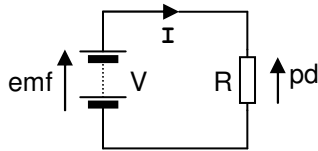


## Basics

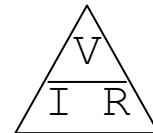
Current is the flow of electrons through a material. Conventional current is said to flow out of the positive terminal of a battery, through the circuit and back to the negative terminal.



The battery is a source of electro-motive force (emf) or voltage, which can be thought of as the pressure driving the current round the circuit. Voltage is also used to express the difference in electrical pressure between two points in a circuit – sometimes called potential difference.

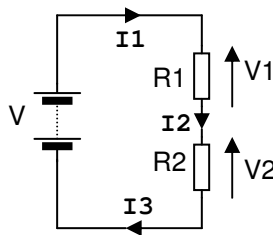
Resistance is the property of the material making up the circuit to resist the flow of current, thus consuming energy.

The current flowing into a point of a circuit is always equal to the current flowing out of that point. The sum of all the potential differences around a circuit always equals the sum of the emfs in that circuit. Voltage, current and resistance are related by Ohms Law shown in the triangle.



## Series Circuit

In a series circuit, the voltages are split but the current is the same everywhere. Therefore  $I_1=I_2=I_3$  and  $V=V_1+V_2$ . The exact values of  $I_1$ ,  $V_1$  and  $V_2$  can be calculated using Ohms Law. Two resistors arranged in series like this is often known as a potential divider and is frequently used in electronics.



## Parallel Circuit

In a parallel circuit, the current is split but the voltages are the same. Therefore  $I_1=I_2+I_3$  and  $V=V_1=V_2$ . The exact values of  $I_1$ ,  $I_2$  and  $I_3$  can again be calculated using Ohms Law.

