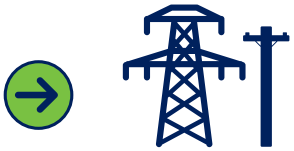
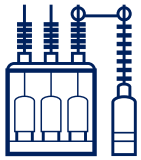
What is electricity?

Prework

A

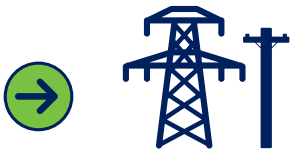


Pylon

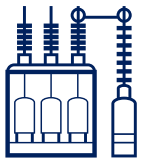


Electrical substation

Homes

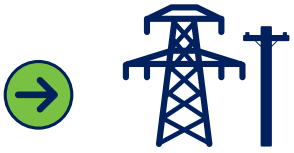


Pylon

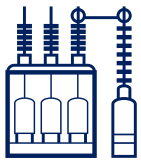


Electrical substation

Homes



Pylon



Electrical substation

Homes

B

Batteries

Solar Wind Chemical Coal

At **Electricity North West** we make sure that the power lines above ground and the cables underground are safe. You will see power lines on pylons or wooden poles.

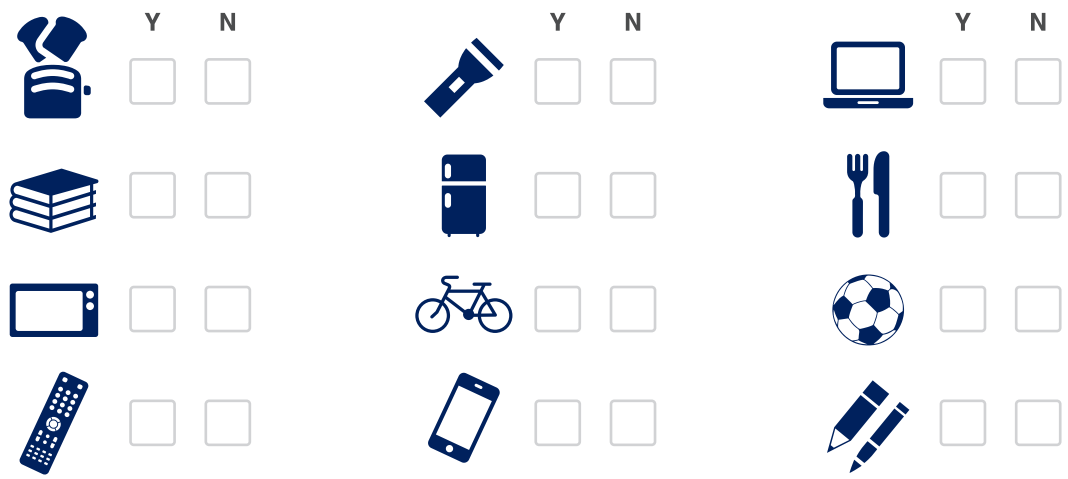
These lines and cables bring electricity to your homes, schools, and more.

We make sure everything that needs electricity in the North West works properly and safely!

Prework

Mains electricity vs batteries

Which of these needs electricity to work?

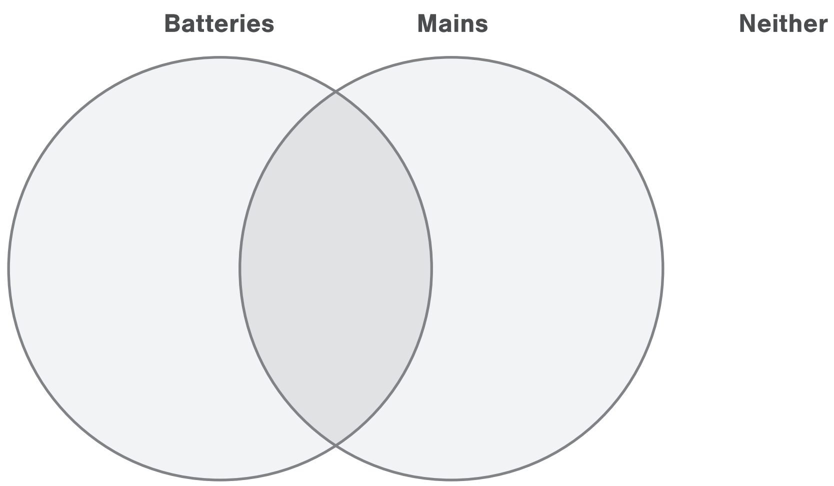


What is the difference between batteries and mains electricity?

Mains electricity comes from a plug socket.

Batteries are made up of cells which store electricity.

Place each item listed above into the VENN diagram below. Which of the items work with batteries, mains electricity, both, or neither.



What are the benefits and disadvantages of batteries vs mains electricity:

....

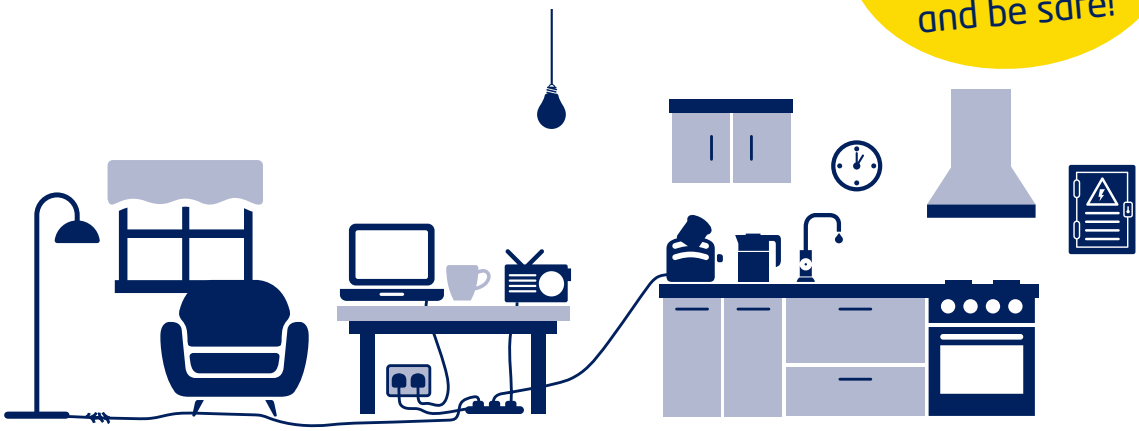
....

Prework

Be switched on to safety!

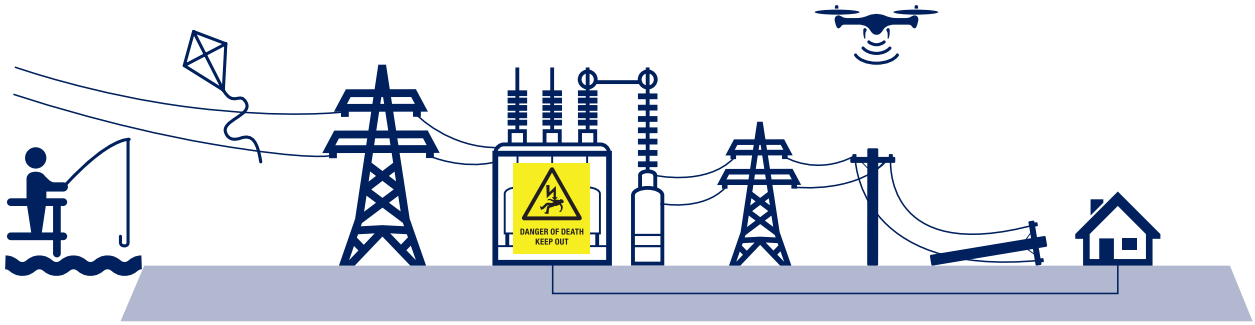
Can you spot the safety hazards in the below scenarios.

Safety around the home



Can you find and circle the 6 hazards?

Safety around us



Can you find and circle the 6 hazards?

Remember to always look out, look up!

POWER CUT? CALL 105

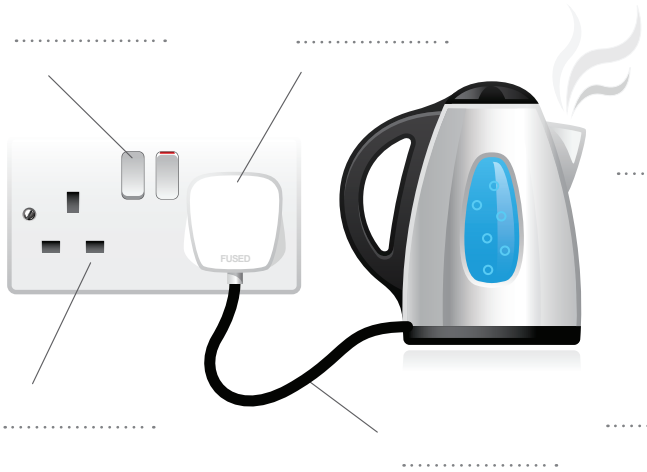
Don't take chances with electricity - it can cause an electric shock, burns or death.

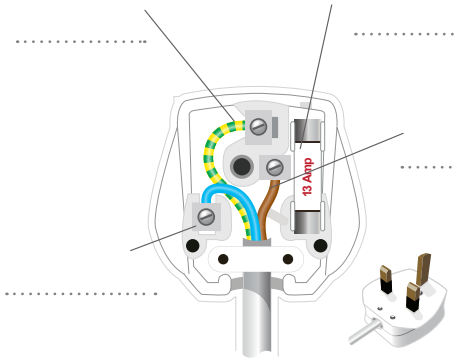
If you see someone ignoring electricity warning signs or see any damage to electrical equipment, call 105 to report it.

Please stay away

Electricity is very powerful and can jump up to 3 metres, so it can hurt you even if you're not touching it directly.

Safety with items that use mains electricity





Socket	Live
Plug	Fuse
Wire	Earth
Switch	Neutral

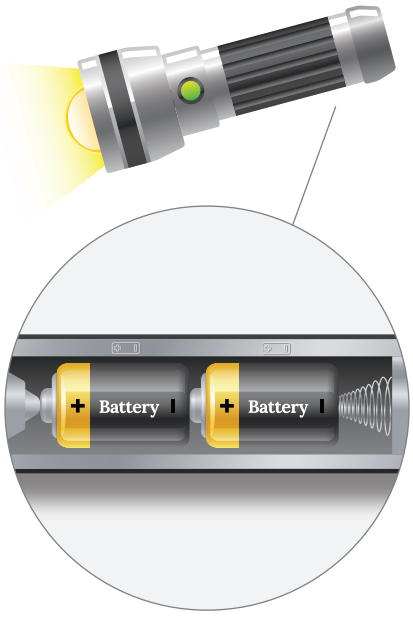
Wiring a plug

Electrical plugs have a fuse inside them. If anything goes wrong, the fuse 'blows'. The special wire inside the fuse melts to cut off the electricity from the faulty equipment safely.

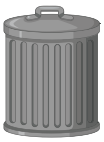
Electrical plugs have a fuse inside them, the **fuse** will 'blow' or break when it reaches a certain amount of **current** (electrical energy flowing through it).

How much current (**amps**) does this **fuse** blow at? .....

Do's and Don'ts with batteries



Rubbish bin



☐ Do ☐ Don't

Water

☐ Do ☐ Don't

Fire

☐ Do ☐ Don't

Battery recycling box

☐ Do ☐ Don't

Leaking battery

☐ Do ☐ Don't

Prework

Insulators and conductors

CONDUCTORS let electricity flow through them

INSULATORS do not let electricity flow through them

We will test these materials in our classroom session, but can you make some predictions?

In the below table can you predict whether each item listed below is a Conductor (C) or an Insulator (I).

Material	Prediction (C) or (I)	Actual
Plastic ruler 		
Piece of string 		
Iron paperclip 		
Piece of fabric 		
Aluminium foil 		
Rubber band 		
Wooden stick 		

If we were testing these materials using a circuit and bulb, what would happen to the bulb if we connected an item into the circuit that conducts electricity?

What would happen to the bulb if we connected an insulator into the circuit?

Materials that conduct heat or electricity are known as CONDUCTORS.
Materials that do not conduct heat or electricity are known as INSULATORS.