

Current and Resistance

Current

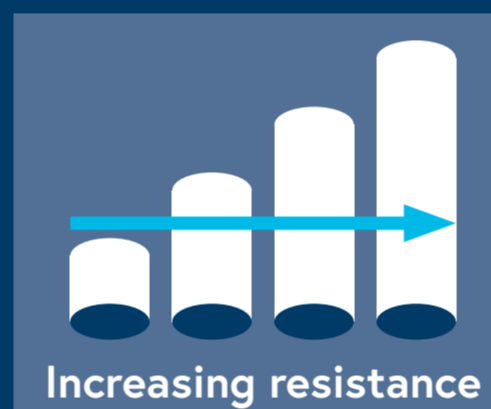
An electric current (**I**) is a flow of **electrons** in a circuit. It is measured in **amperes** or **amps (A)**.

1 amp of current has flowed when **1 coulomb of charge** has passed in **1 second**. A coulomb of charge is a lot of electrons – 6.241×10^{18} electrons.

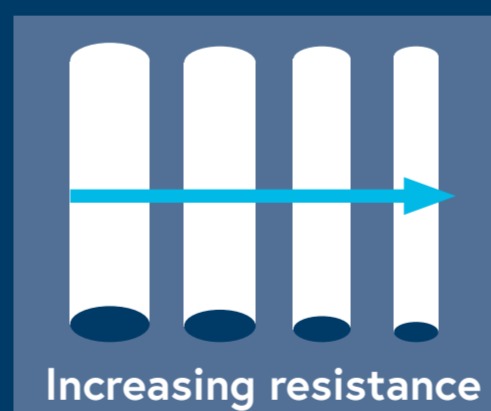
Resistance

Every part of an electric circuit has **resistance**. A component's '**resistance**' is a measure of how well **electric charge flows through it**. Higher resistance means it is **harder for the charge to flow through**.

You can **control the resistance** by **controlling the amount of current or voltage** reaching different **parts of the circuit**.

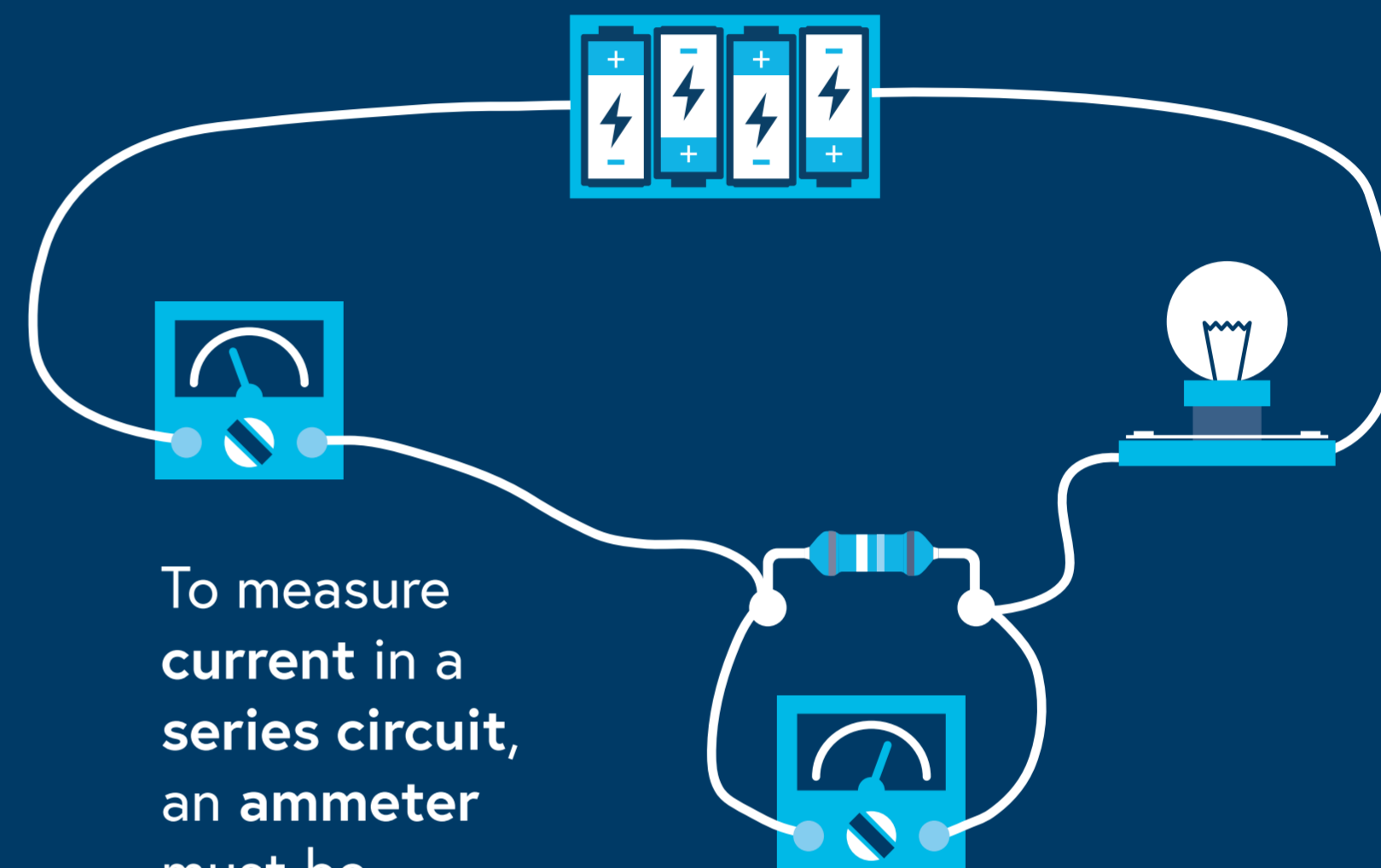


Longer wires have higher resistance.



Thinner wires have higher resistance.

Measuring current and voltage to get resistance



To measure **current** in a **series circuit**, an **ammeter** must be connected in **series** anywhere in the **circuit**.

To measure **voltage** in a particular bit of the **circuit**, a **voltmeter** must be connected across the **component**, in **parallel**.

$$\text{Resistance} = \frac{\text{Voltage}}{\text{Current}} \quad R = \frac{V}{I}$$

A resistance of **1 ohm (Ω)** needs **1 volt** to drive a current of **1 amp** through it.