

What is electricity?

Electricity is an energy. This energy can be used to power electrical items such as toasters, kettles, cookers, televisions and computer tablets.

Electrical energy is caused by electrons (the particles in atoms) moving about to make a current.

Electricity is created by generators which can be powered by gas, coal, oil, wind or solar.

The electrical energy can be converted into other types of energy such as light, heat, movement or sound.

Electricity is dangerous, so be careful when using electrical appliances.

Common Electrical Hazards

Overloading a plug extension socket

Exposed wires

Damaged wall sockets

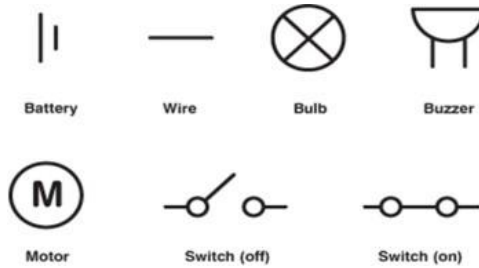
Wires left along the carpet for people to trip over

Placing metal into electrical appliances or open sockets

Electrical appliances and wires near water.

Electrical circuit symbols

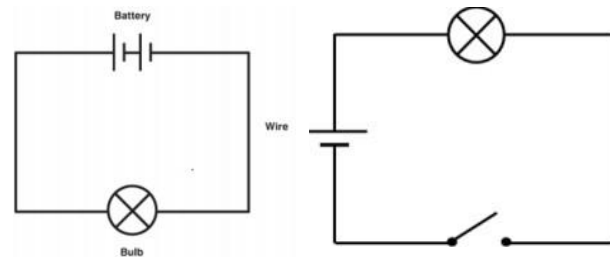
Switches can be used to open or close a circuit



Simple Series Circuit

In order for electricity to flow a circuit needs 3 things:

1. A source of electricity
2. No gaps in the circuit
3. Conductors



The bulb will not light in this circuit until the switch is closed.

By changing the components in a circuit we can vary:



The brightness of a bulb
(brighter / dimmer)



The volume of a buzzer
(louder / quieter)

Key Vocab

Battery	A container consisting of one or more cells that is used for generating current
Buzzer	An electrical device that makes a buzzing noise and is used for signalling (for example, in a burglar alarm)
Circuit	A complete and closed path around which a circulating current can flow
Conductor	A material or device which allows heat or electricity to carry through
Current	A flow of electricity through a wire
Insulator	Any material that electricity cannot pass through or along
Motor	A device that changes electrical energy into movement
Static electricity	A stationary electric charge, typically produced by friction, which causes sparks or crackling or the attraction of dust
Switch	A device for making and breaking the connection in a circuit
Voltage	An electrical force that makes electricity move through a wire, measured in volts (V)

Common appliances that run on electricity

Many of the items that we use every day run on electricity. Electricity can be supplied from the mains (these are plugged into power supplies) or from batteries.

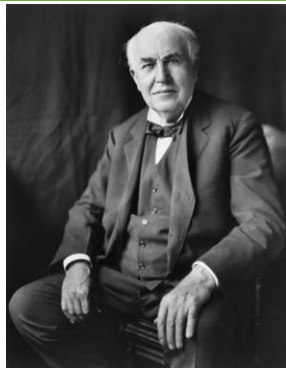
Below are a selection of appliances that run on electricity:



Different appliances run on different amounts of electrical charge. An ammeter can be used to measure amps (the size of the charge).

Thomas Edison (1847 – 1931)

Thomas Edison was born in 1847 and died in 1931. He lived in the state of New Jersey in the United States of America (USA). He is known as one of the greatest inventors in history. He invented the light bulb, the phonograph (which could record and play sound) and an early video camera called the Kinetograph. The films were then watched on a Kinetoscope which he also invented.



Electrical conductors and insulators

A **conductor** is a material that allows charges to flow easily throughout the material. Metals are often good conductors. Examples include: silver, gold, copper, steel and sea water.



An **insulator** is a material that does not allow charges to flow easily throughout the material. Examples include: rubber, glass, oil, diamond and dry wood.



Water

Water is an excellent electrical **conductor** so it can be very dangerous to have electrical devices near water.

Avoid spilling drinks near electrical devices

Make sure your hands are dry before touching electrical switches

