Switches

Make a switch so that you can turn your circuit on or off.

Related Exhibits: Circuits
Time: 10-15 minutes
Ages: 10 and up who have an understanding of a basic circuit
Staff: Floor staff or volunteer
Safety: Give general warning about experimenting with electricity. Experimenting with an AA battery is ok, but is not ok to experiment with electricity from an outlet or car battery. In case of an electrical short or an object getting hot, disconnect immediately.

Materials:
- Toys with switches, disassembled to expose the switch. Other types of switches, such as light switch
- Motors or bulbs
- AA batteries
- Wires/alligator clips
- Tape
- Cardboard or other non-conductive material to build the switch on
- Assorted conductive materials such as paper clips, springs, aluminum foil, coins, metal tacks

Procedure:
1. Build a basic circuit.
2. Disconnect a section and experiment with designing a switch using the materials provided.

Questions to Ask:
Can you make a switch that works like a button and creates a closed circuit when pressed? Can you make a toggle switch?

Science Content:
A switch is used to create a complete circuit when it is in the closed ("on") position. In the open position it is off. There are many types of switches. Some of the most common include a toggle switch, such as a light switch. It is basically a lever that has two positions, open or closed. Another common switch is a pushbutton switch: when depressed the connection is closed, when up the connection is open. Toys with electronics generally have an on/off switch and possibly other switches that may be external (user-driven) or internal (mechanism-driven).

Other Resources:
www.allaboutcircuits.com/vol_4/chpt_4/1.html includes information on how different switches work.