

# SCIENCE, ENGINEERING & TECHNOLOGY DEPARTMENT H

☛ ALL STATIC EXHIBITS MUST HAVE RECEIVED A PURPLE RIBBON AT THE COUNTY FAIR TO ADVANCE TO THE STATE FAIR.

## GENERAL INFORMATION

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 exhibit may be identified if the entry tag is separated from the exhibit.

Each individual is limited to one exhibit per class.

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 (width) if two 24 inch boards are cut from one end of a 4' X 8' sheet of plywood. Nothing should be mounted within 3/4" of the top or bottom of the board. (Example: Woodworking, Small Engines, & Electricity.)

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

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

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

Reports should be written using the scientific method whenever possible (Background, the Question or hypothesis, what you plan to do and what you did, Method used and observations, Results: what you learned. All reports should be computer generated and enclosed in a clear plastic cover. The reports should be attached securely to the display.

## ELECTRICITY

Department H - Section 870  
Premium Schedule B

### MAGIC OF ELECTRICITY - UNIT 1

For classes 911-914, please refer to 4-H manual Electric#1 "Magic of Electricity".

911. **Unit 1 Bright Lights** - Create you own flash light using items found around your house. Flash lights should be made out of items that could be recycled or reused. No kits please.
912. **Unit 1 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.
913. **Unit 1 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.
914. **Unit 1 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

For classes 915- 917, please refer to 4-H manual Electric 2 "Investigating Electricity".

915. **Unit 2 Case of the Switching Circuit** - Use the following items: two D cell batteries, two battery holders, light bulb, bulb holder, a 3" by 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.
916. **Unit 2 Rocket Launcher** - Construct a rocket launcher out of the following materials: a plastic pencil box that is at least 4" by 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 x 6- board 6" long, 1/8 inch 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 inch and 1/4 inch 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. You DO NOT have to actually fire a rocket off of the launcher. Create a poster holder 4" x 4" x 1" using photographs to show the "step by step process" you used to build your launcher.
917. **Unit 2 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 /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.

#### ELECTRICITY- WIRED FOR POWER – UNIT 3

- \*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".

#### ELECTRONICS – UNIT 4

- \*5. **Electrical/Electronic Part Identification** - Display different parts used for electrical/electronic work. Exhibit should show the part (either picture or actual item) and give a brief description, including symbol of each part and its function. Display should include a minimum of 10 different parts.
- \*6. **Electronic Display** - Show an application of one of the concepts learned in the Electronics project. Examples include: components of a electronic device.
- \*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".
- \*10. **Careers Interview** - Interview someone who is working in the field of electricity and research that career. Interview 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.