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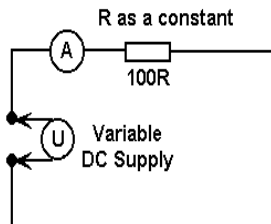
## Ohms Law and Transposition of Formulae

**George Ohm** is attributed with discovering the relationship between current flowing in a circuit and the pressure applied across that circuit. This became known as *Ohm's Law*. Ohm's Law states that the current (I) flowing through a circuit is directly proportional to the potential difference (U), across that circuit, and *inversely* proportional to the resistance (R) of that circuit, provided the temperature remains constant.

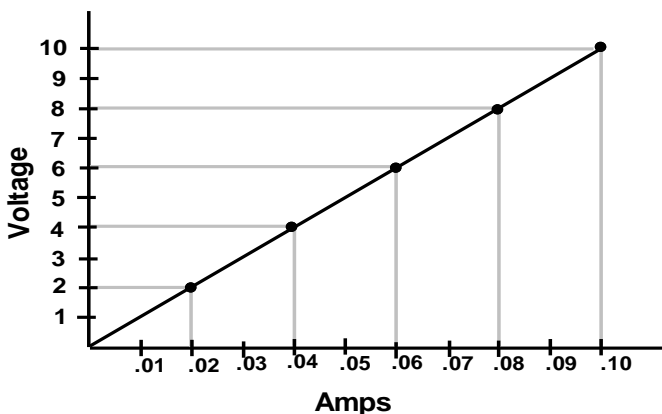
### To Confirm Ohm's Law...

In this arrangement the resistor value is kept constant whilst the voltage is increased in steps of two volts and current readings are taken.

The following results were obtained from the experiment and then plotted in graph form as is presented below.



Voltage	=	I	x	R
2	=	0.02	x	100
4	=	0.04	x	100
6	=	0.06	x	100
8	=	0.08	x	100
10	=	0.10	x	100



The graph shown and the experiment illustrate that current flow increases proportionally as the applied voltage is increased.

Using Ohm's law resolve the following:

1. An electrical lamp used on a 230 Volt supply takes a current of 0.42 Amps. What is the resistance of the lamp and associated wiring?
2. An immersion heater connected to a 230 Volt supply takes a current of 13.5 Amps. Calculate the resistance of the element.
3. An electric heater has a resistance of  $23\Omega$  and is connected to a 230 Volts supply. Calculate the current the heater will take.
4. An electrical circuit has a resistance of  $23\Omega$  and takes a current of 5 Amps. Calculate the voltage applied to the circuit.

From the previous exercises it will be noticed that the amount of current that flows in a circuit is directly proportional to the voltage and inversely proportional to the resistance.

With a fairly constant supply of 230 Volts, the load or resistance of the circuit will determine the amount of current that will flow.

You can use the triangle here to find any value, provided that the other two values are known.

