
Synopsis: Flashlight Challenge

In this activity we will build the worlds simplest flashlight. This should be a fun introduction to circuits.

Standards

4th Grade

1a. Students know how to design and build simple series and parallel circuits by using components such as wires, batteries, and bulbs.

1g. Students know electrical energy can be converted to heat, light, and motion.

9-12th Grade

5a. *Students know* how to predict the voltage or current in simple direct current (DC) electric circuits constructed from batteries, wires, resistors, and capacitors.

Driving Questions

1.) What is a circuit? Open? Closed? Short?

Learning Objectives

1.) Students will gains a hand on understanding of what it means to have a closed circuit.

Flashlight Challenge

Procedure

Work independently.

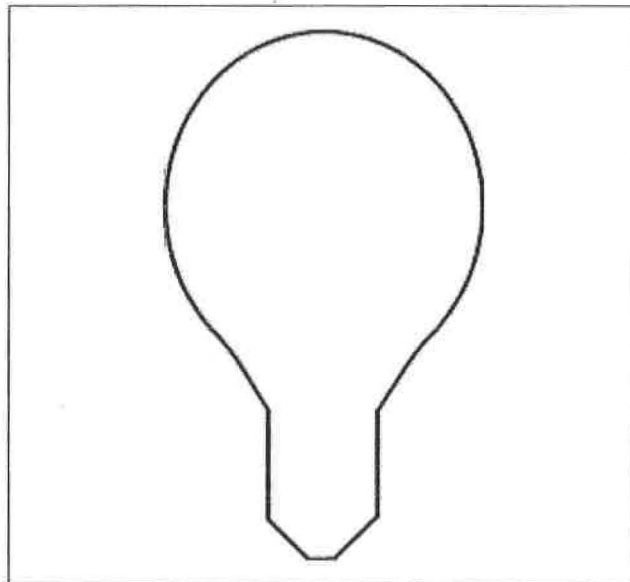
Make sure you have the following:

- 1 D Battery
- 1 piece of aluminum foil
- 1 small light bulb

Your goal: Get the light bulb to light up.

Follow up questions:

1. Draw a picture of the light bulb circuit that you get to work. Show how the electrons are flowing.
2. Draw pictures of at least three ways to connect together a battery, light bulb and piece of wire that doesn't get the light bulb to light.
3. Explain how your circuit that works is different from those that don't work. Describe in particular what is meant by a **complete circuit**.
4. Sketch the filament inside this light bulb. Indicate which portions of the bulb that come into contact with the filament must be good conductors and which must be good insulators.



Instructor Notes: Flashlight Challenge

This activity is relatively bullet proof. It is a nuts and bolts introduction to circuits. Use D batteries. A, AA, AAA and C will work, but they produce quite a bit of heat.

Safety

This activity has little to no risk associated with it. Students may be a little apprehensive, thinking they may get a shock from the battery. They will not be shocked by a D cell or any other 1.5 V battery. The battery may get warm when the circuit is complete.

Materials

Only!

- 1 D Battery
- 1 piece of aluminum foil
- 1 small light bulb

Notes
