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## 6-9: The Flashlight

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### Introduction

One of the simplest circuits in common use is a flashlight circuit.

### Materials

Bulb, two 1.5 v batteries, materials to make a reflector, conducting path and switch

### Procedure

1. Design a flashlight which is able to project a circle onto a wall from a distance of 15 cm using a flashlight bulb, two 1.5 v batteries and other materials as necessary to make a conducting path and a reflector. No standard flashlight parts (except for the bulb) may be used.
2. Build the flashlight so that it is sturdy and self-contained. The switch should turn the light on and off and should not need to be held to keep the light on.
3. Test the flashlight by turning it on, demonstrating that it can make a well defined circle on the wall, lay it down to show that it will remain on and then turn it off.

## 6-9: *The Flashlight*

### Generalizations and Explanations

1. A flashlight has the four essential parts of a circuit: the power source, the conducting path, the resistance and the control. Identify each of these with a part of the flashlight circuit.
2. How does the shape of the reflector affect the shape of the light on the wall?
3. What would happen if only one battery is used for the bulb?

### Connections

1. Describe the transformation of energy from the time the switch is turned on until the time the light hits the wall.