

CIRCUIT SWITCH

A homemade switch is a fun and easy way to understand how switches work in controlling the flow of electricity.

INSTRUCTIONS:

STEP 1: Cut a piece of cardboard into a rectangle about 2 x 3 ". This will serve as the base of your switch.

STEP 2: Poke two small holes in the cardboard, about 1 inch apart, near one edge of the cardboard.

Push a metal fastener (paper brad) through each hole and secure it on the back of the cardboard by spreading the prongs flat.

STEP 3: Attach the paper clip to the second fastener and then push it through the second hole.

STEP 4: Rotate the paper clip so that it touches the first fastener. This will close the circuit and act as your switch.

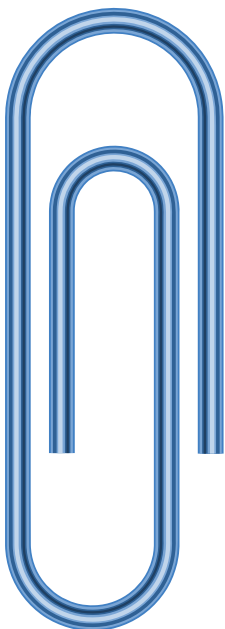
STEP 5: Attach one wire from your circuit to one fastener using electrical tape or an alligator clip. Attach another wire to the second fastener in the same way.

STEP 6: Ensure the paperclip is touching both fasteners at the same time to "close" the circuit. The bulbs in your circuit should light up!

Rotate the paperclip away from the fastener to "open" the circuit. The bulb should go out.

Materials

Small piece of cardboard
2 metal fasteners
(paper brads)
1 paperclip
Electrical tape (optional)
Pre-built series circuit

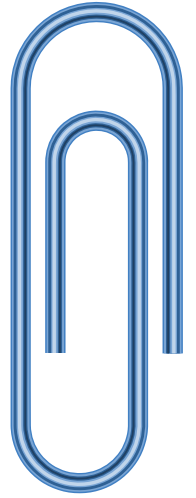


THE SCIENCE

The paperclip acts as the movable part of the switch, controlling whether the electric current can flow through the circuit. When the paperclip touches both fasteners, it completes the electrical path, allowing the current to flow. When the paperclip is lifted, the circuit is interrupted, and the current stops.

Circuit Switch Observations

Use this worksheet to process and evaluate your work.



Did your circuit switch work?

Why do the bulbs light up when the paperclip touches both fasteners?

Would the switch work if you replaced the paperclip with a piece of plastic or wood? Why or why not?

How is this simple switch similar to or different from the switches you use at home?

Can you think of other ways to make a circuit switch using different materials?

