

Circuits Warm Up:

1.) How do we use electricity every day?

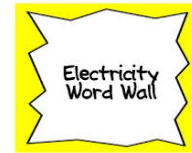
- lights, computers, electronics, tvs, microwaves, etc...

2.) What do you think of when you hear the word "current?"

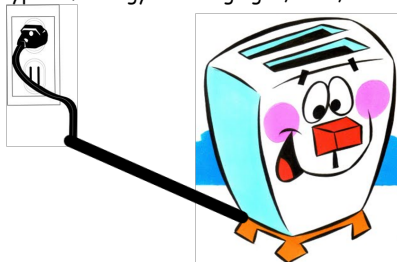
- new, flowing...?
- various sources: nuclear power, solar energy, wind energy, hydropower...

3.) Where does electricity come from?

What do you know about electricity and circuits?



You need a complete circuit for electrons to flow and have an electrical current. Electricity is important because we can use it to make so many things work. When electrons are pushed or pulled through a circuit (electrical force), the electrical energy can be converted through energy transformation into many other types of energy including light, heat, and sound.



School House Rock: Electricity



Electric Circuits- Glue RT

Electricity is the presence or movement of electrons, which are tiny, negatively charged particles that orbit an atom's nucleus. Electricity is what we get when electrons move from one place to another.

Energy can be transferred from one system to another when two objects push or pull on each other over a distance. In the case of electricity, electrons are pushed and pulled through a circuit.

A force is a push or a pull. There are many types of forces. The pushing and pulling of moving electrons is an electrical force.

Electricity is naturally present in lightning and static electricity, but the flow of the electrons in lightning and static electricity are not controlled or steady.

In order for electricity to be useful in our homes and devices, there needs to be a steady flow of electrons called a current.

There also needs to be a complete circuit or a complete loop through which the electrical current can pass.

In a complete circuit, energy starts at a power source (for example a battery), moves through a conductor (for example, a metal wire), passes through a load (a device that uses electricity such as a light bulb or toaster) and returns back to the power source.

It starts out in one place, travels around the circuit, and ends up back at the place where it originated (it makes a complete loop). The electrons are pushed and pulled through the circuit.

Web Activity

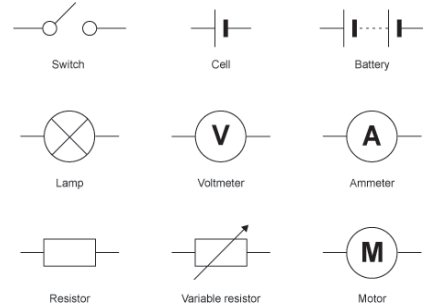
Types of Circuits- Class copy

- A **closed circuit** has a complete path for current to flow. An **open circuit** broken path so current cannot flow, which means that it's not functional.
 - You might think that when a circuit is open, it's like an open door or gate that current can flow through. And when it's closed, it's like a shut door that current can't flow through. Actually, it's just the opposite, so it might take awhile to get used to this concept.
 - A **series circuit** is a circuit in which loads are arranged in a chain, so the current has only one path to take. The current is the same through each resistor. The total resistance of the circuit is found by simply adding up the resistance values of the individual resistors.
 - A **parallel circuit** is a circuit in which the loads are arranged with multiple paths to take. The current in a parallel circuit breaks up, with some flowing along each parallel branch and re-combining when the branches meet again.
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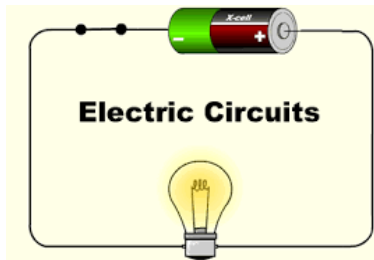
Circuit Foldable

| | |
|------------------|----------------|
| Closed Circuit | Open Circuit |
| Parallel Circuit | Series Circuit |

Circuit Symbols



Electrical Circuits Web Quest



CIRCUIT LAB

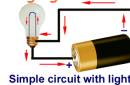
Warm Up: Read over your lab sheet!

Warm Up

- 1.) In a complete battery circuit, what is the name/purpose for a battery? -a power source
- 2.) What is the light bulb or electrical appliance called in an electrical circuit? -the load
- 3.) Review: Does pressure increase or decrease as you go get higher into the atmosphere? -air pressure decreases

Batteries and Circuits

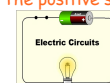
- Batteries are devices that use "energy transformation" to produce electricity. They work by changing stored chemical energy into electrical energy.



- A chemical reaction inside a battery creates electrons. These electrons are stored in the negative terminal (-) of the battery. When a battery is part of a complete circuit, the negative terminal pushes the electrons out.



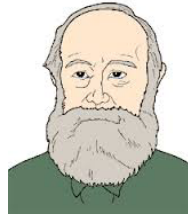
- The electrons travel from the negative terminal, through the circuit to the positive terminal (+). The positive side of the battery pulls the electrons in.



- Batteries create an electrical force by pushing and pulling electrons through a complete circuit.

James Prescott Joule

Reading & Questions



Choose your Own Adventure:



OR

