



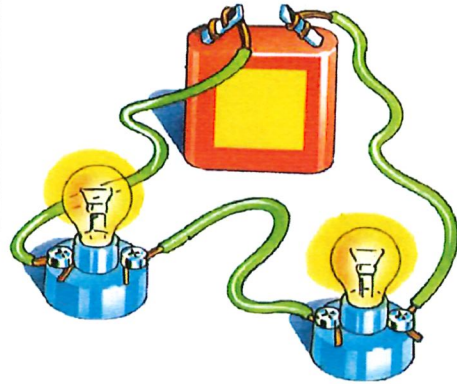
ELECTRICITY

KNOWLEDGE ORGANISER



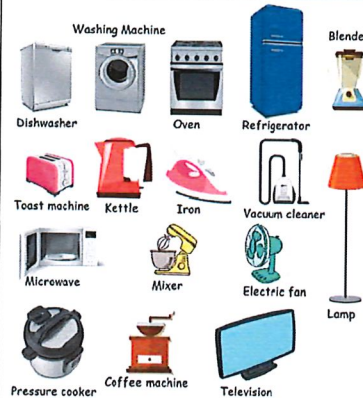
Y4

Overview



- Electricity is a type of energy.
- It is used to power lots of different things, including many items that we use in everyday life.
- Electricity can flow through wires and cables, and can be stored in batteries (sometimes called cells).
- Electricity can flow in simple series electrical circuits.
- Some materials conduct electricity, and others do not (insulators).

Creation and Uses of Electricity



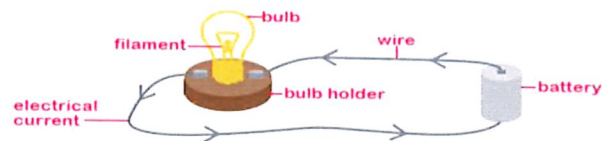
Electricity can be created in a number of different ways, for example:

- Burning fossil fuels (oil, gas, etc.) in power stations;
- Using solar power generated from the sun;
- Using wind power from wind turbines;
- Using water power (hydropower).

Electricity is used to power numerous household appliances, for example laptops, TVs, fridges, microwaves, toasters, ovens and lights/ lamps. Life would be very different without it!

Simple Series Electric Circuits

This diagram shows a battery with wires connecting it to a battery (or cell).



Circuit

-A circuit is the path the electric current follows. It must have no breaks in it (a closed circuit) for electricity to flow.

Current

-A current is the electricity flowing through the circuit.

Battery (Cell)

-A battery (or cell) is something in which electricity can be stored.

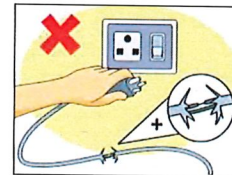
Wire/Cable

-Wires and cables are thin flexible threads that transport electricity.

Conductor/Insulator

-Conductors allow electricity to flow through freely. Insulators do not allow electricity to flow through freely.

Electrical Safety



Electricity can be extremely dangerous if it is not used safely. It can cause burns, shocks, serious injury and (in extreme cases) even death.

There are many electrical dangers, both in the home and outdoors.

Some Important Electrical Safety Trips

- Do not put fingers and other objects in an outlet;
- Never use anything with a cord or plug around water;
- Keep metal objects away from toasters;
- Stay away from power stations and power lines;
- Never pull a plug out by its cord;
- Never touch or climb trees near power lines;
- Go indoors when there is thunder and lightning.
- Look out for signs like the one on the left.



Conductors

Silver

Gold

Copper

Steel

Sea Water

Rubber

Glass

Oil

Diamond

Dry Wood

Insulators



SOUND

KNOWLEDGE ORGANISER



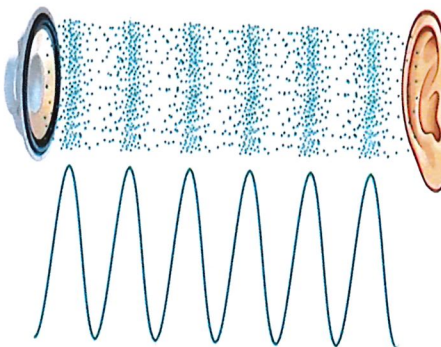
Y4

Overview



- Sounds are made when objects vibrate.
- Vibrations travel from objects in waves to our ears, allowing us to hear sound.
- Weak vibrations make a gentle soundwave which do not travel as far as strong vibrations. This is why sounds have different volumes.
- Sounds can be high pitched or low pitched. Tight, short frequency waves make a high-pitched sound, while more loose waves make low-pitched sounds.

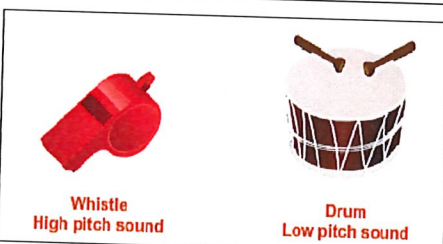
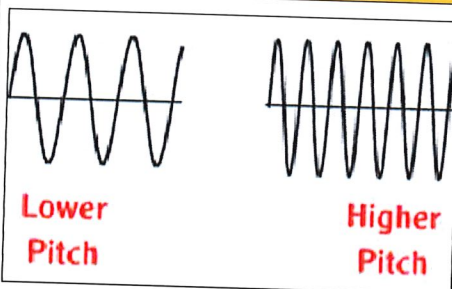
How Sounds are Made



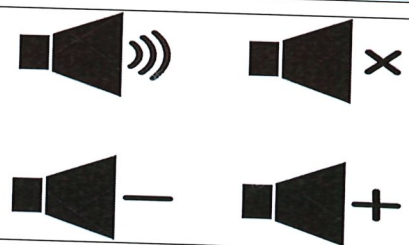
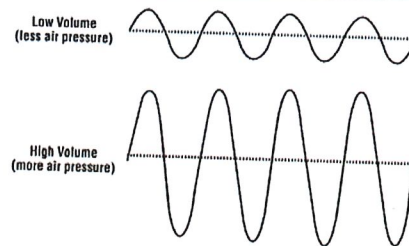
- Sounds are created when something vibrates (shakes back and forth).
- This creates soundwaves which travel to the ears of the listener.
- When a bell is struck, the metal of the bell vibrates. These vibrations create waves in the air (sound waves).
- When they reach our ears, they make our eardrums vibrate, and we hear the sound of the bell ringing.

Pitch

- Pitch is the highness or lowness of sounds.
- Pitch is caused by the frequency of vibrations (how many times vibrations go back and forth per second).
- The higher the rate of vibrations, the higher the pitch.
- Lower pitch sounds have a lower rate of vibrations.
- Humans can hear a large range of pitches, high-pitch sounds e.g. a mouse squeak to low-pitch sounds e.g. the rumble of an earthquake.
- However, some sounds are too high or low-pitched for us to hear.



Volume



- Volume is the loudness of a sound.
- The volume of a sound depends on the amount of energy that the vibrations contain.
- Vibrations with lots of energy create large soundwaves.
- When these large soundwaves arrive at your ears, they push harder on your eardrums.
- This is why when we strike a drum harder (with more energy) it is louder than when we strike it more softly.
- Our ears can detect a wide range of loud and quiet sounds, from rumbling jet engines to leaves rustling.

Low Pitch Sounds

Lion's Roar

Tuba

Bass Guitar

Thunder

High Pitch Sounds

Child's voice

Whistle

Shriek

Mouse Squeak