

Department H - Science & Technology

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All entries must be pre-entered at the York County Extension Office by July 15. All entries will be interview judged on Wednesday, August 5. Contact the extension office by Friday, July 31 for an appointment time.

Following is general information pertaining to all entries in Department H - Science & Technology:

- A. 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 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" in thickness. A height of 23 7/8" is acceptable to allow for the saw kerf (width) if two 24 inch boards are cut from one end of a 4'x8' sheet of plywood. Nothing should be mounted within 3/4" of the top or bottom of the board.
- 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. All reports should be clearly written or typed and enclosed in a clear, plastic cover. The reports should be attached securely to the display.

AEROSPACE

Each individual is limited to one exhibit per class. 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"x12"), 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 rocket must be mounted vertically. Please do not attach side boards 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 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 a clear plastic cover, must include 1) rocket specification; 2) a flight record for each launching (weather, distance, flight height); 3) number of launchings and 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 or 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. Plastic fins will only be allowed in class 902. 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 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.

* denotes those entries are not eligible for State Fair

Division 850 – Aerospace Pay Category 200

- *H850901 Rocket - any Skill Level 1 rocket with wooden fins.
- *H850902 Rocket - any skill level rocket with plastic fins.

LIFT OFF – UNIT 2

- H850001 Rocket - any Skill Level 2 rocket with wooden fins painted by hand or air brush.
- H850002 Display - needs to exemplify 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.

- H850003 Display can be any size up to 28" x 22".
Rocket - any Skill Level 2 Rocket with wooden fins painted using commercial application (example commercial spray paint)

REACHING NEW HEIGHTS - UNIT 3

- H850005 Rocket - any Skill Level 3 rocket with wooden fins painted by hand or air brush.
H850006 Display - needs to exemplify 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".
H850007 Rocket - Any Skill Level 3 Rocket with wooden fins painted using commercial application (example, commercial spray paint).

PILOT IN COMMAND – UNIT 4

- H850010 Rocket - any Skill Level 4 rocket with wooden fins or any self designed rocket.
H850011 Display - needs to exemplify 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".

COMPUTERS

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Division 860 – Computers Pay Category 200

COMPUTER MYSTERIES – UNIT 2

- H860001 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.

- H860002 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.
- H860003 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.

COMPUTER MYSTERIES – UNIT 3

- H860005 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.
- H860006 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.
- H860007 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.
- H860008 Write A Software Program - This project allows a 4-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.

One article may be exhibited per class with a limit of four articles per project. Disk must be included with project.

- *H860901 Computer Art Poster (Black & White) - Exhibit should be created on at least 8 x 11 papers using a commercially available graphics software package and a single-

color printer/plotter. No theme required.
Prefabricated posters/signs from
commercial available graphic programs will
NOT be accepted mounted on 14" x 22" a
poster board.

*H860902 Computer Art Poster (Color) - Exhibit
should be created on at least an 8 1/2 x 11
pages using a commercially available
graphics software package and a color
printer/plotter. No theme required.
Prefabricated posters/signs from
commercial available graphic programs will
NOT be accepted Mounted on 14"x22"
poster board.

*H860903 Computer Designed Greeting Card - Exhibit
will consist of six (6) greeting cards, each
for a different occasion/holiday. Exhibit
should be created on 8 1/2 x 11 paper using
a commercially available graphics program
and a color printer/plotter or single color
printer/plotter. The cards should vary in
folds and design. Prefabricated cards from
commercial available card programs will
NOT be accepted. No theme required. Put
cards in some type of protective sleeve that
can be pulled out to look at. The name of
the software program used should be
included.

GPS

H860001 Mapping a Historical Site Within Nebraska -
Using a global positioning system (GPS)
device and preprinted map, pinpoint a
historic site within Nebraska. Add 1-3
digital images of the historical site to the
map and a brief explanation of 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 map itself
enclosed in a clear plastic cover attached to
poster. The poster size should not exceed
22" X 30".

H860002 Mapping a Historical Site Within Nebraska -
Using a global positioning system (GPS)
device and a geographic information
system (GIS) computer software application
create an 8 1/2"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. Add 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.

H860003 Hand Drawn or Pre-printed Hurricane Tracking map – Create a hand drawn or pre-printed map of the Atlantic Ocean or the Gulf of Mexico. Blank hurricane base maps can be downloaded from The National Oceanic and Atmospheric Administration (NOAA) (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 and the line must be the same color. The plotting point will be every 12 to 24 hour increments and must be identified with a shape (dot, square, triangle, etc.). Hurricane data is located at this youth friendly website

www.wunderground.com/tropical/. Exhibit will be 8.5" x 11" and mounted in a simple picture frame with hardware for hanging.

H860004 GIS Hurricane Tracking Map - Exhibit will consist of a poster presentation using approved National Oceanic and Atmospheric Administration (NOAA) hurricane tracking maps. The maps can be of the Atlantic Ocean, the Pacific Ocean or the Gulf of Mexico. The tracking maps must have 1-3 hurricanes from the same hurricane season plotted on the map 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. The plotting point will be every 12 or 24 hours with the date located to the right of the plot point. Hurricane data can be located at:

www.wunderground.com/tropical/. Poster size will be 14" x 22" and include: (1) a title

(include year of the hurricane season), (2) the name of the hurricane and (3) listed below the name of the hurricane in column format: the dates of the storm in sequential order, the plotted latitude and longitude at 12-24 hour intervals, the highest hurricane category, and the highest sustained winds. Please include the Title, Base map, Neat Line, North arrow and Legend.

H860005 Hurricane Tracking Poster - Exhibit will consist of a poster presentation using the approved National Oceanic Atmospheric Administration (NOAA) hurricane tracking maps. Go to the National Hurricane Center to print hurricane tracking map at: 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:

www.wunderground.com/tropical/. Include title, name of hurricane, date hurricanes begins and ends, distance traveled, minimum and maximum wind speeds, type categories and latitude and longitude, etc.

H860006 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:

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.

H860007 GIS Thematic Poster – Create a thematic poster using pre printed or hand copies map 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.

H860008 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 Frances 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. US Center for Disease Control or US 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.

ELECTRICITY

The name and county of each exhibitor should appear separately on the back of each board or articles and a set of plans so owner of exhibit may be identified if the entry tag is separated from the exhibit.

All reports should be clearly written or typed and enclosed in a clear, plastic cover. The reports should be attached securely to the display.

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" boards are cut from one end of a 4'x8' sheet of plywood. Nothing should be mounted within 3/4" of the top or bottom of the board. Fabricated board such as plywood, composition board, or particle-type lumber may be used for demonstration displays. Demonstration boards should be sanded and finished to improve their appearance. The finish on a demonstration board will be judged as a woodworking exhibit. Demonstration boards should include an overall title for the display, plus other necessary labeling.

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Division 870 – Electricity Pay Category 200
MAGIC OF ELECTRICITY – UNIT 1

- *H87090 Bright Lights - create your own flashlight using items found around your house. Flashlights should be made out of items that could be recycled or reused. No kits.
- *H870902 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.
- *H87090 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.
- *H870904 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.

INVESTIGATING ELECTRICITY – UNIT 2

- *H87091 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 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.
- *H87091 Rocket Launcher - construct a rocket launcher out of the following materials: a plastic pencil box that is at least 4" x 8", single pole switch, single throw switch, normally-open push button switch, 40 feet of 18 or 22 gauge stranded wire, 4 alligator clips, 2-by-6-board 6" long, 1/8" diameter metal rod, rosin core solder, soldering iron or gun, wire stripper, small crescent wrench, pliers, small Phillips and straight blade screwdrivers, drill, 1/8 " and 1/4" drill bits, rocket engine igniters, additional drill bits matched to holes for two switches. You must successfully build a rocket launcher and light two rocket igniters with your launcher. Create a poster using photographs to show the "step by step process" you used to build your launcher.
- *H870912 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 blue 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.

ELECTRICITY – WIRED FOR POWER - UNIT 3

- H870001 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.
- H870002 Lighting Comparison - display studying the efficiency of various lights (incandescent, fluorescent, halogen, light emitting diodes,

- etc.) Exhibit could be a poster display, or an actual item.
- H870003 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.
- H870004 Poster should exemplify one of the lessons learned in the Wired for Power project. Posters can be any size up to 28" x 22".

ELECTRONICS – UNIT 4

- H870005 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.
- H870006 Electronic Display - show an application of one of the concepts learned in the Electronics project. Examples include: components of a electronic device (refer to page 35 of the Electronic manual).
- H870007 Electronic Project - exhibit an electronic item designed by the 4-Her or form a manufactured kit that shows the electronic expertise of the 4-Her. Examples include: a radio, a computer or a volt meter.
- H870008 Poster - should exemplify one of the lessons learned in the Entering Electronics project Posters can be any size up to 28" by 22".

SMALL ENGINES

Division 890 – Small Engine Pay Category 200 CRANK IT UP – UNIT 1

- *H89090 Small Engine Display/Item - show an application of one of the concepts learned in the Crank It Up project. Examples include: identify the parts of a small engine, safety rules for starting a small engine,

small engine repair tool identification.
Exhibit could be a poster display or an actual item.

WARM IT UP – UNIT 2

H890001 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.

TUNE IT UP – UNIT 3

H890002 Engine Display/Item - display or 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.).

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 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 from the original need to be noted on the plans. All plans used for making the article must be securely attached and projected by a clear plastic cover.

* denotes those entries which are County Fair ONLY.

Division 910 – Woodworking Pay Category 200

MEASURING UP – UNIT 1

*H911901 Article - item made using skills learned in the Measuring Up project. Examples include: recipe holder, stilts or other skill

- level appropriate item.
- *H91190 Display - display exemplifying one of the principles learned in the Measuring Up project. Examples include: safety, tools and proper way to use them, etc.
 - *H911903 Second Article Making the Cut - Unit 2
 - *H911910 Article - item made using skills learned in the Making the Cut project. Examples include: birdhouse, foot stool, napkin or letter holder.
 - *H911911 Display - display exemplifying one of the principles learned in the Making the Cut project. Examples include: woodworking careers, different wood species, sanding, types of finishes, etc.
 - *H911912 Second Article Nailing It Together - Unit 3

NAILING IT TOGETHER – UNIT 3

- H911001 Article - item made using skills learned in the Nailing It Together manual. Examples include: bookcase, coffee table or end table.
- H911002 Display - display exemplifying one of the principles learned in the Nailing It Together manual. Examples include: measuring angles, wood lamination and joint types.
- H911915 Second Article

FINISHING UP – UNIT 4

- H911003 Article - item made using skills learned in the Finishing It Up manual. Examples include: dovetailing, making a pen using lathe, overlays, using a router etc.
- H911004 Display - display exemplifying one of the principles learned in the Finishing It Up project. Examples include: career opportunities, types of finishes, or dovetailing.
- H911920 Second Article

WELDING

All 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, 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.

Division 920 – Welding Pay Category 200

- H920001 Welding Joints - a display of one butt, one lap and one fillet weld.
- H920002 Position Welds - a display showing three beads welded in the vertical down, horizontal and overhead positions.
- H920003 Welding Article - any shop article where welding is used in the construction. All plans and bill of materials must be attached. Protect plans with a clear plastic cover.

4-H Welding Project Tips and Suggestions

CLASS 1

1. All welds should be made with the same electrode/ wire/rod size and number.
2. Welds should be made only on one side of metal so penetration can be judged.
3. Welds should be cleaned with chipping hammer and wire brush. Apply a coat of light oil (penetrating oil) to the metal to prevent rusting. Wipe off excess oil.
4. It is suggested that all welds be on the same size and thickness of metal. These pieces, referred to as coupons, should be 1.5 to 2 inches wide and 3.5 to 4 inches long. A good way to get this size is to buy new cold rolled strap iron and cut to length. The extra width is needed to provide enough metal to absorb the heat from the welding process and prevent the coupons from becoming too hot before the bead is completed. Narrower coupons will become very hot, making an average welder setting too cold at the bead start, just about right in the middle, and too hot at the end. The correct way to weld narrow strips is to make short beads and allow time to cool, however this project requires a full length bead.

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

CLASS 2

1. It is suggested that all welds be on same size thickness of metal. These pieces are referred to coupons. The welds can be on one coupon that is about 4" x 4" or on individual coupons that are about 2" x 4" inch and 1/4" thick. Suggested rods for this class of position welds for AC and DC straight or reverse polarity is, first E-6013, second E-7014 and E-6010 for DC reverse polarity only.
2. Welds should be cleaned with a chipping and wire brush. Apply a coat of light oil (penetrating oil) to the metal to prevent rusting. Wipe off excess oil.

CLASS 3

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.

ROBOTICS

ROBOTICS EXPLORER – UNIT 1

- H921901 Robot or Not Poster - Create a poster 14"x 22" demonstrating how to determine whether an object is a machine, computer or a robot. Poster should include at least 2 - 4 objects.
- H921902 Pseudo code Display Poster - Poster (14" x 22") should display the pseudo code written for the robot to perform at least four functions and utilize at least two modifiers. Include the pseudo code, and a written description of the icon functions.
- H921903 Robotics Explorer 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 functions. Include your pseudo code and a written description of the icon functions.
- H921904 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.
- H921905 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

- H921906 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.
- H921907 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 the complete 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?
- H921908 Build a Robot (may use kit) - Include a robot and a notebook which includes any code/pseudo code that you have written for the robot, the robots purpose, and any challenges or changes you would make in the robot design or programming.
- H921909 Life Skills Notebook - Using the Life Skills Model (available through your local 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.