

- Class 905 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.
- Class 906 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.

### **ELECTRIC EXCITEMENT 2**

**Exhibits from these classes (907-909) are NOT eligible to go on to State Fair**

- Class 907 Case of the 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.
- Class 908 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, normally-open push button switch, 40 feet of 18 or 22 gauge stranded wire, 4 alligator clips, 2- by 6- board 6 inches 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 using photographs to show the "step by step process" you used to build your launcher.
- Class 909 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 Plexiglass board to mount circuit on; rosin core solder, soldering gun/iron, two feet of 22 gauge wire, wire strippers, hot glue gun 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.

### **ELECTRIC EXCITEMENT 3**

- 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.
- Class 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.
- Class 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.
- Class 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".

### **ELECTRIC EXCITEMENT 4**

- 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.
- Class 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).

- Class 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.
- Class 8 Poster should exemplify one of the lessons learned in the Entering Electronics project. Posters can be any size up to 28" by 22".

### **CAREER EXPLORATION**

- Class 10 Careers Interview: Interview someone who is working in the field of electricity and research that career. 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.

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# **ROBOTICS**

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### **STATE FAIR ENTRIES:**

**Premier 4-H Science Award is available in this area.**

## **DEPT. H / DIV. 861**

### **ROBOTICS**

**Youth enrolled in Robotics Explorer, Robotics Probe or GEAR TECH 21 may exhibit in any class within this division.**

- Class 1 Robotics Poster – Create a poster (14"x 22") communicating a robotics theme such as "Robot or Not", "Pseudocode", "Real World Robots", "Careers in Robots" or "Autonomous Robotics", "Precision Agriculture" or a robotic topic of interest to the 4-H'er.
- Class 2 Robotics Notebook – 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, a programming skill, calibration, sensor exploration, or any of the topics suggested in Class 1.
- Class 3 Robotics 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 function. Include your pseudocode and screenshots of the actual code with a written description of the icon/command functions.

### **CAREER EXPLORATION**

- Class 4 CAREER INTERVIEW – 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. Written reports should Multimedia reports should be between 3 to 5 minutes in length.
- Class 5 Robotics Sensor Notebook – Write pseudocode which includes at least one sensor activity. Include the code written and explain the code function.
- Class 6 Build a Robot (may use kit) –Include a robot and notebook including the pseudo codes for at least one program you have written for the robot, the robots purpose, and any challenges or changes you would make in the robot design or programming.