

Resistance

Resistance

- * Electrical Resistance is the opposition of the movement of electrons as they flow through a circuit
- * Measured in Ohms Ω

Factors that Affect Resistance

- * Factors that affect resistance

- * i) Type of material: if the material is a good conductor, resistance is low as electrons can travel easily

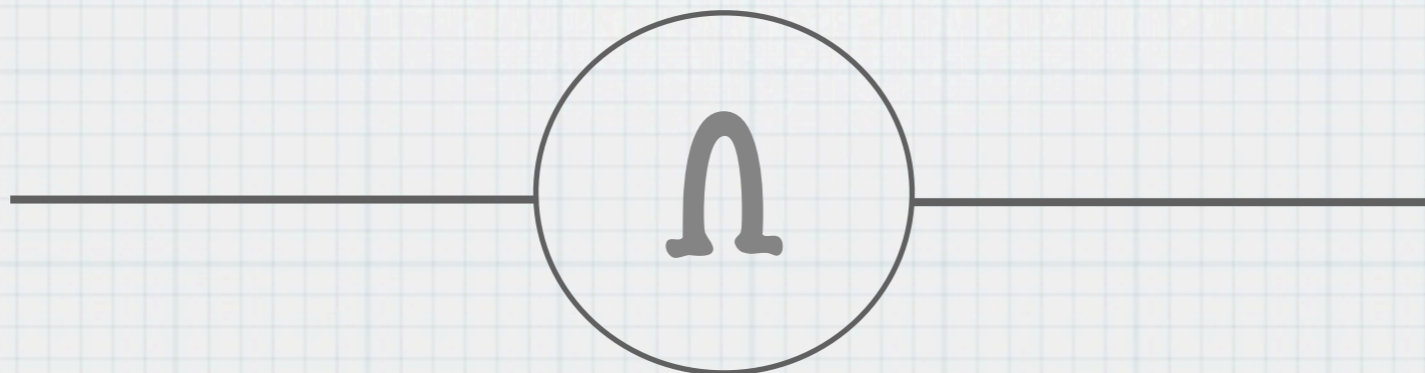
- * ii) Cross-Sectional area: The greater the cross sectional area, the lower the resistance

Factors that Affect Resistance

- * Factors that affect resistance
 - * iii) Length: The longer the wire the higher the resistance value
 - * iv) Temperature: The cooler the substance, the lower the resistance
 - * As a substance warms, the particles vibrate faster and there is more things for the electrons to run into

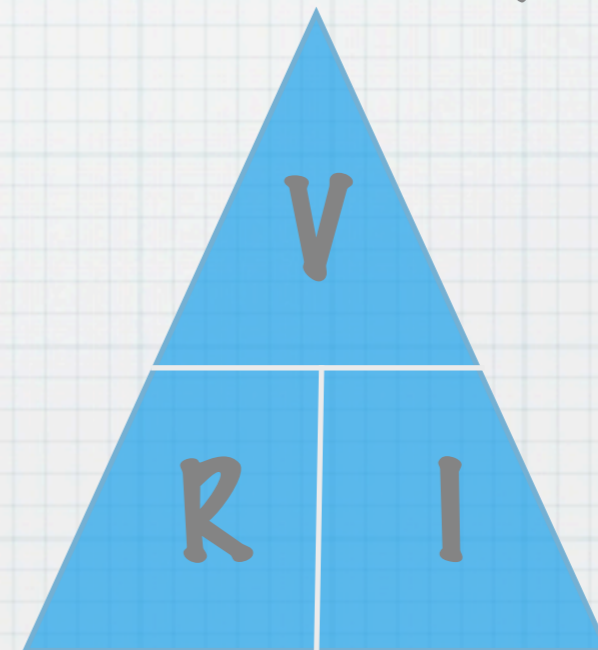
Measuring Resistance

- * Resistance is measured using an ohmmeter
- * The ohmmeter is connected in parallel with the load
- * Ohmmeters are represented by the following symbol



Ohm's Law

- * Current (I) is measured in amperes (A)
- * Voltage (V) is measured in volts
- * Resistance (R) is measured in ohms (Ω)
- * Ohm's law states that as the potential difference across a load increases, so does the current



Sample Calculation

- * A $110\ \Omega$ resistor is connected to a power supply set at $1.2\ \text{V}$. Calculate the current going through the resistor.

Sample Calculation

* Given:

* $R = 110 \Omega$

* $V = 1.2$

* $I = V/R$

Sample Calculation

- * $I = 1.2 \text{ V} / 110 \Omega$

- * $I = 0.01 \text{ A}$

- * Therefore, the current through the resistor is 0.01 A.