

Student Home Guide: Making A Simple Circuit

Explore and understand the transfer of electrical energy through a simple circuit and the role of insulators and conductors in the circuit.

MATERIALS:

- Electrical wire
- D-cell (1.5-volt) Battery
- Small light bulb
- Rubber gloves
- Tape
- Piece of plastic
- Penny
- Other optional as required by teacher

Hey Kids:

Watch for signs and symbols in your science classroom!


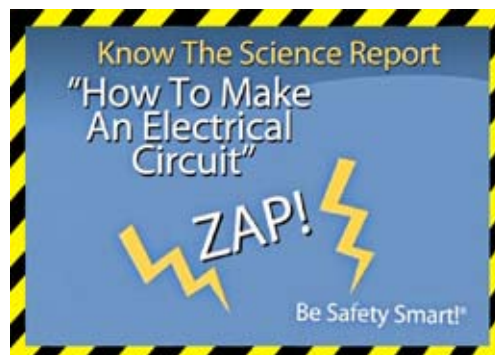
PROCEDURE:

Part A - Building a basic simple circuit

1. If the materials needed to conduct your investigation are in a central location, gather those materials now before proceeding.
2. Wrap one end of the wire around the metal base of the light bulb. If necessary, wrap a small piece of tape around it to hold it in place.
3. Tape the other end of the exposed wire to the bottom of the battery. Make sure that the wire is actually touching the battery surface.
4. Touch the base of the bulb to the top of the battery. Respond to the questions in Part A of the Data and Questions section.

Part B - Trying alternative circuit arrangements


5. Use other materials provided by your teacher to try a variety of circuit arrangements. Only try one at a time, and take care to not keep a bulb lit for too long or you will run down your battery. When you find a configuration that you really like (and that works very well to light the bulb!) illustrate it in Part B of the Data and Questions section.



Note to the Safety Smart!

1. Never use cords that are worn or have exposed wires or broken plugs.
2. Tie back long hair, don't wear loose clothing, and don't lean over wires or power sources.
3. Do not touch power sources or wires that are not insulated.

Look for signs and symbols when dealing with electricity!



5. When you signal that your group is ready, your teacher will add boiling hot water to your cup, just covering the bowl of the spoon. Begin timing at that point (0 minutes), and take one temperature reading for each spoon each minute. Record the data as it is collected and respond to the questions in part B of the Data and Questions section. If your teacher allows, you may repeat the experiment and record data for another spoon made of a different material.

Note: It is important to always clean up your work area after you have completed an investigation. Did your group leave things the way they found them, or not? You don't need to answer, but if you didn't get things clean, then you should get **Safety Smart!**

DATA and QUESTIONS:

Part A:

What happens when the base of the bulb is touched to the top of the battery?

What happens when it is removed?

Part B:

Illustrate the circuit arrangements that worked well for your group. Be sure to show all wires, batteries, and bulb(s).



Part C:

Item between bulb and battery	Rubber glove	Piece of Plastic	Penny
Bulb lit? (yes/no)			

Which type of material(s) conducted electrical energy well?

Which did not? Which would be best used to insulate wires?