

Science: Electrical Circuits and Components

Components

All electrical items are made up of components, which make them work.

Components have different jobs. For example, a cell provides electrical power, a buzzer creates a sound, a switch makes or breaks a circuit and a motor creates movement.

			
switch	lamp	cell	battery
			
wire	buzzer	motor	LED

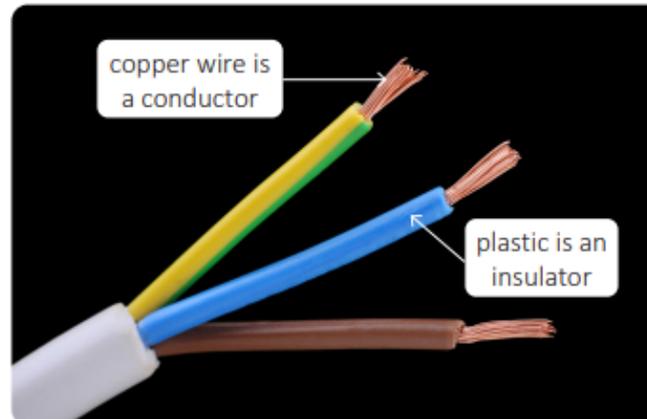
Circuits

A circuit is a collection of components connected by wires through which electricity can flow. If a circuit forms a loop with a single path for the current to take, it is called a series circuit.



Conductors and insulators

Materials that allow electricity to flow through them are called conductors. Most metals are conductors. Materials that do not allow electricity to flow through them are called insulators.



Voltage

In a circuit, the cell acts like a pump, pushing electric charge around the circuit. This pushing force can be measured using a voltmeter or multimeter. The pushing force is known as voltage, which is measured in volts (V).



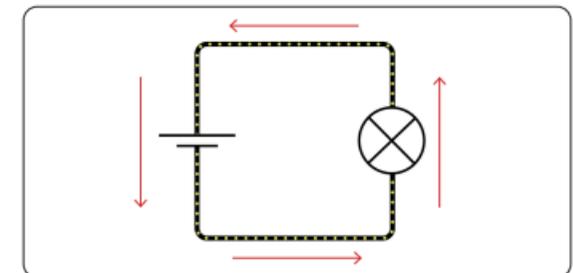
Cells

Cells have different names, such as AA, AAA and D. They are labelled with the voltage they supply to a circuit. For example, an AA cell is labelled with 1.5V. As cells are used, their voltage, or pushing force, decreases.



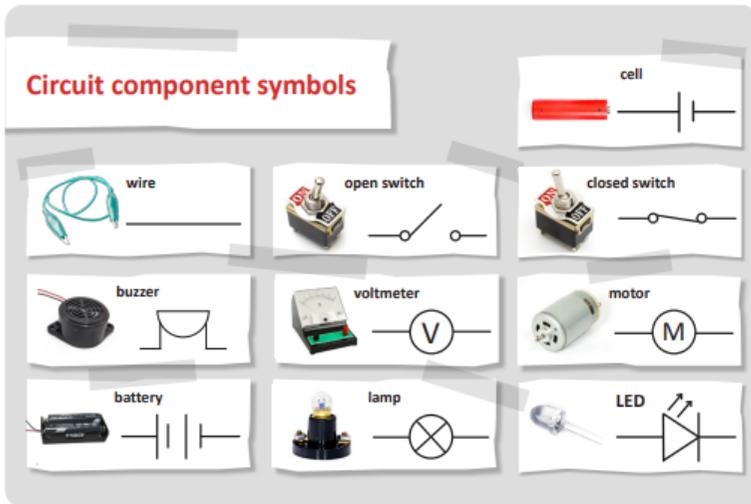
Electric current

An electric current is the flow of electric charge through a circuit. For an electric current to flow, a circuit must be complete. The electric current flows from the cell through the components and back to the cell.



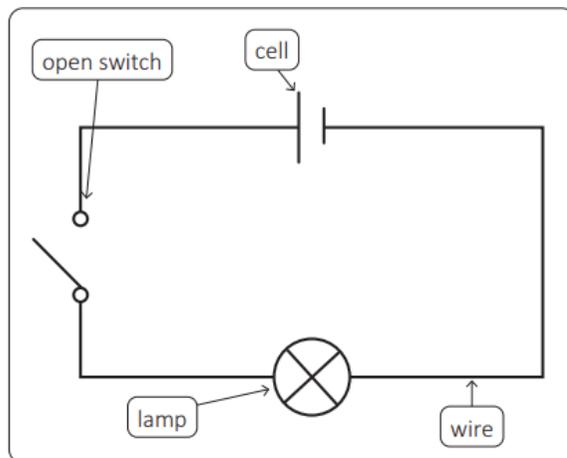
Circuit symbols

Circuit components are represented by different symbols.



Circuit diagrams

A circuit diagram is a simplified drawing that represents a real electrical circuit. Circuit symbols are used to draw circuit diagrams.



Glossary

Appliance: a piece of electrical equipment used in the home.

Battery: a number of cells connected together.

Buzzer: a component that makes a sound when a part of a complete circuit.

Cell: a store of chemical energy that can be converted to electrical energy and used as a power source.

Circuit: a collection of components connected by wires through which electricity can flow.

Component: a material through which an electric current can flow.

Crocodile clip: a metal clip that is used to join electric wires to components

Electric current: the flow of electric charge through a circuit.

Environmental variable: a feature of the environment that changes, such as temperature or light.

Insulator: a material that does not allow an electric current to pass through.

Light-emitting diode (LED): a device with two legs that emits light when part of a complete circuit. An LED only conducts electricity in one direction.

Motor: a component that creates movement when part of a complete circuit.

Series circuit: a circuit that forms a loop with a single path for electric current to take.

Voltage: a measure of the force of an electric current, measured in volts.