

## Electricity Explained Part 1

This tutorial will introduce the concept of what electricity is  
You will then learn about:

Positive and Negative Charges

What a conductor is

What an Insulator is

What a resistor is

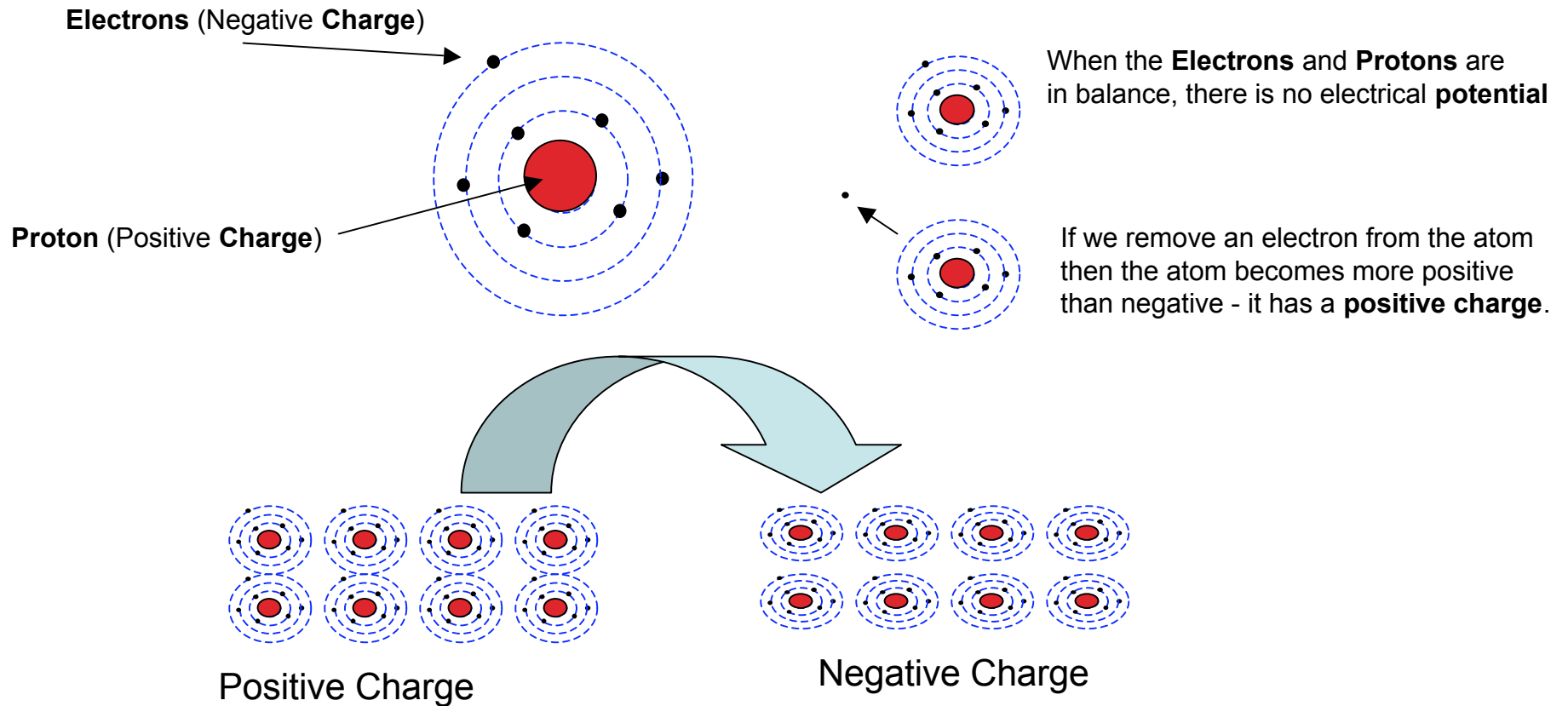
What Volts are

What Amps are

What Ohms are

These are the basic building blocks to understanding electricity and the information you will need to help you with the far more practical tutorials to come.

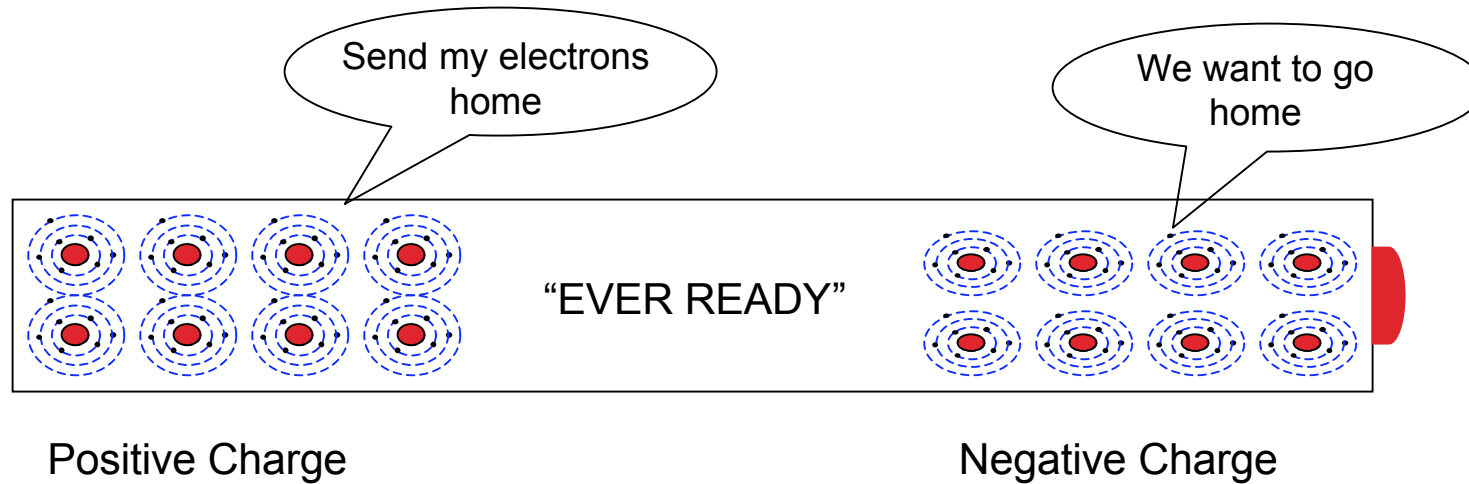
Everything around us is made of atoms and all atoms have an electrical charge  
The electrical charge comes from the balance between Protons and Electrons



If we move electrons from one object to another - then the **Donor** becomes more **Positive** and the **Receiver** becomes more **Negative**.

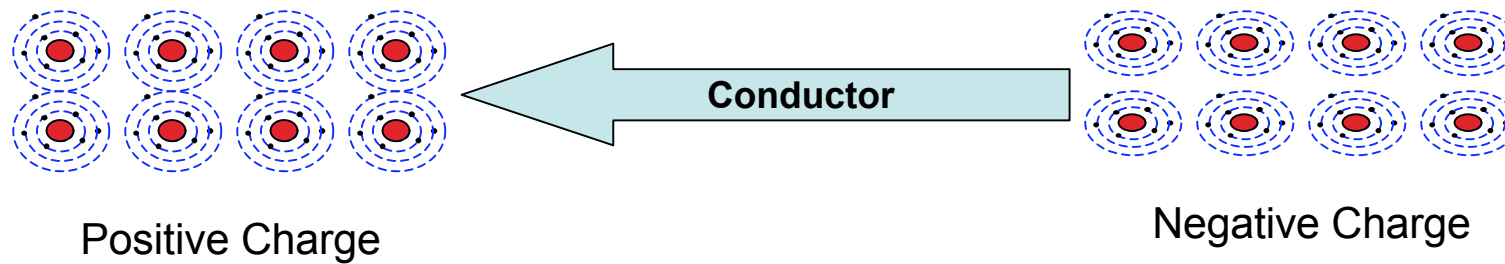
Nature likes things to be in balance - so if we move electrons from one place to another they will want to move back again.

This is what happens when we **Charge a battery**



We call this force to return to balance - the potential difference

Potential difference is measure in **Volts (V)**

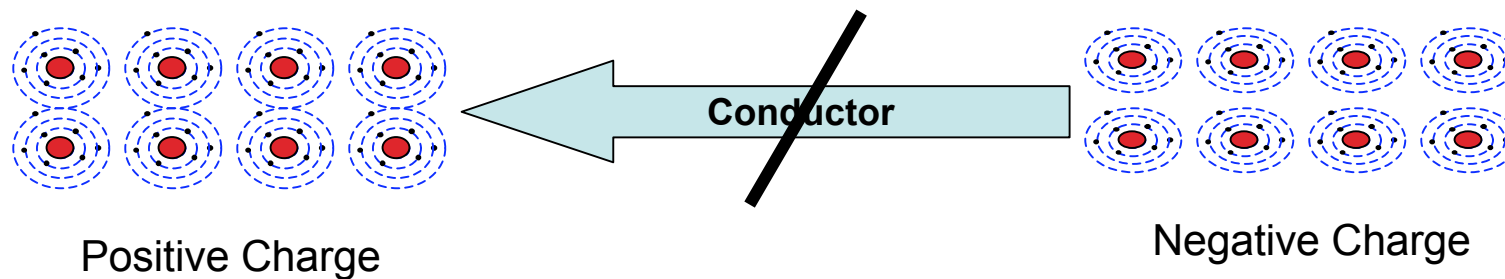


We move electrons from one object to another along a **Conductor**  
**Conductors** are materials or objects that allow electrons to flow through them

Examples of good **conductors** are:

Copper  
Aluminum  
Steel  
Water  
**People**

We measure the flow of electricity in units called **Amperes** or **Amps (A)**



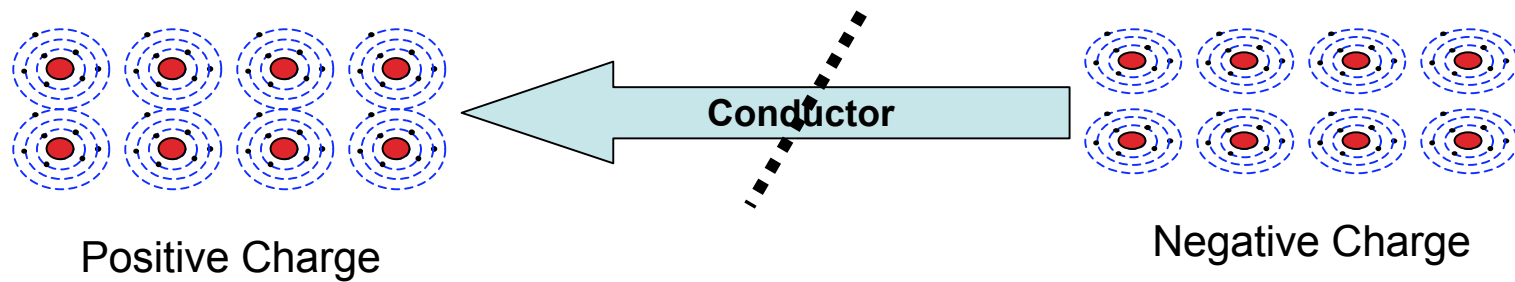
Materials that do not conduct electricity are called **Insulators**. Insulators do not allow electrons to flow through them

Examples of good **Insulators** are:

Glass  
Rubber  
PVC  
Air  
Porcelain

We measure the resistance to the flow of electricity in units called **Ohms ( $\Omega$ )**

**Warning** - All conductors will allow electricity to flow if the voltage is high enough (e.g the back of your TV). Water on the surface of insulators will let Electricity flow - (e.g Sweat on hand tools)

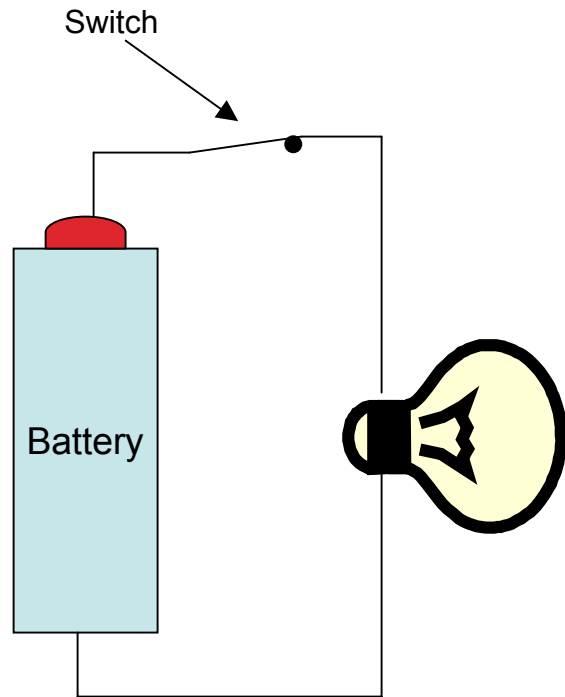


Some materials allow electrons to flow very slowly - they do not stop the flow, but they do **Resist** the flow  
A bit like you riding a bicycle with the breaks rubbing on the wheel - You can go along the road but you can't go as fast and there is one other effect - the break shoes will get hot - resistors produce **heat**.

Examples of good **Resistors** are:

- Conductors that have been made very thin
- Loose connections between conductors
- Filaments in Light bulbs

**Resistance** is a form of **Insulator** so again we measure the **resistance** to the flow of electricity in units called **Ohms ( $\Omega$ )**



## Summary of Part 1

So now you know - It is the busy electrons that are flowing  
From the negative potential to the positive potential  
That makes your flash lamp shine.

The rate of flow is measured in **Amps**

The potential difference is measured in **Volts**

The filament in the lamp gets very hot when it **resists** the **electrical current**  
and glows white hot to give you light

And one more piece of information - When we connect conductors to a source of  
Electricity and then connect an electrical appliance (like a bulb), we call this  
a **Circuit**.

When we close a switch, **Make a Circuit**, when we open a switch,  
we **Break a Circuit**.