

Name: \_\_\_\_\_

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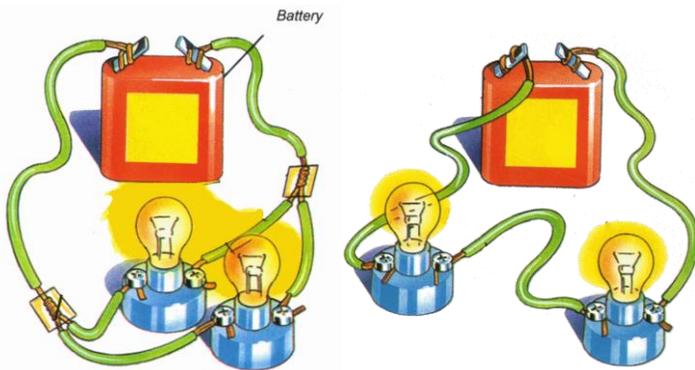


# Week 11 - Squishy Circuits

Materials:	Amount:
Power supply	1
Conductive Play-doh	1 ball
Light Emitting Diodes (LEDs)	3

**Procedure:** TRY TO LIGHT UP THE LEDs WITHOUT THE HELP OF SCOUTS!

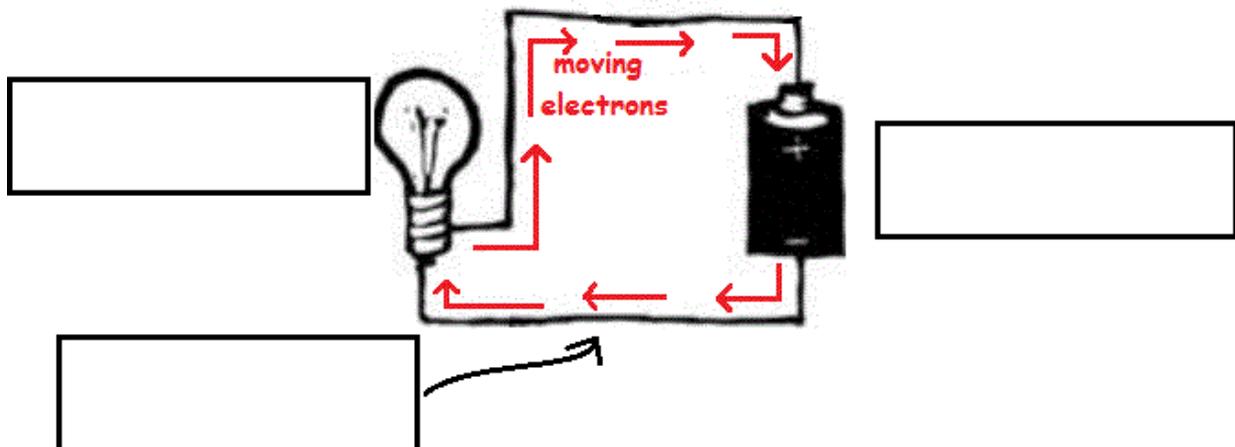
1. Listen to the SCouts talk about the different parts of a circuit: power supply, wire, & load.
2. The power supply is a battery, the conductive play-doh is the conductor, and the load is an LED. Try putting together the three so that the LED lights up!
3. The power supply and LEDs come with two leads, or tails. Stick the leads into the dough to connect a power supply or LED to a "wire".
4. Don't forget that a circuit must be a closed loop!
5. Also, watch out for short cuts you might accidentally make in your loop!
6. After you get one LED to light up, try putting more LEDs in your circuit.
7. After you get multiple LEDs to light up, find ways to make some LEDs brighter than others.



## What are circuits?

Before in Static Electricity, we learned that **conductors** are things that like to **move charges: electrons**. Also, in Marshmallow Catapults, we learned that **moving objects** have **kinetic energy**. So in a way, **electricity** is a form of **energy**. Electrical engineers have used these ideas to build circuits. **Circuits are closed loops** that are **always moving charges** along **conductors** to **power many things** from lamps to computers.

**Question 1:** Listen to the SCouts talk about the different parts of a circuit. Label the following diagram using the terms on the back page.



1. The **energy source**, also called a **power supply**, is normally a battery that stores electrical energy as chemicals inside.
2. The **load** is an object that has **resistance** which uses up the energy from the energy source. (Read below.)
3. The **conductor** is some material where moving electrons travel along from the battery to the load. Usually, the conductor is a metal wire.

## Resistance

Electrical **resistance** is like **friction to moving electrons**. We already know that electrons move easily through conductors, so **conductors have low resistance**. On the other hand, objects that have **high resistance** are called **insulators** because they **block** the flow of **electrons**. The resistance of an object depends not only on what it is made of but also its shape. A load's **resistance** is what **takes away energy** from moving electrons, kind of like how we use the friction of our hands to make heat on a cold day.

**Question 2:** In our circuit, we use a special Play-doh as the conductor. Name another material that is a good **conductor**. (Hint: What are the tails of the LEDs made of?)

**Question 3:** Circle the correct answer.

Electrons move more easily through things with ( high / low ) resistance.

## **Bonus Question: Think like an engineer!**

Ever notice why batteries have + and - sides? This is because electrons flow out from the ( + / - ) side and flow back in the ( + / - ) side.

