Ladywood Primary School Year 4- Science– Animals including Humans

What should I already know?

- The parts of the human body and what they do.
- All animals need water, air and food to survive.
- The different ways in which humans are healthy.
- Animals get nutrition from what they eat.

Humans and some animals have skeletons .
What carnivores, omnivores and herbivores are.

What will I know by the end of the unit?

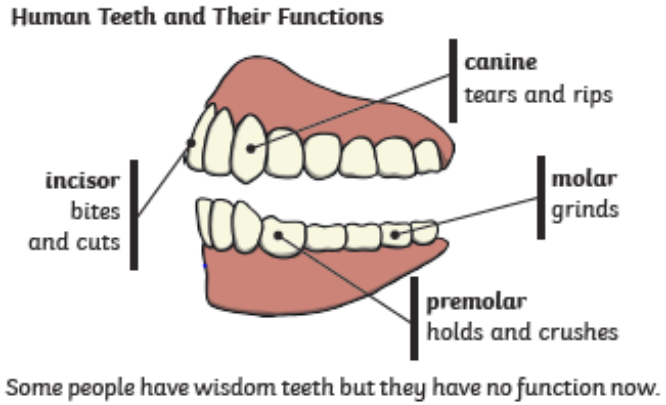
What is digestion?

Digestion is the way the body breaks down the food we eat into smaller parts that can be used to give the body energy.

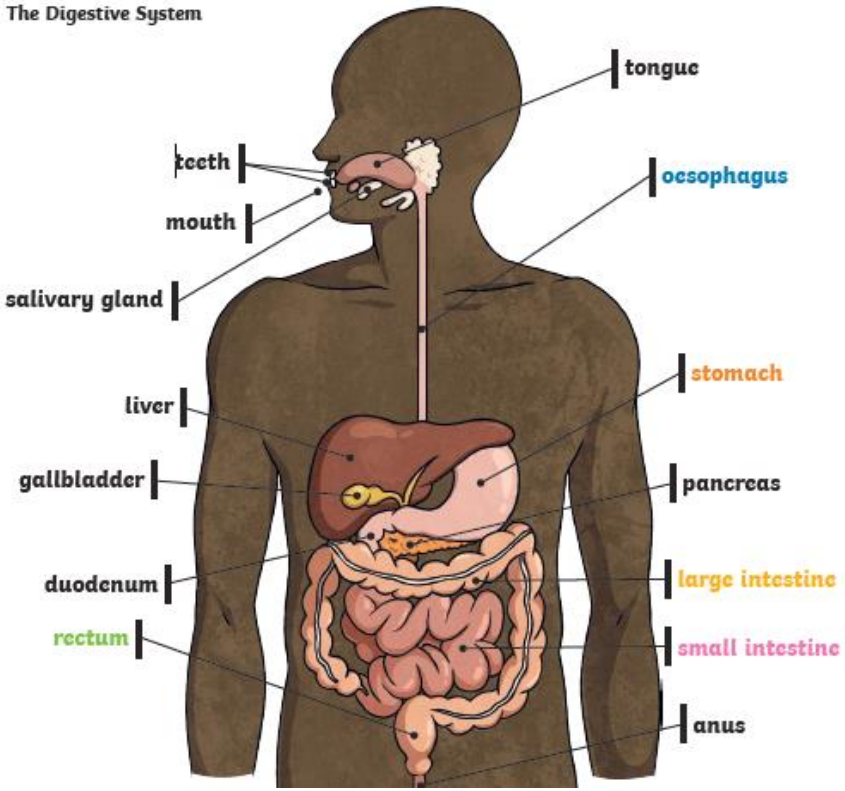
The digestive process

1 Humans put food into their mouth.
2 Food is chewed by the teeth.
3 Food is swallowed and passed through the pharynx and oesophagus to the stomach.
4 In the stomach, it is mashed into a mixture like soup and mixed with acid.
5 The mixture passes into the small intestine, where tiny bits of food pass into the bloodstream.
6 The food that is still left goes into the large intestine
7 Finally, waste products leave the body.

What jobs do teeth do?



To help prevent tooth decay:
limit sugary food and drink;
brush teeth twice daily using a fluoride toothpaste;
visit your dentist regularly.



What is a food chain?

A food chain is a diagram that shows a producer and consumers

Investigate!

Investigate the amount of sugar in drinks, how sugar leads to an increase in plaque and how this destroys tooth enamel.
Compare the teeth of carnivores, omnivores and herbivores. What do you notice?
Match animals to their teeth and explain your reasons for this.
Identify the parts of the digestive system and explain their functions
Create a presentation to show how our food is digested.

Key Vocabulary

Organ – part of the body with a purpose
Absorb – soak up or take in
Waste –unwanted substances in the body
Decay-gradually destroyed by a natural process
Enamel - the hard white substance that forms the outer part of a tooth
Plaque-a substance containing bacteria that forms on the surface of your teeth
Fluoride- in toothpaste and protects teeth
Producer- a plant that produces its own food
predator – an animal that hunts and eats other animals
Pray – an animal that gets hunted and eaten by another animal
Consumer – things that eat other things

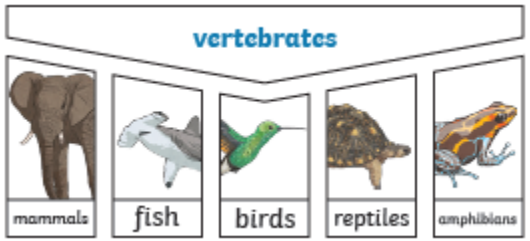
Ladywood Primary School Year Science – All Living Things and their Habitats

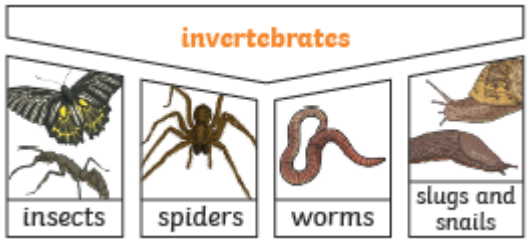
What should I already know?

- Animals can be grouped into vertebrates and invertebrates.
- Animals can be grouped into carnivores, herbivores and omnivores.
- Examples of habitats and the animals and plants that can be found there.
- Living things depend on each other to survive.

What will I know by the end of the unit?

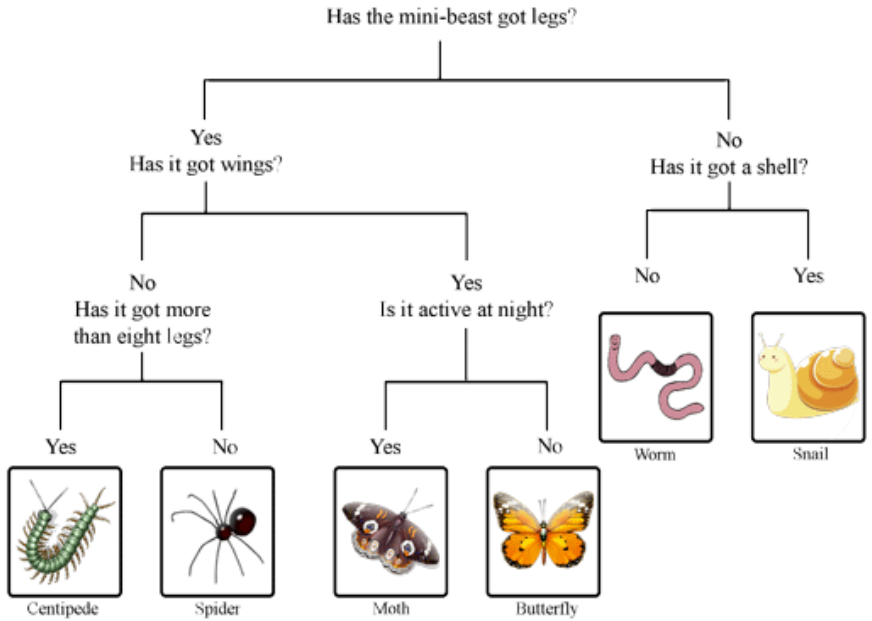
All living things, which can also be called organisms, have to do certain things to stay alive. These are the life processes: movement, respiration, sensitivity, growth, reproduction, excretion, nutrition
Animals can be grouped in lots of different ways based upon their characteristics.





<u>Using keys</u>

You can use classification keys to help group, identify and name a variety of living things.



<u>Investigate!</u>

Use criteria to sort living things in a Carroll and Venn diagram.
Use a classification key to identify animals and plants and then create your own.
Carefully observe minibeasts in a microhabitat and use a classification key to identify them.
Use simple computer software programmes to create a branching classification key.
Explore examples of human impact (both positive and negative) on environments.

<u>How can habitats change?</u>

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, climate change, deforestation.

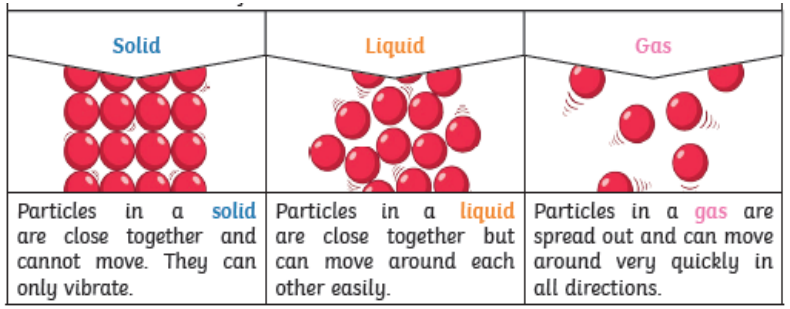
Key Vocabulary

Organisms -This is another word that can be used to mean 'living things'.
Respiration- A process where plants and animals use oxygen gas from the air to help turn their food into energy.
Sensitivity - The way living things react to changes in their environment.
Reproduction - The process through which young are produced.
Excretion -The process by which living things get rid of waste products.
Nutrition - Food which provides living things with energy to live and stay healthy
Classification -This is where plants or animals are placed into groups according to their similarities.
criteria
Characteristics - The distinguishing features or qualities that are specific to a species.
Criteria -a factor on which something is judged.

Ladywood Primary School Year 4 Science – States of Matter

What should I already know?
Why some materials are used for certain purposes because of their properties

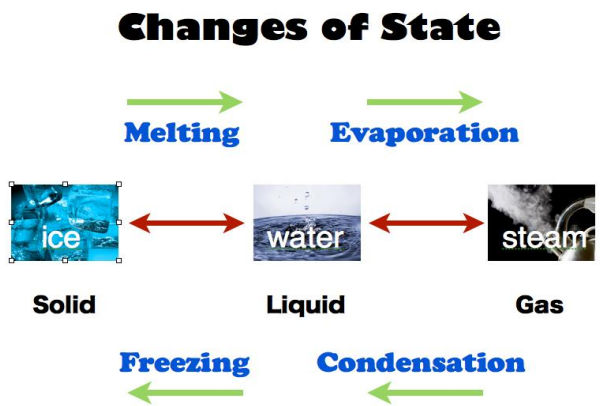
What will I know by the end of the unit?
Materials fall into three main categories: solids, liquids and gases.
Particles are what materials are made from. They are so small that we cannot see them with our eyes. The properties of a substance depend on what its particles are like, how they move and how they are arranged. Particles behave differently in **solids**, **liquids** and **gases**.
Solids – solids are materials that keep their own shape unless a force is applied to them. They can be hard, soft r squashy. Solids take up the same amount of space, no matter what happens to them.
Liquids – liquids take the shape of their container. They can change shape but do not change the amount of space they take. They can flow or be poured.
Gases – gases can spread out to fill the container or room they are in. they do not have a fixed shape.

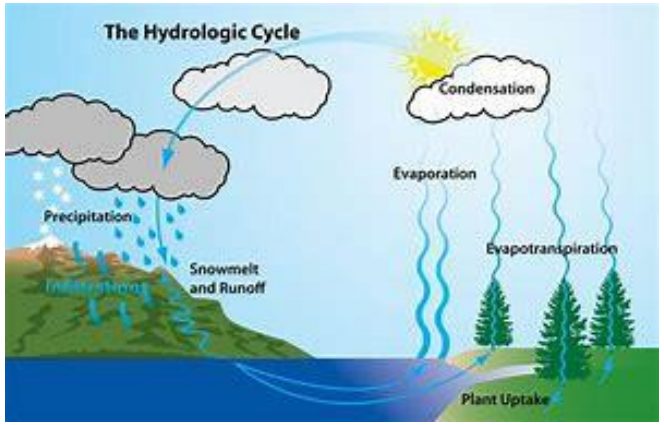


What is a change of state?
What a material changes from one material type to another, we say 'it has changed state.'

What	Explanation	Name of process	Example
Solid to Liquid	When a solid **melts** it changes to a liquid.	Melting	When an ice cube melts.
Liquid to Gas	A liquid **evaporates** into a gas when it is heated.	Evaporation	When water on a roof is warmed up and turns to steam.
Gas to Liquid	When a gas it cooled it **condenses** into a liquid.	Condensation	When steam from the shower cools on the mirror it turns to water.
Liquid to Solid	When a liquid **freezes** it turns into a solid.	Freezing	When the water in a pond freezes, it turns to ice.

Water boils at 100°c
Ice melts at 0°c
Chocolate melts at about 35°c





Condensation and evaporation can be seen in the water cycle.
Water
The sun's heat evaporates the water from seas and lakes. It turns to water vapour.
The water vapour rises and then cools down to form water droplets in clouds.
When the clouds get to heavy they burst and fall back to land as rain or snow.

Key Vocabulary
Precipitation – rain, sleet, hail or snow.
Water vapour – when water is heated and turns to a gas.
Celsius – the common measure for temperature.
Melting point – the temperature when ice melts.
Freezing point – the temperature when water freezes.
Boiling point – the temperature when water turns to a gas.
Oxygen, carbon dioxide, helium, neon, nitrogen – Different gases we use in everyday life.

Investigate!
Group materials according to their states.
Explain the particle structure of solids, liquids and gases.
Explore the effect of temperature on substances such as chocolate, butter, cream. Compare their melting points and place them in a table.
Research the temperature at which materials change state, Observe and record evaporation over a period of time, Analyse and interpret different forms of data (tables, graphs) to show the effects of temperature on states of matter.
Present what you know about the water cycle

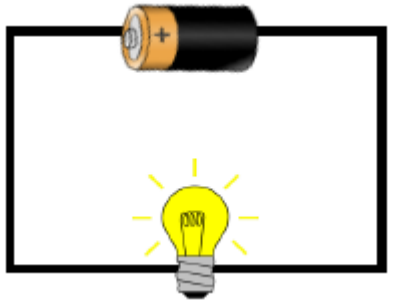
Ladywood Primary School Year 4 Science – Electricity

What should I already know?
Electricity is a form of energy that can be for heating and lighting, and to provide power for devices.
Sources of light and sound may need electricity to work.

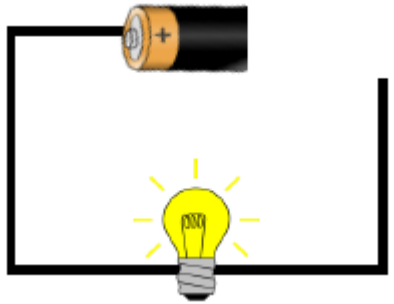
What will I know by the end of the unit?

Where does electricity come from?
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.

How does a circuit work?
Electricity can flow through the components in a complete electrical circuit.
A circuit always needs a power source, such as a battery, with wires connected to both the positive (+) and negative (-) ends.
A circuit can also contain other electrical components, such as bulbs, buzzers or motors, which allow electricity to pass through.
Electricity will only travel around a circuit that is complete. That means it has no gaps.



The bulb will light up



The bulb will not light up

Investigate!
- Research how to work safely with electricity.
- Make a variety of circuits, investigating which circuits work and why.
- Name the basic parts including cells, batteries, wires, bulbs, switches, motors and buzzers. Investigate which materials are electrical conductors and insulators.

What are electrical conductors and insulators?
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.
Many metals, such as iron, copper and steel, are good 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.
Wood, glass, plastic and rubber are good electrical insulators. That is why they are used to cover materials that carry electricity.

Key Vocabulary
Mains – were electricity enters a building and flow round it.
Device - an object that has been invented for a particular purpose.
Component – a part of a circuit appliances.
Circuit -path throu.gh which an electrical current flows.
Generate – to make or produce.
Cell – another word for battery.
Buzzer-an electrical device that is used to make a buzzing sound.
Motor- a device that uses electricity or fuel to produce movement.
Wires -a long thin piece of metal that is used to fasten things or to carry electric current.
Battery – a device that stores electrical energy as a chemical.

Ladywood Primary School Year 4 Science – Sound

What should I already know?
Hearing is one of my five senses.
Sounds can be combined using musical instruments.

What will I know by the end of the unit?

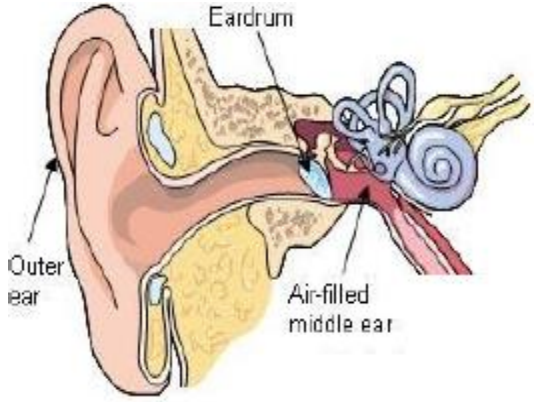
How is a sound made?
When objects vibrate, a sound is made.
The vibration makes the air around the object vibrate and the air vibrations enter your ear.
These are called sound waves.
If an object is making a sound, a part of it is vibrating, even if you cannot see the vibrations.

How do sounds travel?
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.

Investigate!

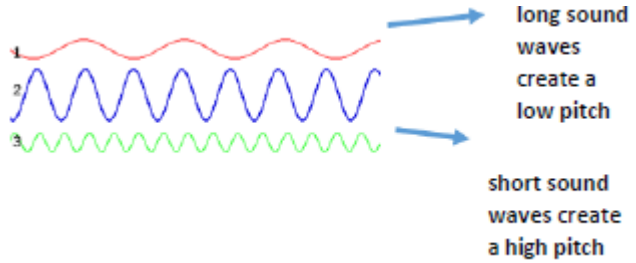
- Fill identical jars with different volumes of water. Which one creates the highest pitch?
- Which material would make the best sound defender? How can you investigate this?
- Make musical instruments using different length strings. How do their pitches differ
- Experiment with a tin can telephone
- Investigate vibrations with rice on a drum

How do we hear sounds?
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.



Key Vocabulary
Sound waves - invisible waves that travel through air, water, and solid objects as vibrations.
Vibrations -invisible waves that move quickly
Source -where something comes from
Transmit- to pass from one place or person to another.
Particles – make up solids, liquids and gases and are so small you can't see them.
Medium - something that makes possible the transfer of energy from one location to another.
Ear drum – a part of the ear that separates the inner and outer ear.
Amplitude- measure and size of the strength of a sound wave.
Decibel -a measure of how loud a sound is.
Frequency - measure of how many times per second the sound wave cycles.
Soundproof – to prevent sound for passing.
Absorb – to take energy in. Absorbent materials muffle sounds.

How do sounds change?
The pitch of a sound is how high or low it is.
High pitch sounds are created by short sound waves.
Low pitched sounds are created by long sound waves.



The volume of a sound is how loud or quiet it is.
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.