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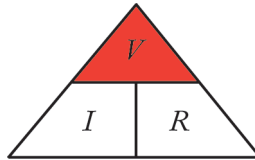
The relationship between voltage, current, and resistance was investigated in 1827 by Georg Ohm. His findings became known as *Ohm's law*, which states that current flowing through a conductor that is kept at a uniform temperature is directly proportional to the applied voltage but inversely proportional to the resistance of that conductor.

Ohm's law can be expressed using the following formulae:

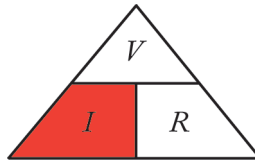
$$V = IR \quad \text{or} \quad R = V/I \quad \text{or} \quad I = V/R$$

You may find it easier to remember the three formulae for Ohm's law by using a simple triangle diagram, as follows:

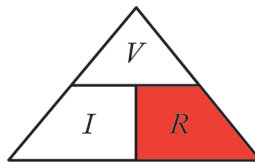
- 1 To find the voltage, cover the V and you are left with I alongside R . Therefore, this means that $V = I$ multiplied by R



- 2 To find the current, cover the I and you are left with V above R . Therefore, this means that $I = V$ divided by R



- 3 To find the resistance, cover the R and you are left with V above I . Therefore, this means that $R = V$ divided by I



The unit of resistance is the *ohm* and the symbol is Ω . However, 1 Ω is quite small, so in electronic circuits it is common to refer to large values of resistance in terms of kilo- or mega-ohms.

A kilo-ohm is equal to one thousand ohms:

$$1 \text{ k}\Omega = 1000 \Omega \quad (\text{or } 1 \times 10^3 \Omega)$$

A mega-ohm is equal to one million ohms:

$$1 \text{ M}\Omega = 1\,000\,000 \Omega \quad (\text{or } 1 \times 10^6 \Omega)$$



Remember that Ohm's law is only valid on the assumption that temperature always remains constant.



In electrical terms, resistance is defined as the opposition to the flow of electric current.