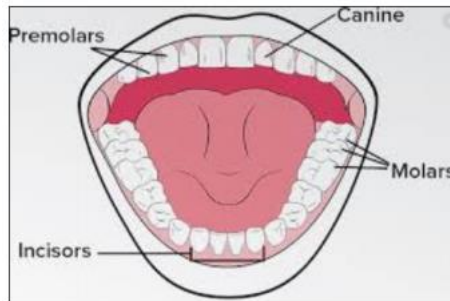


Big Ideas



Biology:

The cellular basis of life - Heredity and life cycles - **Variation, adaptation and evolution** - **Organisms and their environments** - **Health and disease**



Canines are pointed for tearing and ripping food - these are usually used when chewing meat.
Incisors are shovel shaped and help bite lumps out of and cutting food.
Premolars and **molars** are flat, and they grind and crush food.

The smell of food triggers saliva to be produced.
The digestive system begins with the mouth and teeth where food is ingested and chewed.
Saliva is mixed with the food which helps to break it up.
When the food is small enough to be swallowed, it is pushed down the oesophagus by muscles to the stomach.
In the stomach, food is mixed further.
The mixed food is then sent to the small intestine which absorbs nutrients from the food.
Any leftover broken down food then moves on to the large intestine.
The food minus the nutrients arrives in the rectum where muscles turn it into faeces. It is stored here until it is pushed out by the anus. This is called excretion.

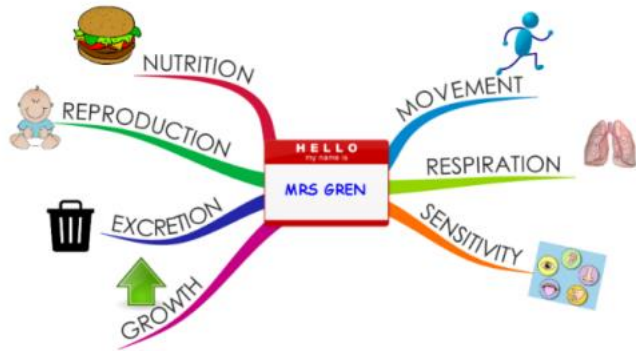
All living things, which can also be called organisms, have to do certain things to stay alive. These are the life processes:

- movement
- respiration

Vocabulary

condensation small drops of water which form when water vapour or steam touches a cold surface, such as a window
cooling lowering the temperature of something
evaporation to turn from liquid into gas; pass away in the form of vapour.
freezing If a liquid or a substance containing a liquid freezes, it becomes solid because of low temperatures
freezing point The freezing point of a particular substance is the temperature at which it freezes. The freezing point of water is 0o C.
gas a form of matter that is neither liquid nor solid. A gas rapidly spreads out when it is warmed and contracts when it is cooled.
Heating raising the temperature of something
liquid in a form that flows easily and is neither a solid nor a gas.
melting to change from a solid to a liquid state through heat or pressure
melting point The melting point of a particular substance is the temperature at which it melts.
particles a tiny amount or small piece
precipitation rain, snow, sleet, dew, etc, formed by condensation of water vapour in the atmosphere
process a series of actions used to produce something or reach a goal.
properties the ways in which an object behaves
solid having a firm shape or form that can be measured in length, width, and height; not like a liquid or a gas
temperature a measure of how hot or cold something is
vibrations when something vibrates, it shakes with repeated small, quick movements
water cycle the process by which water on the earth evaporates, then condenses in the atmosphere, and then returns to earth in the form of precipitation.
water vapour water in the gaseous state, esp when due to evaporation at a temperature below the boiling point
amplitude a measure of the strength of a sound wave

- sensitivity
- growth
- reproduction
- excretion
- nutrition



Living things can be grouped according to different criteria (where they live, what type of organism they are, what features they have). For example, a camel can belong in a group of vertebrates, a group of animals that live in the desert, and a group of animals that have four legs.

Habitats can change throughout the year and this can have an effect on the plants and animals that live there. Humans can have positive and negative effects on the environment:

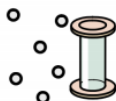
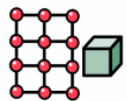
- positive effects: nature reserves, ecological parks
- negative effects: litter, urban development

- decibel** a measure of how loud a sound is
- electricity** a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices
- energy** the power from sources such as electricity that makes machines work or provides heat
- frequency** a measure of how many times per second the sound wave cycles
- medium** something that makes possible the transfer of energy from one location to another
- pitch** how high or low a sound is
- Power** is energy, especially electricity, that is obtained in large quantities from a fuel source and used to operate lights, heating, and machinery
- sound waves** invisible waves that travel through air, water, and solid objects as vibrations
- source** where something comes from
- transmit** to pass from one place or person to another
- travel** how something moves around
- vibrations** invisible waves that move quickly
- volume** how loud or quiet a sound is
- biomes** a natural area of vegetation and animals
- carnivore** an animal that eats meat
- classification key** a system which divides things into groups or types
- criteria** a factor on which something is judged
- deciduous** trees that lose leaves in the autumn every year
- environment** all the circumstances, people, things, and events around them that influence their life
- evergreen** a tree or bush which has green leaves all the year round
- excretion** the process of eliminating waste from the body
- food chain** a series of living things which are linked to each other because each thing feeds on the one next to it in the series
- habitat** the natural environment in which an animal or plant normally lives or grows
- herbivore** an animal that only eats plants
- invertebrate** a creature that does not have a spine, for example an insect, a worm, or an octopus
- life processes** There are seven processes that tell us that living things are alive



Chemistry:

Substances and Properties - Particles and Structure - **Chemical reactions** - Earth's atmosphere - Dynamic earth



Revisit in Y5

Particles are what materials are made from.

They are so small that we cannot see them with our eyes.

The properties of a substance depend on what its particles are like, how they move and how they are arranged

Particles behave differently in solids, liquids and gases.

In the solid state, the material holds its shape.

Solids have vibrating particles which are closely packed in and form a regular pattern.

This explains the fixed shape of a solid and why it can't be poured.

Solids always take up the same amount of space.

In the liquid state, the material holds the shape of the container it is in.

This means that liquids can change shape, depending on the container.

Liquids have particles which are close together but random.

Liquid particles can move over each other.

Liquids can be poured.

In the gas state, particles can escape from open containers.

Gases have particles which are spread out and move in all directions.

When water (in its liquid form) is heated, the particles start to move faster and faster until they have enough energy to move about more freely. The water has evaporated into a water vapour.

When water is cooled, the particles start to slow down until a solid structure (ice) is formed. The water has frozen.

The temperature at which water turns to ice is called the freezing point. This happens at 0o C.

microhabitat a small part of the environment that supports a habitat, such as a fallen log in a forest

minibeast a small invertebrate animal such as an insect or spider

nutrition the process of taking food into the body and absorbing the nutrients in those foods

omnivore person or animal eats all kinds of food, including both meat and plants

organism a living thing

reproduction when an animal or plant produces one or more individuals similar to itself

respiration process of respiring; breathing ; inhaling and exhaling air

sensitivity responding to the external environment

urban belonging to, or relating to, a town or city

vegetation plants, trees and flowers

vertebrate a creature which has a spine

appliances a device or machine in your home that you use to do a job such as cleaning or cooking. Appliances are often electrical.

battery small devices that provide the power for electrical items such as torches

bulb the glass part of an electric lamp, which gives out light when electricity passes through it.

buzzer an electrical device that is used to make a buzzing sound

cell a synonym for battery

circuit a complete route which an electric current can flow around

component the parts that something is made of

conductor a substance that heat or electricity can pass through or along

current a flow of electricity through a wire or circuit

device an object that has been invented for a particular purpose

electricity a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices

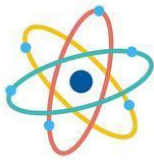
energy the power from sources such as electricity that makes machines work or provides heat

fuel a substance such as coal, oil, or petrol that is burned to provide heat or power

generate cause it to begin and develop

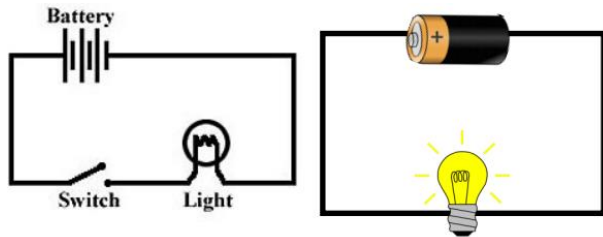
insulator a non-conductor of electricity or heat

mains where the supply of water, electricity, or gas enters a building



Physics:

Matter - Forces and motion - **Sound, light and Waves** - **Electricity and Magnetism** - Earth in space



These are complete circuits - they have a battery (cell) and a component (bulb). The wires are placed in the right places of the battery for the circuit to work.
Electricity is generated using energy from natural sources such as the Sun, oil, water and wind. These can also be called fuel sources.
Some appliances use batteries and some use mains electricity.
Batteries come in different sizes depending on how much and for how long the appliance is used.
Common appliances that use electricity.

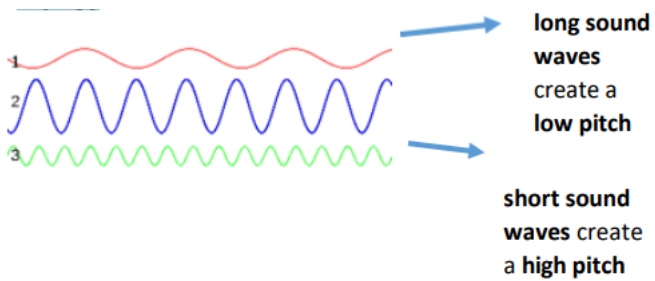
A complete circuit is a loop that allows electrical current to flow through wires.
A circuit contains a battery (cell), wires and an appliance that requires electricity to work (such as a bulb, motor or buzzer).
The electrical current flows through the wires from the battery (cell) to the bulb, motor or buzzer).
A switch can break or reconnect a circuit.
A switch controls the flow of the electrical current around the circuit. When the switch is off, the current cannot flow. This is not the same as an incomplete circuit.
When objects are placed in the circuits, they may or may not allow electricity to pass through.
Objects that are made from materials that allow electricity to pass through a create a complete circuit are called electrical conductors.
Objects that are made from materials that do not allow electricity to pass through and do not complete a circuit are called electrical insulators.

Revisit in Y5

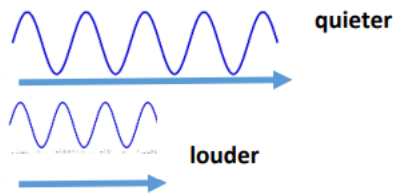
motor a device that uses electricity or fuel to produce movement power
Power is energy, especially electricity, that is obtained in large quantities from a fuel source and used to operate lights, heating, and machinery
source where something comes from
switch a small control for an electrical device which you use to turn the device on or off
wires a long thin piece of metal that is used to fasten things or to carry electric current
absorb soak up or take in
canine pointed teeth near the front of the mouth of humans and of some animals
carnivore an animal that eats meat
decay gradually destroyed by a natural process
digestion breaking down ingested food material
enamel the hard, white substance that forms the outer part of a tooth
excretion the process of eliminating faeces, urine, or sweat from the body
faeces the solid waste substance that people and animals get rid of from their body by passing it through the anus
herbivore an animal that only eats plants
incisor the teeth at the front of your mouth which you use for biting into food
ingested When animals or plants ingest a substance, they take it into themselves, for example by eating or absorbing it
intestines the tubes in your body through which food passes when it has left your stomach
molar the large, flat teeth towards the back of your mouth that you use for chewing food
muscles something inside your body which connects two bones and which you use when you make a movement
nutrition the process of taking food into the body and absorbing the nutrients in those foods
oesophagus the part of your body that carries the food from the throat to the stomach
omnivore person or animal eats all kinds of food, including both meat and plants
organ a part of your body that has a particular purpose
plaque a substance containing bacteria that forms on the surface of your teeth
premolar two situated on each side of both jaws between the first molar and the canine

A thing that can be heard.
 The object that makes the sound is called the source.
 When objects vibrate, a sound is made.
 The vibration makes the air around the object vibrate and the air vibrations enter your ear. These are called sound waves.
 If an object is making a sound, a part of it is vibrating, even if you cannot see the vibrations.
 Sound waves travel through a medium (such as air, water, glass, stone, and brick).
 For example, if somebody is playing music in the room next door, the sound can travel through the bricks in the wall.
 When an object vibrates, the air around it vibrates too. This vibrating air can also be known as sound waves.
 The sound waves travel to the ear and make the eardrums vibrate.
 Messages are sent to the brain which recognises the vibrations as sounds.

- Pitch:**
- High pitch sounds are created by short sound waves.
 - Low pitched sounds are created by long sound waves.



- Volume:**
- The closer you are to the source of the sound, the louder the sound will be.
 - The further away you are from the source of the sound, the quieter the sound will be.



process a series of actions used to produce something or reach a goal.
saliva the watery liquid that forms in your mouth and helps you to chew and digest food
stomach the organ inside your body where food is digested before it moves into the intestines

Recall Quiz



- How are different pitches of sound made?
- How do we hear these sounds?
- Why does a sound get quieter the further away you are from it?
- Does sound travel differently through different medias (example: water)? Why?
- What are the different states of matter?
- What different materials could you group into these?
- In what unit do we measure temperature?
- Describe the water cycle. [Geography link](#)
- How could you create a simple series circuit?
- What is the job of a switch in a circuit?

If a circuit is not working, what would you check?

How could you power a circuit?

How does a human eat and digest food?

How might a bad diet affect our teeth?

Can you give me an example of a food chain? What is the predator and what is the prey?

What different types of teeth do humans have? What is their purpose?

In what ways can you classify/group different animals? (prompt: habitat, taxonomic title)

How can a change in environment effect the animals that live there?

Can you give me an example of a food chain? What is the predator and what is the prey?

What animals/plants are in our local environment? Why is this a good habitat for them?

Teaching resources:

Animals including humans:

<https://pstt.org.uk/resources/curriculum-materials/assessment> (click 'Focussed Assessment Plans)
<https://explorify.wellcome.ac.uk/en/activities/odd-one-out/fuel-up>
<https://www.stem.org.uk/resources/community/collection/12365/year-4-animals-including-humans>

Electricity:

<https://pstt.org.uk/resources/curriculum-materials/assessment> (click 'Focussed Assessment Plans)
<https://explorify.wellcome.ac.uk/en/activities/odd-one-out/battery-bonanza>
<https://www.stem.org.uk/resources/community/collection/12388/year-4-electricity>

living things and their habitats:

<https://pstt.org.uk/resources/curriculum-materials/assessment> (click 'Focussed Assessment Plans)
<https://explorify.wellcome.ac.uk/en/activities/what-if/there-used-to-be-life-on-mars>
<https://www.stem.org.uk/resources/community/collection/12774/year-4-living-things-and-their-habitats>

Sound:

<https://pstt.org.uk/resources/curriculum-materials/assessment> (click 'Focussed Assessment Plans)
<https://explorify.wellcome.ac.uk/en/activities/whats-going-on/bottle-orchestra>
<https://www.stem.org.uk/resources/community/collection/12746/year-4-sound>

States of matter:

<https://pstt.org.uk/resources/curriculum-materials/assessment> (click 'Focussed Assessment Plans)
<https://explorify.wellcome.ac.uk/en/activities/problem-solvers/ice-block-skyscraper>
<https://www.stem.org.uk/resources/community/collection/12345/year-4-states-matter>