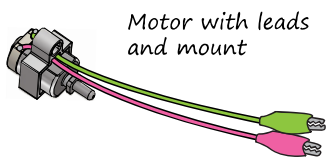


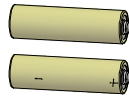
# Basic electricity Activity



Let's have some fun, and learn a little bit about electricity. Here's what you'll need to complete this activity:

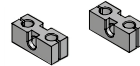
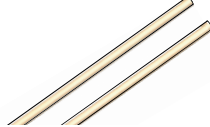


Motor with leads and mount



1-3 AA Batteries

2 Dowels: at least 150mm (6in)



2 Perpendicular Blocks

Other materials, such as a metal wire, paper clip, plastic strip, dowel, metal screw, etc.



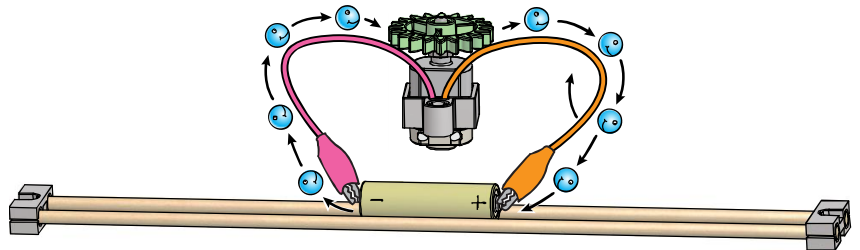
## 1. Make a battery holder.

It is easy to make a battery holder out of 2 perpendicular blocks and 2 dowels.



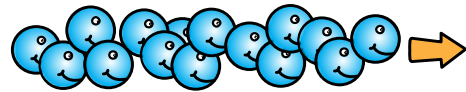
## 2. Run your motor.

Touch your motor leads to the ends of a battery. The motor should turn on. Is it magic? Nope... it's electricity.



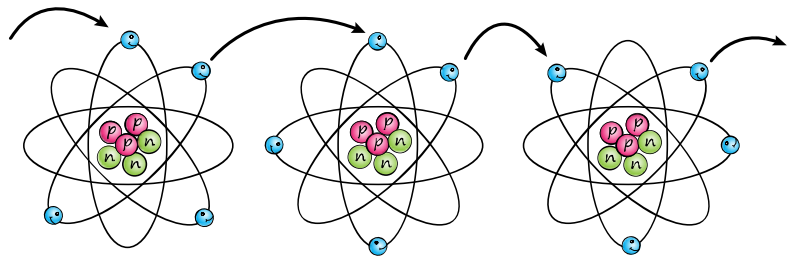
## 3. What is electricity?

Electricity is the flow of electrons (from one place to another). Electricity flows through your motor to make it run.

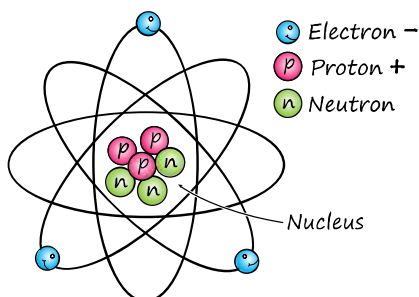


## 4. Electrons can move?

Yep... Electrons can move by hopping from atom to atom. Electrons are flowing through you right now; allowing you to think, feel and move your muscles.



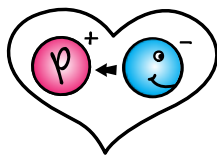
## 5. What is an atom?



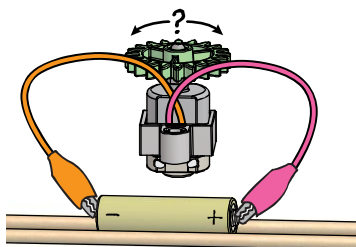
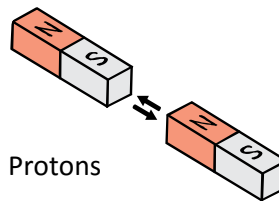
Look around you. Every object is made of atoms. The average adult is made of around 7,000,000,000,000,000,000,000,000 atoms. How many atoms do you think you are made of?



## 6. Why do electrons move?



Have you ever heard that opposites attract? It's true. Electrons have a negative (-) charge. Protons have a positive (+) charge. This makes electrons and protons opposites, and the perfect match. Electrons will do anything possible to get to a free (single) proton. Only electrons can move. Protons and neutrons are stuck in the nucleus of the atom.

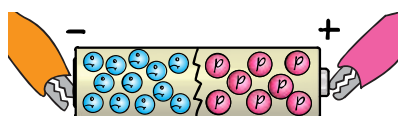
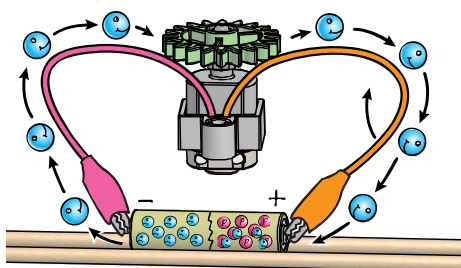


## 7. Where is reverse?

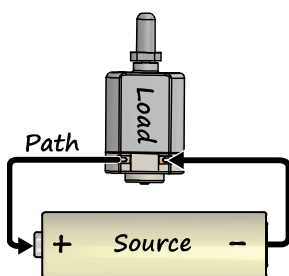
Can you find a way to make your motor turn backwards? Does your solution have anything to do with the direction electrons flow?

## 8. How does a battery work?

A chemical reaction inside a battery causes electrons to crowd on the negative side. The electrons want to get to the protons (their perfect match) on the positive side. The electrons cannot travel inside the battery. They need an outside path to get to the protons.



What makes the negative side of the battery negative, and the positive side positive?

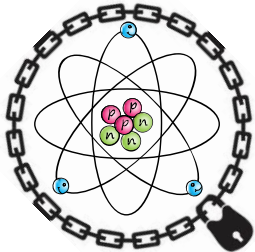


## 9. Make a circuit.

Too late... You created a circuit when you connected your motor to the battery. A circuit is a complete path for electricity to flow. In a circuit, electricity flows from the source, through a load and back to the source.

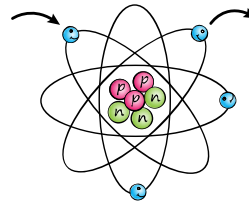
## 10. What can electricity flow through?

Insulator



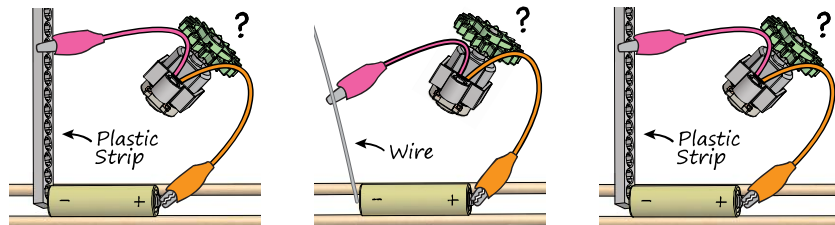
Insulators are materials that do not let electrons easily flow through them.

Conductor



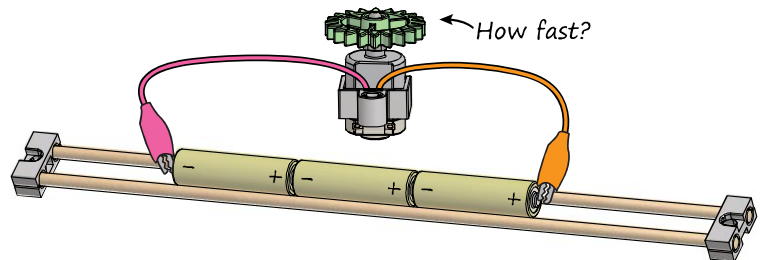
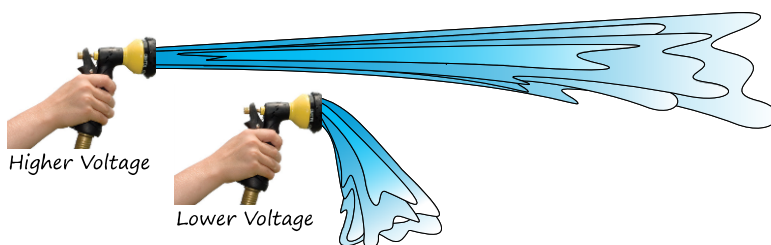
Conductors are materials that let electrons easily flow through them.

Test different materials to see if they are an insulator or conductor. Put them between the battery and one of the motor leads. If the material is a conductor, electricity should flow through it and turn the motor on.



## 11. Give it more Voltage.

Voltage is the pressure (force) that causes the flow of electricity. It's like water pressure. Take a look at the picture. The amount of water exiting the nozzles is the same. The pressure (voltage) of the water exiting the nozzles is different.



$$1.5 \text{ Volts} + 1.5 \text{ Volts} + 1.5 \text{ Volts} = \text{--- Volts}$$

Do you have more batteries? Put 2 or 3 of them together. Make sure they are all facing the same way. How does it change the speed of the motor?

*It's time for you to create your own electrical project!*