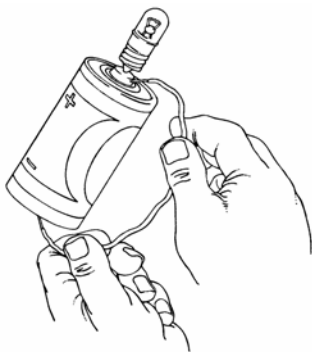


Electricity

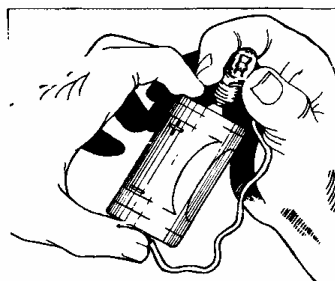
A Look at Circuits

(Lesson 2)

Background: (What you're studying today) Have you ever wondered how a light bulb lights up? In this lesson, you will learn how to light a bulb using a battery, some wire and a small bulb. **Electricity** flows along a **pathway** called a **circuit** and in this lesson, the battery, wire and bulb will work together to form a circuit. Although electricity is invisible, you can see the results of its flow between the battery and bulb when the light bulb lights. Below you will see diagrams of two circuits. Diagram A shows a **short circuit** and Diagram B shows a **complete circuit**. Only one of these circuits will light the bulb! Look carefully at how each circuit is made and guess which one will light the bulb.



Short Circuit



Complete Circuit

Question: (What you want to find out) Does a bulb need a short circuit or a complete circuit to light?

Hypothesis: (Prediction) I think that a bulb needs a **short circuit** **complete circuit** to light.

Materials: (What you'll need) 1 D-cell battery 1 bulb 6" piece of wire (ends stripped)

Procedure: (Numbered steps needed to complete the investigation)

1. Build the short circuit as shown in Diagram A. Have one partner hold the battery with the metal tip of the bulb resting on the north pole of the battery. Have the other partner touch one end of the bare wire to the south pole of the battery and the other end of bare wire to the north pole. Make sure you hold the wire by its plastic coating and **don't touch the bare ends!**
2. Observe if the bulb lights or not and record that on your data sheet.
3. Build the complete circuit as shown in Diagram B. The metal tip of the bulb should sit on the north pole of the battery and the wire should run from the south pole of the battery to the side of the bulb base.
4. Observe if the bulb lights or not and record that on your data sheet.

Data: (What happened)

Circuit:	Short Circuit	Complete Circuit
Bulb lights?	Yes	Yes
	No	No

Conclusion: (What you learned) My hypothesis was **proven** **disproved** because a bulb needs a **short circuit** **complete circuit** to light.

- The _____ circuit made a continuous path for the electricity to flow from the south pole of the _____, through the bulb and back into the north pole of the _____. The bulb **did** **did not** light up.
- The electricity in the _____ circuit went from one end of the battery to the other, but did not go through the bulb. The bulb **did** **did not** light up.

Discussion: (What else can you say?)

1. Can you find the variables in this investigation?

- List two controlled variables. (What you kept the same to make the investigation fair)
1. _____ 2. _____
- What was the manipulated variable? (The one thing you changed to get an answer)
- What was the responding variable? (The one thing you were testing)

2. Write down something you have learned about electricity from this lesson.

3. Did you notice that one of these circuits made the battery feel hot? Which circuit caused this to happen and why might it be a dangerous circuit to have in your house?

