

Definitions and Concepts for AQA Physics GCSE

Topic 2: Electricity

*Definitions in **bold** are for higher tier only*

Definitions marked by '' are for separate sciences only*

Alternating Potential Difference: A continually oscillating current flow, which results in the potential difference across two points continually oscillating between a positive and negative value.

Amperes (Amps): The unit of current.

Attraction: A force pulling two opposite charges together, when they are brought near each other.

Coulomb: The unit of charge.

Diode: A component that only allows current to flow through in the forward direction. They have very large resistances in the reverse direction.

Direct Potential Difference: A one-directional current flow.

Earth Wire: The green and yellow striped safety wire that prevents an appliance from becoming live.

***Electric Field Lines:** Lines representing an electric field, that point in the direction in which a positive charge would experience an electric force.

***Electric Field:** A region in which a charge will experience a non-contact, electric force. All charged objects have an electric field around them, and this field is stronger the closer you are to the charge.

Electrical Current: The rate of flow of electrical charge. Its value is the same at any position in a single closed loop.

Electrical Work: When charge flows in a circuit, electrical work is said to be done.

Filament Lamp: A light emitting component consisting of an enclosed metal filament. Its resistance increases as the filament's temperature increases.



Insulation: The coating around power cables that prevents electrocution and is colour coded to allow for easy identification.

Light Dependent Resistor (LDR): A light sensitive component whose resistance increases as its temperature decreases.

Live Wire: The brown coloured wire that carries the alternating current from the supply in a mains power supply.

Mains Electricity: An a.c supply, which in the UK has a frequency of 50Hz a value of 230V.

Neutral Wire: The blue coloured wire that completes the circuit in a mains power supply.

Non-Contact Force: A force experienced between two separated objects. Examples include gravity, and magnetic and electric forces.

Ohmic Conductor: A conductor whose current flow is directly proportional to the potential difference across it, when held at a constant temperature.

Ohms: The unit of resistance.

Parallel: Components connected in parallel have the same potential difference across each component. The total current is equal to the sum of the currents flowing through each component.

Potential Difference: The product of a component's resistance and the magnitude of current flow through it.

Repulsion: Caused when two like-charges are brought near each other.

Resistance: A measure of the opposition to current flow.

Resistors in Parallel: The total resistance is equal to the inverse of the sum of the inverses of the resistance of the parallel components. The total resistance of two parallel resistors is always less than the lowest individual resistor value.

Resistors in Series: The total resistance is equal to the sum of the resistances of the individual components.

Series: Components connected in series have the same current passing through each component but share the total potential difference of the power supply.

***Static Charge:** The charge caused by an imbalance of positive and negative charges in, or on, an object's surface. It is often caused by electrons being rubbed from one surface onto another.



Step-Down Transformers: Devices found between the transmission cables and the consumer that lower the potential difference of the power so it is at safe, usable levels.

Step-Up Transformers: Devices that increase the potential difference generated by a power station, so that the electrical power transmitted along the transmission cables is at a higher potential.

The National Grid: The network of power stations, transformers and cables that connect consumers to power stations.

Thermistor: A temperature dependent component, whose resistance increases as its temperature decreases.

Volt: The unit of potential difference.

