# OHM's Law

A voltage appears across a conductor when current flows through it. If a large voltage is required to drive a small current, the conductor offers a high resistance against current flow. You could probably guess that increasing the voltage across the conductor would result in a higher current flowing through it. Georg Ohm went one better and discovered that:

The current (I) flowing through a metallic conductor is directly proportional to the voltage (V) across it, provided its temperature remains constant.
i.e.

V / I = constant for the conductor

The constant is called the resistance (R) of the conductor. A graph of voltage against current for a conductor obeying Ohm's law will be a straight line. This will be illustrated in the next practical exercise. Ohm's law can be expressed as follows:

V / I = R

If the voltage is in volts and the current is in amperes, the resistance will be in units called ohms. The equation can be rearranged to give:

I = V / R and R=V / I

NOTE:

- The Greek letter omega (Ω) is used as an abbreviation for ohm.
- If the temperature of a metallic conductor increases, its resistance will also increase.
- Most components do not obey Ohm's law.