the concepts learned in the Unit I project. Examples include: identify the parts of a small engine, safety rules for starting a small engine, small engine repair tool identification.

DIVISION 890 - SMALL ENGINES - WARM IT UP - UNIT 2 - Must be 3rd year in project to be eligible for State Fair.

AWARDS: Purple - \$4.00 Blue - \$3.00 Red - \$2.00 White - \$1.00

CLASS:

- 1 **Small Engine Display/Item** - Show an application of one of the concepts learned in the project. Examples include: comparison of engine oil types, transmissions, or safety related to engines. Exhibit could be a poster display, or an actual item.

DIVISION 890 - SMALL ENGINES - TUNE IT UP - UNIT 3

AWARDS: Purple - \$5.00 Blue - \$4.00 Red - \$3.00 White - \$2.00

CLASS:

- 2 **Engine Display/Item:** Display/item should exemplify one of the lessons learned in the 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.)

DEPARTMENT H - RESTORED VEHICLE

DIVISION 891 - RESTORED VEHICLE

AWARDS: Purple - \$10.00 Blue - \$7.00 Red - \$5.00 White - \$3.00

CLASS:

- C1 In lieu of bringing a tractor, etc. to the fair, **submit a detailed report** explaining the process used to restore or overhaul. Also include a VHS tape or digital recorded copy of the item and the process used.
- C2 **Restored Vehicle** - This is a class for the exhibitors of automobiles, motorcycles, tractors or multi-cylinder engines that have been restored and/or overhauled in a 4-H petroleum power project or original specifications.
- C3 **Customized Vehicle** - This is a class for the exhibitors of automobiles, motorcycles, tractors or multi-cylinder engines that have customized the vehicle from original specifications.

DEPARTMENT H - ROBOTICS

GENERAL INFORMATION:

- All activities require a kit that can be checked out from the G-L-W Extension Office AFTER attending the Robotics Training on June 1, 2009.
- This project is suggested for ages 9 and above.

DIVISION 861 - ROBOTICS

AWARDS: Purple - \$3.00 Blue - \$2.00 Red - \$1.50 White - \$1.00

CLASS:

Robotics Explorer – Unit 1

- 1 **Robot or Not Poster** – create a 14" x 22" poster demonstrating how to determine whether an object is a machine, a computer or a robot. Poster should include at least 2-4 objects.
- 2 **Pseudocode Display Poster** – poster (14" x 22") should display the pseudocode written for the robot to perform at least four functions and utilize at least two modifiers. Include the pseudocode, and a written description of the icon functions.
- 3 **Robotics Explorer Video** – display in a notebook. Notebook should include a video clip on a CD/DVD that demonstrates the robot performing the programmed function. Include your pseudocode and a written description of the icon functions.

- 4 **Robotics Explorer Interview** – Interview someone who is working in the field of 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.
- 5 **Careers in Robotics** – Research a career in robotics. Your report can be either written or in a multimedia (CD/DVD) format. Written reports 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.

Robotics Probe – Unit 2

- 6 **Rotation Sensor Notebook** – Write pseudocode which includes at least one rotational sensor activity. Include the code written and explain what the code function is and how you would change it to improve either the function or the code.
- 7 **Robotics Probe Notebook** – Youth should follow one of the following activities in the project manual: Go the Distance, Tighten Your Belts, or Do the Time. Based upon the activity you select, replicate and complete the chart. Your notebook should include the chart and the answer to the following questions: 1) What did you learn about gears and gear ratios? 2) What are the benefits of using belts and pulleys? 3) What is the relationship between gear ratio and speed?
- 8 **Build a Robot** (may use kit) – Include a robot and a notebook which includes any code/pseudocode that you have written for the robot, the robots purpose, and any challenges or changes you would make in the robot design or programming.
- 9 **Life Skills Notebook** – Using the Life Skills Model (available through the G-L-W Extension Office), develop a notebook that explains which life skills you developed while enrolled in the robotics project and how they will influence you in the future.

DEPARTMENT H – GPS/GIS

DIVISION 880 - GPS/GIS

AWARDS: Purple - \$3.00 Blue - \$2.00 Red - \$1.50 White - \$1.00

CLASS:

- 1 **Mapping a Historical Site Within Nebraska Poster** – Using a global positioning system (GPS) device and preprinted map, pinpoint a historical site within Nebraska. Add 1-3 digital images of the historical site to the map and a brief explanation of the image and surrounding area, brief explanation of how photo was taken, camera, etc. . Latitude and Longitude of the site, map datum used, position format used and a brief explanation of why you chose this site. Exhibit will include: 2-4 pg. report on the map itself enclosed in a clear plastic cover attached to poster. The poster size should not exceed 22” X 30”.
- 2 **Mapping a Historical Site within Nebraska** – Using a global positioning system (GPS) device and a geographic information system (GIS) computer software application create a map at least 8 ½” X 11” and no larger than 26” X 24” (plotter map size) GIS map. The historical site must be in Nebraska. Map should include title, base map, neat line, north arrow, and legend. Identify 1-3 points of interest, using a GPS device, collect the GPS data and take a digital image of each point. Place the 1-3 points in the exact location on your map and ensure the GPS data is within the map or the legend. Place the digital images on your map in an appropriate location.
- 3 **Hand Drawn or Pre-printed Hurricane Tracking Map** – Create a hand drawn or pre-printed map of the Atlantic Ocean, the Pacific Ocean or the Gulf of Mexico. Blank hurricane base maps can be downloaded from The National Oceanic and Atmospheric Administration (NOAA) (<http://www.nhc.noaa.gov/>). The tracking maps must have at least 1-5 hurricanes from the same hurricane season or historical hurricane statistics. Each hurricane must be plotted with points showing the location of the storm and connecting lines to show the path of the storm. Plotting points and the line must be the same color. The plotting point will be every 12 or 24 –hour increments and must be identified with a shape (dot, square, triangle etc.). Hurricane data is located at this youth friendly website <http://www.wunderground.com/tropical/>. Exhibit will be 8.5” X 11” and mounted in a simple picture frame with hardware for hanging.
- 4 **GIS Hurricane Tracking Map** – Create a GIS map with a geographic information system (GIS) computer software application of the Atlantic Ocean, Pacific Ocean, or the Gulf of Mexico. The map should appear similar to the National Oceanic and Atmospheric Administration (NOAA) (<http://www.nhc.noaa.gov/>). The map should include title, base map, neat line, north arrow, and legend. The tracking map must have 1-5 hurricanes from the same season or historical hurricane statistics. Each hurricane must be plotted with points showing the location of the storm and connecting lines to show the path of the storm. Plotting points and line should identify the category of the Hurricane with the same color. Plotting points should indicate the date, latitude, and longitude of the point. The line should show the wind speed of the storm. The plotting point will be every 12 or 24-hour increments and must be identified with a GIS point shape (dot, square, triangle, etc.). Hurricane data is located at this youth friendly website (<http://www.wunderground.com/tropical/>). Exhibit will be an 8.5” X 11” to the maximum size of 36” X 24” (plotter map size) GIS map. Map can be laminated and should not be placed in picture frame.
- 5 **Hurricane Tracking Poster** – Exhibit will consist of a poster presentation using the approved National oceanic and Atmospheric Administration (NOAA) hurricane tracking maps. Go to the National Hurricane Center to print a hurricane tracking map at <http://www.nhc.noaa.gov/> . Poster can be of the Eastern Atlantic, the Full Pacific or the Western Atlantic using different colors and different plotting shapes for each hurricane. The plotting point must be identified with a shape (dot, square, triangle, etc) and must be connected by a line showing the progression of the storm. Plot points every 12- 24 hours. Hurricane data can be located at: <http://www.wunderground.com/tropical/>; . Include title, name of hurricane, date hurricanes

begins and ends, distance traveled, minimum and maximum wind speeds, types of categories and latitude and longitude, etc. Poster size should not exceed 22" X 30".

- 6 **4-H Youth Favorite Places** – The 4-H exhibitor visits his or her favorite place in Nebraska. Using a Global Positioning Systems (GPS) receiver he/she records the latitude and longitude of his/her favorite place. The exhibitor also takes a digital picture of the favorite place. The exhibitor then uploads the data and picture to the 4-H Youth Favorite Places Web site at <http://www.youthfavoriteplaces.org/index.php>. Up to three sites can be included in the state fair exhibit which is to consist of a folder/notebook explaining the steps involved in entering the data to the 4-H Youth Favorite Places Web site. Fair exhibit will include: A folder/notebook including a report for each site visited and at least one and no more than five digital photos and captions of each site visited. The reports should explain how the 4-H'er participated in the national 4-H Youth Favorite Places project, recording the information and then uploading it to the Web site. Each report should include (1) the nearest city or town, (2) the county where the site is located, (3) the latitude and longitude of the favorite place, (4) an explanation of why this is their favorite place and why other people should visit the place and (5) a list the steps for entering the data on the Web site for the national project. A printed copy of the Web site posting of each favorite place uploaded should also be included with the report in the folder. **NOTE:** 4-H exhibitor should choose a public location that others can visit; not their personal residence.
- 7 **GIS Thematic Poster**– Create a thematic poster using pre-printed or hand copies maps on any subject. Examples of Maps might be Emilia Earhart journey, Sir Francis Drake's Voyage, population density maps, water usage maps, and voter poll results, disease outbreaks in animals/humans or 4-H projects in Nebraska. Create a 1-3 page report on why you choose the subject and map(s), how you created the map(s) and the source of your data (use reliable sources such as the US Center for Disease Control or the US Census Bureau). Poster should include a Title and size should not exceed 22" X 30". Place report in plastic cover attached to poster.
- 8 **GIS Thematic Map** - Using any GIS software, create a thematic map. Thematic maps can utilize any subject of interest to the 4-Her. Maps could be of Amelia Earhart's journey, Sir Francis Drake's voyage, population density maps, water usage maps, or 4-H projects in Nebraska (examples). Create a GIS Map using data from books and/or internet. Use reliable date, ex. U.S. Center for Disease Control or U.S. Census Bureau. Map any size for 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 the map.

DEPARTMENT H - WOODWORKING

GENERAL INFORMATION:

- All articles exhibited must include a plan stating dimensions and other critical instructions a builder would need to know to build the project. Plans may include narrative instructions in addition to the dimension drawings. Part of the score depends on how well the project matches the plans. If plans are modified the changes need to be noted on the plans. Think about it like this. One department in a company develops a product and draws a set of plans. A second department manufactures the product and a third department makes the boxes that the product will be sold in. Still a fourth department will do the advertising for the product. As you can imagine the company has big problems and maybe a law suit if everyone doesn't follow the same plan. You are welcome to be the designer, but the plans and the article must match or points will be taken away at judging.
- All plans used for making the article must be attached and protected by a clear plastic cover and include the exhibitors name and county.
- Youth must be in 3rd year to exhibit at the State Fair.

DIVISION 911 - WOODWORKING - UNIT 1 - MEASURING UP

AWARDS: Purple - \$3.00 Blue - \$2.00 Red - \$1.50 White - \$1.00

CLASS:

- C1 **Woodworking Article:** Item made using skills learned in the project guide. Examples include: recipe holder, stilts or other skill level appropriate item. Items should be entered with construction plans.
- C2 **Wood Identification Display** - Samples of 10 woods. Each sample should be solid wood with dimensions not greater than 4" x 4" x 1" or less than 2" x 4" x 1/4". Samples should be sanded or planed and can be finished with a clear, colorless finish or can be unfinished. Finish both sides to reduce warping. Samples may be mounted on a board or can be displayed in a box or other container to make an attractive display. A label must accompany each sample listing the wood's common name, scientific name (underlined), type of wood (hardwood or softwood), whether the wood is from a tree native to Nebraska, common uses of the wood and other relevant information as needed.

DIVISION 911 - WOODWORKING - UNIT 2 - MAKING THE CUT

AWARDS: Purple - \$3.00 Blue - \$2.00 Red - \$1.50 White - \$1.00

CLASS:

- C3 **Woodworking Article:** - Item made using skills learned in the project guide. Examples include: birdhouse, foot stool, sawhorse, whistle, tool box. Items should be entered with construction plans.
- C4 **Woodworking Display** - Display exemplifying one of the principles learned in the project. Examples include safety rules, painting supplies, functions of tools.

DIVISION 911 - WOODWORKING - UNIT 3 - NAILING IT ALL TOGETHER

AWARDS: Purple - \$4.00 Blue - \$3.00 Red - \$2.00 White - \$1.00

CLASS:

- 1 **Woodworking Article:** Item made using skills learned in the manual. Examples include bookcase, coffee table or end table.
- 2 **Woodworking Display:** Display exemplifying one of the principles learned in the project. Examples include: measuring angles, wood lamination and joint types.

DIVISION 911 - WOODWORKING - UNIT 4 - FINISHING UP

AWARDS: Purple - \$4.00 Blue - \$3.00 Red - \$2.00 White - \$1.00

CLASS:

- 3 **Woodworking Article:** Item made using skills learned in the manual. Examples include: dovetailing, making a pen using lathe, overlays, using a router, etc.
- 4 **Woodworking Display:** Display exemplifying one of the principles learned in the project. Examples include career opportunities, type of finishes, or dovetailing.

DEPARTMENT H - WELDING

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.
- NOTE: You must be in your third year of a welding project to exhibit welding at the State Fair.

DIVISION 920 - WELDING - ARCS AND SPARKS

AWARDS: Purple - \$3.00 Blue - \$2.00 Red - \$1.50 White - \$1.00

CLASS:

- 1 **Welding Joints** - a display of one butt, one lap and one fillet weld.

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 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
- 2 **Position Welds** - a display showing three beads welded in the vertical down, horizontal and overhead positions.
Suggestions: 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 area 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.

AWARDS: Purple - \$4.00 Blue - \$3.00 Red - \$2.00 White - \$1.00

CLASS:

- 3 **Welding article** -any shop article where welding is used in the construction. All plans and bill of materials must be attached to the article. Protect plans with a cover.

Suggestions: 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.

DEPARTMENT H - HIGH SCHOOL AGRICULTURAL MECHANICS SHOP PROJECTS

GENERAL INFORMATION:

Judging of shop projects will be on the Danish system as follows: Construction and workmanship - 50 points; Utility and design - 30 points; Material finish - 20 points. Entries limited to one per class per exhibitor.

DIVISION 766 - HIGH SCHOOL AG. MECHANICS

AWARDS: Purple - \$3.00 Blue - \$2.00 Red - \$1.50 White - \$1.00

CLASS:

- C1 **Small Carpentry Item** - such as poultry feeder, tool cabinet, pair of saw horses, pig trough, pig brooder, lawn chair, show box.
- C2 **Small Metal Item** - such as saw horse, hand cart, poultry feeder, post driver, shop stool, ladder, food scraper, farm sign, electrode holder, mail box stand, etc.
- C3 **Small Item of Metal and Carpentry combination** - such as show box, hand cart, etc.

AWARDS: Purple - \$3.00 Blue - \$2.00 Red - \$1.50 White - \$1.00

CLASS:

- C4 **Medium Carpentry Item** - such as farm gate, work bench, ladder, picnic table, small feeder, etc.
- C5 **Medium Metal Item** - such as power drill press, power hacksaw, seed treater, tank heater, power lawn mower, welding table, feed care, farm gate, etc.
- C6 **Medium Item of Metal and Carpentry combination** - such as picnic table, farrowing crate, etc.

AWARDS: Purple - \$4.00 Blue - \$3.00 Red - \$2.00 White - \$1.00

CLASS:

- C7 **Large Carpentry Item** - such as hay rack, wagon box, loading chute, hog house, feed bunk, etc.
- C8 **Large Metal Item** - such as remodeled machinery, trailer chassis, manure loader, post hole digger, loading chute, etc.
- C9 **Large Item of Metal and Carpentry combination** - such as trailers, loading chutes, lo-boy, etc.
- C10 **Concrete Item** - such as hog troughs, stepping stones, fence posts.

DISPLAY BOARDS - Display boards shall be 18" x 24" in size.

DIVISION 766 - DISPLAY BOARDS

AWARDS: Purple - \$3.00 Blue - \$2.00 Red - \$1.50 White - \$1.00

CLASS:

- C11 **Display Board** of at least 6 hot metal projects
- C12 **Display Board** of at least 6 exercises in oxyacetylene welding.
- C13 **Display Board** of at least 6 exercises in arc welding
- C14 **Display Board** of at least 4 soldering and sheet metal items
- C15 **Display Board** of at least 6 electricity items
- C16 **Display Board** of metal lathe projects
- C17 **Miscellaneous exhibit**

DEPARTMENT H - ENTOMOLOGY

GENERAL INFORMATION:

- Specimens to be mounted properly and labeled with the date and location of collection, name of collector, and order name. Follow mounting and labeling instructions in the Nebraska 4-H Entomology Manual.
- Purchased insects and other insects not collected by the participant 4-H'er can be included, but must have accurate labels and will not be counted in meeting minimum requirements for the exhibit.
- Boxes to be not more than 12" high x 18" wide x 3" deep.

DIVISION 800 - ENTOMOLOGY

AWARDS: Purple - \$4.00 Blue - \$3.00 Red - \$2.00 White - \$1.00

CLASS:

- 1 **Entomology display - first year project** - Collection to consist of 25 or more different kinds (species) of insects representing at least 6 orders. Limit of one box.
- 2 **Entomology Display - second year project** - Collection to consist of a minimum of 50 kinds (species) of insects representing at least 8 orders. Replace damaged or poorly mounted specimens. About 25 species should be from after July 1 of previous year. Limit 2 boxes.
- 3 **Entomology Display - third or more year project** - Collection to consist of a minimum of 75 kinds (species) of insects representing at least 10 orders. Replace damaged or poorly mounted specimens. About 25 species should be from after July 1 of previous year. Limit of 3 boxes.

- 4 **Special Interest Display** - Educational display developed according to individual interests and abilities. Examples include a collection from a specific insect group (e.g. butterflies, grasshoppers) or by subject (e.g. insect pests of corn, aquatic insects, insect mimicry, etc), a research project, special report, poster display, insect scrapbook, artwork, etc. Poster displays should be no larger than 22" x 28". Other displays are restricted to a base area no larger than 22" x 28" nor should height be over 24". Research projects should include a report about methods and results, as well as a brief discussion about what was learned. Artwork should include a brief information about the work. Each display should be self-explanatory so that the audience can understand it without help.

DEPARTMENT H - SCHOOL ENRICHMENT

All posters for School Enrichment projects should be 14" x 22" and displays should be 12" x 15" x 10" high.

DIVISION 715 - EMBRYOLOGY

AWARDS: Purple - \$2.00 Blue - \$1.50 Red - \$1.25 White - \$1.00

CLASS:

C1 **Poster**

C2 **Display**

C3 **Chicken from Project**

C4 **Embryonic Development Display of Preserved Egg**

DIVISION 701 - JUST OUTSIDE THE DOOR

AWARDS: Purple - \$2.00 Blue - \$1.50 Red - \$1.25 White - \$1.00

CLASS:

C1 **Mini-Poster**

C2 **Major activity** from project book

C3 **Arts and Crafts** activity from project book

DEPARTMENT H - VETERINARY SCIENCE

GENERAL INFORMATION:

- The purpose of the Veterinary Science exhibit is to inform the public regarding a common health problem of animals, a veterinary principle or promotion of the Veterinary Science projects.
- A Veterinary Science exhibit may consist of a poster or a display.
 - The display may represent material from any of the Veterinary Science projects. Exhibitors should focus on one idea or problem, stressing the prevention of disease by use of good management. Do not confuse veterinary science display topics with animal husbandry production. The 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 damages 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.
 - The poster may represent material from any of the Veterinary Science projects. Exhibitors should focus on one idea or problem, stressing the prevention of disease by use of good management. Do not confuse veterinary science poster topics with animal husbandry production. The poster presents the viewer with a design that is simple and direct, unlike a display that presents more information. A poster should not exceed 22" x 28" and may be either vertical or horizontal.
- Each display must be identified with name, complete address and county.
- When using actual photographs, remember that these will be viewed by the public. Make sure that photographs used are in good taste and will not be offensive to anyone. Graphic photographs depicting excessive bleeding, trauma or painful procedures are not appropriate. For public displays related to veterinary surgical procedures, aseptic techniques need to be shown (use of drapes, use of sterile procedures, gloves worn during any surgeries, other appropriate veterinary medical practices).
- **NO ANIMAL FIRST AID KITS WILL BE PERMITTED.** This is due to public safety concerns and risk of theft.
- Appropriate Veterinary Science Topics:
 - Maintaining health
 - Specific disease information
 - Photographic display of normal and abnormal characteristics of animal
 - 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

DIVISION 840 - VETERINARY SCIENCE

AWARDS: Purple - \$2.00 Blue - \$1.50 Red - \$1.25 White - \$1.00

CLASS:

- 1 **4-H Veterinary Science Large Animal Poster or Display** - A large animal poster or display on one of the following topics or that of the exhibitor's choosing:
 - Photographic display of normal and abnormal characteristics of animals
 - Samples of leather, fur or dried skin damaged by disease or parasites
 - Animal health or safety
 - Specific diseases of either food animals or companion animals
 - Proper animal management to ensure food safety and quality
 - Efficient and safe livestock working facilities
 - Promotion of 4-H Veterinary Science project
 - Veterinary medicine as a career
 - Any other appropriate display, such as an actual skeleton, teeth or the equivalent.
 - Display to be self-explanatory to the viewers, but should be in exhibitor's own words and not consist exclusively of previously published pamphlets, brochures, journals, books or similar material.
- 2 **4-H Veterinary Science Small Animal/Pet Poster or Display** - A small animal poster or display on one of the following topics or that of the exhibitor's choosing:
 - Photographic display of normal and abnormal characteristics of animals
 - Samples of leather, fur or dried skin damaged by disease or parasites
 - Animal health or safety
 - Specific diseases of either food animals or companion animals
 - Proper animal management to ensure food safety and quality
 - Efficient and safe livestock working facilities
 - Promotion of 4-H Veterinary Science project
 - Veterinary medicine as a career
 - Any other appropriate display, such as an actual skeleton, teeth or the equivalent.
 - Display to be self-explanatory to the viewers, but should be in exhibitor's own words and not consist exclusively of previously published pamphlets, brochures, journals, books or similar material.