

E2-C: Ohm's Law

Name: _____

Ohm's Law

Georg Ohm lived from 1789 to 1854. He discovered that when electric current goes through a conductor, there is a voltage from one end of the conductor to the other. He wrote this scientific law:

$$V = IR$$

V is for voltage (volts, V)

I is for current (amps, A)

R is for resistance (Ohms, Ω)

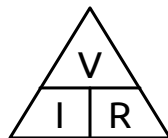
Ohm's Law doesn't work for every kind of material. It does work for most conductors and a lot of other things. But many electronic components don't obey this law.

Practice:

1. $I = 2A$. $R = 35\Omega$. What is V?

Ohm's Law Triangle

We can use a triangle to show Ohms Law. It lets you work out V or I or R if you have the other two.



Cover up the one you want to calculate. What is left is the formula to use.

$$V = IR$$

$$I = \frac{V}{R}$$

$$R = \frac{V}{I}$$

Practice:

1. $I = 10\text{A}$. $R = 3\Omega$. What is V ?

2. $V = 1\text{V}$. $R = 2\Omega$. What is I ?

3. $I = 10\text{A}$. $V = 0.5\text{V}$. What is R ?

More Practice:

1. An extension cable has 10A current in it. Its resistance is 2.5Ω . What is the voltage drop from one end to the other?

2. A transmission line has a voltage drop of 18V when the current in it is 100A . What is its resistance?

3. A bar heater has a resistance of 1.2Ω . When it is turned on, there is 240V across it. What is the current in the heater?
