Kitronik Ltd – What is Ohm's Law?

Ohm's law

Ohm's law is used to describe the relationship between Voltage (V), Current (I) and Resistance (R).

If you know any of two of these values it is possible to calculate the third. Ohm's law can be arranged in the following three ways depending on what you want to calculate.

V = I x R

I = V / R

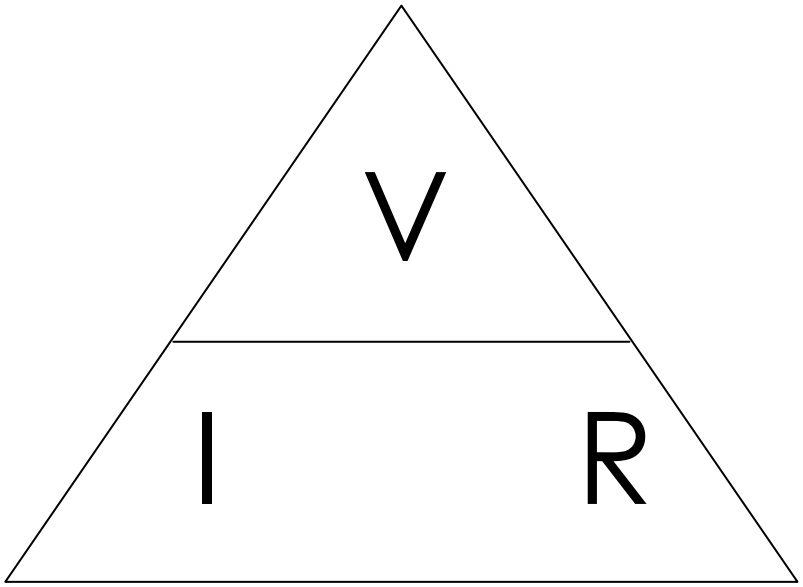
R = V / I

Note: V = Voltage in Volts, I = Current in Amps, R = Resistance in Ohm's

The Ohm's law triangle

A very useful tool that can be used when doing one of the above calculations is the Ohm's law triangle shown below. The triangle is used by covering the item which you wish to calculate. The two items that are not covered will then be left in the arrangement required to calculate the covered item.

For example if you want to calculate R you would cover that item. The two remaining items are arranged as V/I. This is the formula to calculate R.



Questions

Voltage

Using the following Currents and Resistances calculate the corresponding Voltage.

Question 1:	I = 5 Amps	R = 1 Ohm	Answer = ...
Question 2:	I = 3 Amps	R = 4 Ohm	Answer = ...
Question 3:	I = 2 Amps	R = 3 Ohm	Answer = ...

Current

Using the following Voltages and Resistances calculate the corresponding Current.

Question 4:	V = 5 Volts	R = 1 Ohm	Answer = ...
Question 5:	V = 12 Volts	R = 4 Ohm	Answer = ...
Question 6:	V = 24 Volts	R = 12 Ohm	Answer = ...

Resistance

Using the following Voltages and Currents calculate the corresponding Resistances.

Question 7:	V = 5 Volts	I = 5 Amps	Answer = ...
Question 8:	V = 3 Volts	I = 6 Amps	Answer = ...
Question 9:	V = 50 Volts	I = 10 Amps	Answer = ...

Answers

Voltage

Using the following Currents and Resistances calculate the corresponding Voltage.

Question 1:	I = 5 Amps	R = 1 Ohm	Answer = 5 Volts
Question 2:	I = 3 Amps	R = 4 Ohm	Answer = 12 Volts
Question 3:	I = 2 Amps	R = 3 Ohm	Answer = 6 Volts

Current

Using the following Voltages and Resistances calculate the corresponding Current.

Question 4:	V = 5 Volts	R = 1 Ohm	Answer = 5 Amps
Question 5:	V = 12 Volts	R = 4 Ohm	Answer = 3 Amps
Question 6:	V = 24 Volts	R = 12 Ohm	Answer = 2 Amps

Resistance

Using the following Voltages and Currents calculate the corresponding Resistances.

Question 7:	V = 5 Volts	I = 5 Amps	Answer = 1 Ohm's
Question 8:	V = 3 Volts	I = 6 Amps	Answer = 0.5 Ohm's
Question 9:	V = 50 Volts	I = 10 Amps	Answer = 5 Ohm's