


Electrical Circuits

1. **Current** is the **rate of flow of charge** and is measured in **Amps (A)** by an **Ammeter**.
2. Ammeters are connected in series.
3. Current transfers energy.
4. Current needs a **complete circuit** to flow.
5. Voltage is the **amount of energy** shifted from the power source to the moving charge, or from the charge to the circuit component
6. Voltage is measured in **Volts (V)** using a **Voltmeter**.
7. Voltmeters are connected in parallel.

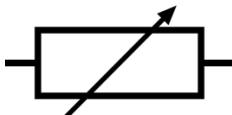
Resistance

8. Resistance **decreases current**.
9. Resistance is measured in **ohms (Ω)**.
10. Resistance is added by **all components**.

11. Electrical conductors have low resistance.
12. Electrical insulators have high resistance.

13. The circuit symbol for a resistor is: 

14. A **variable resistor** can **change** the resistance in a circuit, whereas other resistors have a fixed resistance that cannot be changed.

15. The circuit symbol for a variable resistor is: 

Ohm's Law

16. Current through a component depends on both **resistance** of the component and **voltage** cross the component.

17. **Increasing** the **voltage** gives the charges a bigger push, which **increases** the **current**.

18. **Increasing** the **resistance** makes it harder for the current to flow, which **decreases** the **current**.

19. Current, voltage or resistance can be calculated using the equation:

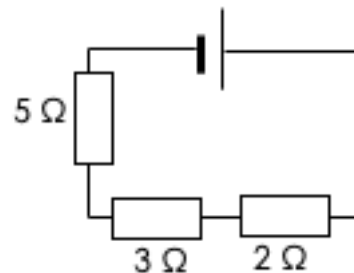
$$V = IR \text{ (Ohm's Law).}$$

Measuring Resistance

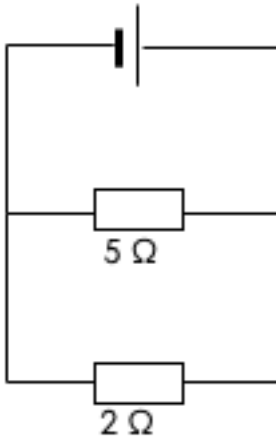
20. Resistance is measured by measuring voltage and current and using $R = \frac{V}{I}$
21. A **longer wire** has a **greater resistance**.
22. Resistance of a wire is also affected by the type of metal the wire is made of.

Resistance in Series and Parallel Circuits

23. Resistance in **series** is the **sum** of individual resistors.



24. The total resistance of this circuit is **10 Ω** .
25. Resistance in **parallel** is **less than** the **lowest** resistance branch.



26. The resistance of this circuit is **less than 2**
 Ω .