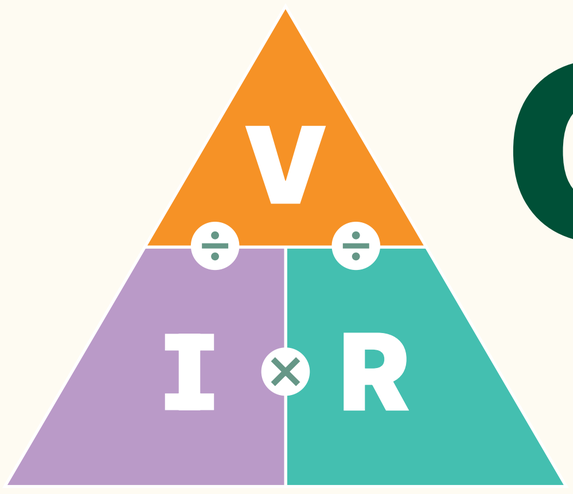
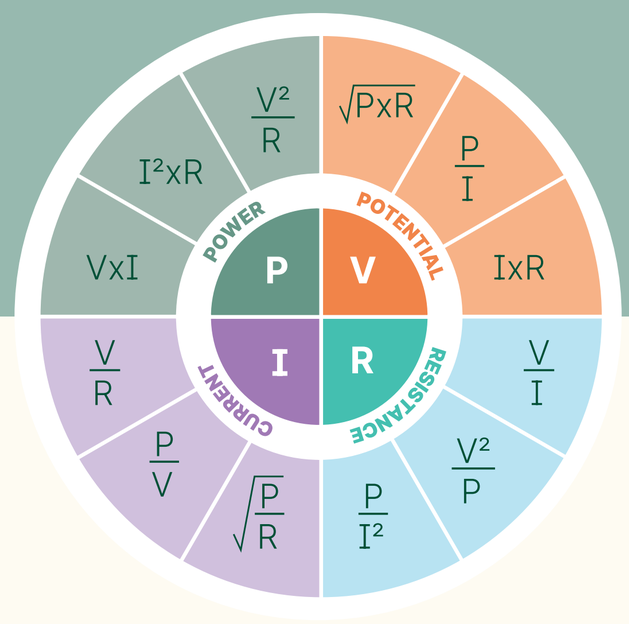


Ohm's Law — say watt?

Electrical power can be calculated using one of the fundamental laws in electronics

—developed by Georg Simon Ohm nearly 200 years ago.

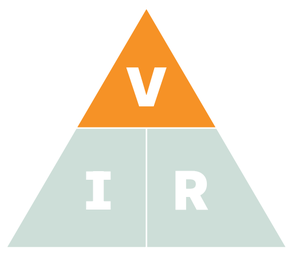


Ohm's Law

Describes the relationship between potential (V), current (I) and resistance (R) in an electrical circuit—the three basic units required to understand how electricity works.

POTENTIAL

Pushes the current through the circuit, like the pressure applied by a pump in a water pipe makes the water flow.

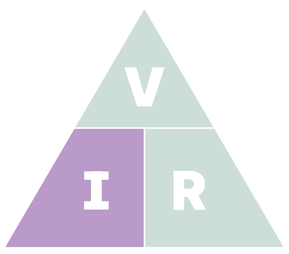


Measured in **volts** (V)
1 volt = 1V

V = I x R

CURRENT

The flow of charge (electrons) through a circuit. It's a little like the flow of water through pipes.

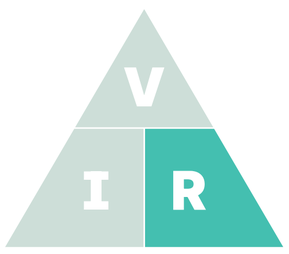


Measured in **amps** (A)
1 amp = 1A

I = V ÷ R

RESISTANCE

How difficult it is to push the current through the circuit. It's like having a blockage in your water pipe, making it harder for the water to flow.



Measured in **ohms** (Ω)
1 ohm = 1Ω

R = V ÷ I

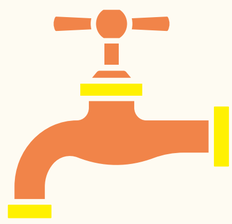
POWER

The purpose of a circuit is often to deliver energy to objects like mobile phones, motors, or lights. Energy is measured in **joules**, and the rate at which energy is delivered is called power.

Measured in **watts** (W)
1 watt = 1W

P = I x V

Electrical power can also be calculated using Ohm's Law.



A larger potential (voltage) pushes a bigger current.
A larger resistance decreases the current.

That's Ohm's Law: I = V/R

Example
An electrical circuit with a 12V power supply and 2Ω resistance will produce 6A of current (12V/2Ω), but if the resistance were increased to 4Ω, the current would go down to 3A (12V/4Ω).

If you want to learn more about electrical and electronic engineering, come study with us.

Fun Fact

A typical lightning bolt creates a potential difference (voltage) of several hundred million volts!

Watt power?

When a Pikachu uses thunderbolt, it generates 100,000 watts of power.

What would be the potential (voltage) of the thunderbolt if this was distributed at a current of 4 amps?*

*ANSWER: 25,000 volts

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