

Science Knowledge Organiser – Energy; Electricity and Circuits

Electrical appliances

There are many examples of electrical appliances around us.



An **electrical circuit** is the pathway electrical charge flows around in an appliance.

For a circuit to work, it must have:

- A power source.
- A complete pathway.
- A device or component, such as a bulb.

Power source: something that transfers electrical energy to make an appliance work.

Mains power



- Provides high power for larger appliances.
- Requires access to an electrical socket.
- Appliance is fixed in place.

Batteries



- Allows an appliance to be portable (move anywhere).
- Allows an appliance to be used where there are no electrical sockets.
- Batteries run out and need replacing.
- Batteries are harmful and must not go to landfill.

A **component** is a part of an electrical circuit.

Symbols are often used to represent the components so they are easy to draw and recognise.

battery/cell



wire



bulb



open switch



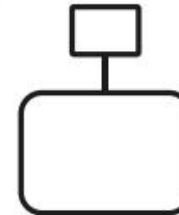
closed switch



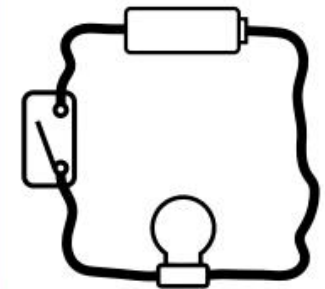
buzzer



motor



A **circuit diagram** is a simple line drawing that represents how the components in an appliance join together.



Electrical conductors are materials that allow electrical charge to flow through quickly.



Metals are good electrical conductors.

Electrical insulators are materials that do not allow electrical charge to flow easily.



Plastics are good electrical insulators.

Electrical safety



- Do not use wet hands when using electrical appliances or switches.
- Do not put anything other than a plug in an electrical socket.
- Let an adult know if electrical appliances or wires appear damaged.
- Do not leave electrical wires across the floor or hot surfaces.