

ELECTRICITY AND MAGNETISM: STUDY GUIDE!

Electricity is **energy** is made of **electrons**. Electrons can travel easily through **conductors**, but get blocked by **insulators**. An object that opposes the flow of electricity is said to have high **resistance**. When electricity travels it must be in a closed circuit.

There are two main types of circuits - parallel and series. A **parallel circuit** is one in which each item has it's own path - if a bulb burns out, the rest stay lit. In a **series circuit** each item is on the same path - if a bulb burns out, they all do.

The **electrons flow from the negative to the positive**. This can result in a **magnetic charge**.

A **magnet** is an object that sticks to certain types of metal - iron, cobalt, and nickel. Magnets that are free-moving are called **compasses**. A magnet that occurs in nature is called a **lodestone**. The earth is a magnet - the molten metal in its core creates a **magnetic field**. This field deflects dangerous solar particles and results in the Northern Lights. This is why the Earth has a **north** and **south** pole - just like all magnets.

A Magnetic Field

You can make your own magnet - they are created when the electrons in an object all line up and face the same direction.

The coolest way to make a magnet is to make an **electro-magnet**.

Electro magnets are made when you wrap a wire around a magnetic object and run a current through the wire - use a battery. The electrons are all flowing in one direction - they produce a magnetic field.

An electromagnet.

Using a magnet and a spool of wire, you can generate electricity. Spin the magnet in the wire (or spin the wire) and electricity will be generated.