

DEPARTMENT H – SET ELECTRICITY

In this category, 4-H'ers have the opportunity to create informational exhibits about the different aspects of electricity. Through involvement in this category, 4-H'ers will be better educated about electricity and be able to present their knowledge to others. For more resources and materials in this category, refer to the manuals.

DIVISION 870

Class

Electronics - Unit 1 Magic of Electricity

901. **UNIT 1 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 please.
902. **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, a bulb holder, paper clip, cardboard, and two brass paper fasteners to create a circuit that you can open and close.
903. **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.
904. **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.

Electronics - Unit 2 Investigating Electricity

905. **UNIT 2 Case of the Switching Circuit** – Use the following items: two D cell batteries, two battery holders, light bulb, bulb holder, a 3"x6" piece of cardboard, six brass paper fasteners and approximately 2' 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.
906. **UNIT 2 Rocket Launcher** – Construct a rocket launcher out of the following materials: a plastic pencil box that is at least 4"x8", single pole switch, single throw switch, normally-open push button switch, 40' of 18 or 22 gauge stranded wire, four alligator clips, 2x6 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. You **DO NOT** have to actually fire a rocket off of the launcher. Create a poster using photographs to show the "step-by-step process" you used to build your launcher.
907. **UNIT 2 Stop the Crime** – Build an ALARM using the following materials: On-off push button switch, mercury switch, buzzer-vibrating of piezoelectric, 9-volt battery, 9-volt battery holder, 4"x4"x1/8" Plexiglas board to mount circuit on; rosin core solder, soldering gun/iron, 2' 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.

Electronics - Unit 3 Wired for Power

- *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** – Poster should exemplify one of the lessons learned in the Wired for Power project. Posters can be any size up to 28"x22".

Electronics - Unit 4 Entering Electronics

- *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 an electronic device (refer to p. 35 of the project manual "Entering Electronics").
- *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** – Poster should exemplify one of the lessons learned in the Entering Electronics Project. Posters can be any size up to 28"x22".