



EXPERIMENT

Complete a Circuit

Print this page and follow the directions to build your own circuit.

In order for electricity to travel to where we need it, there must be a complete circuit of electricity. A complete circuit is like a circle. Electricity starts at a particular place, travels around the circuit, and returns to the same place.

Ask an adult to help you with this experiment.

Materials:

- 1 D-cell battery
- 1 1.2-volt light bulb
- 1 E-10 light bulb base
- Two 12-inch pieces of insulated solid strand copper wire (18–22 gauge), with 1 inch of insulation removed at each end
- Masking tape



Directions:

1. Connect one end of each wire to the light bulb base (see illustration).
2. Tape one free wire end to each end of the battery.

In this experiment, the complete circuit is something like the electrical distribution system that brings electricity to our homes. The battery produces the electricity like the generating plant does. What part of the distribution system is like the wires?

What happens if you tape only one of the wires to the battery? Why?



EXPERIMENT TIPS

Complete a Circuit

This basic experiment appears in the section *Travels of Electricity*.

Materials:

Students will need the materials listed on their activity sheet (1 D-cell battery, 1 1.2-volt light bulb, 1 E-10 light bulb base, two 12-inch pieces of insulated solid strand 18-22 gauge copper wire with 1 inch of insulation removed at each end, masking tape). Make sure the light bulbs and bases match.

Safety First:

- Students should be supervised by an adult while doing this experiment.
- A teacher or another adult should be responsible for stripping insulation.
- Explain to students that electricity can be dangerous if it is not handled correctly, and emphasize that they should never experiment with the electricity that comes from a wall outlet. It's much more powerful than the electricity made by small batteries and could seriously injure or even kill someone.

Objective:

Students will build a circuit and equate it to the path of electricity that comes from power plants.

Getting It Across:

Have students read the information and follow the steps on the page. Make sure they are able to identify the circuit electricity travels from the battery to the light bulb and back, and the circuit electricity travels from power plants to homes and back. They should be able to equate the wires in the experiment with power lines and electrical wiring in the electric distribution system.

Questions and Answers:

What part of the distribution system is like the wires in the experiment? (Power lines and electrical wiring.) What happens if you tape only one of the wires to the battery? Why? (The bulb does not light. The circuit is not complete unless both wires are taped to the battery, allowing electricity to flow in a circle.)