

Year 5
Science Knowledge
Organisers

Living Things + Their Habitats

KNOWLEDGE ORGANISER

What you should already know:

There are seven common features of living things – **Movement, Respiration, Sensitivity, Growth, Reproduction, Excretion & Nutrition.**

Animals can be grouped into vertebrates (have backbone) and invertebrates (have no backbone). They can be grouped into further categories, e.g. mammals, reptiles, birds, etc.

Plants can also be categorised in many different ways, e.g. flowering and non-flowering plants.

Vocabulary:

Life cycle – the different stages of life for a living thing.

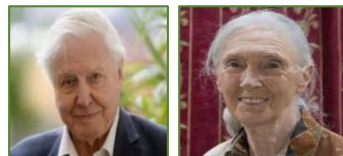
Reproduction – as part of their life cycle plants and animals need to reproduce to produce offspring.

Sexual reproduction – Both the male and female are needed to produce offspring.

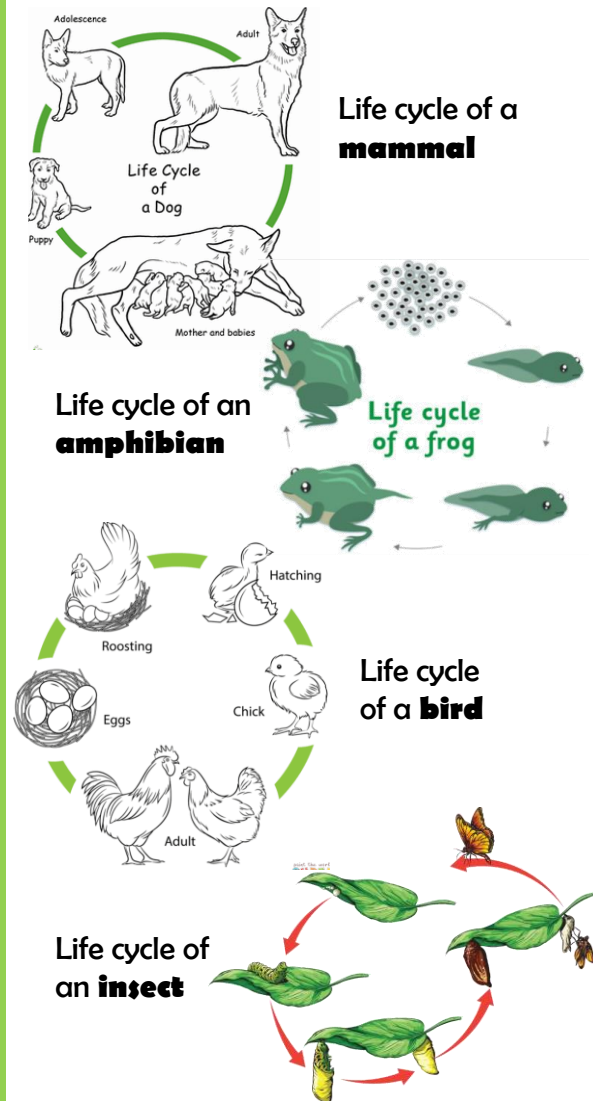
Asexual reproduction – Only one parent is needed to produce offspring. This happens mostly in plants and bacteria.

Metamorphosis - A major change from one form to another in the life cycle of some animals. Eg a caterpillar → butterfly

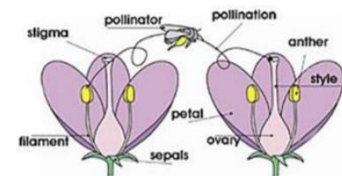
A **natural scientist** studies animals and plants by observation, rather than by experimenting. Eg **Sir David Attenborough**



Animals **behaviourists** make scientific studies of everything that animals do. Eg **Dr Jane Goodall**

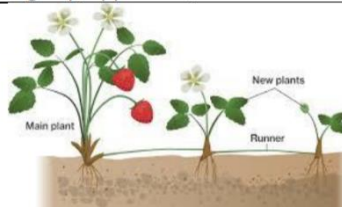


Sexual reproduction occurs through pollination usually involving wind or insects.



E.g. lily, apple tree, tomato

Asexual reproduction involves only one parent using bulbs, tubers, runners and cuttings.



E.g. spider plant, potato, strawberry

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FORCES



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What you should already know:

- Forces are **pushes** and **pulls** which make things move and stop moving.
- Most forces need contact between objects, but magnets can act at a distance.
- **Magnets** are made of materials that create a magnetic field.
- Forces are shown by **arrows** in diagrams. The bigger the arrow, the bigger the force.

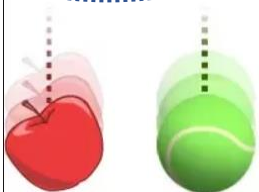


Air resistance slows them down when they open their parachute

Dolphins are a streamlined shape to reduce **water resistance** when they swim.



Things fall to the ground because of **gravity**.



Applied force: The force placed on an object by a living creature.

Gravity: the force that attracts all matter towards each other. Without gravity we would fly right off the planet!

Friction: the 'sticking' force that occurs when an object moves over another.

Air resistance: a type of friction force that pulls against an object travelling through the air. Some objects are more **streamlined**, meaning that the air pulls on them less and they travel faster.

Water resistance: friction force on objects floating or moving in water.

Surface resistance: the friction force of objects moving across a surface.



Gears are different sized cogs that work together to give a machine extra force.



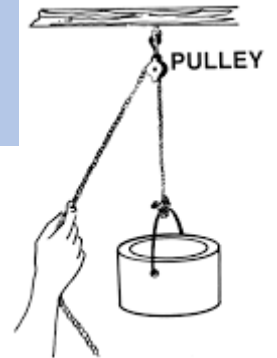
Levers give us extra pushing or pulling force and help us lift greater weights.

Forces that are equal in size but in opposite directions are called **balanced forces**. Balanced forces do not cause a change in the motion of objects.

Forces that do cause a change in the motion of objects are called **unbalanced forces**. They are forces in opposite directions but they are not equal in size.

Pulleys, gears and levers are simple machines. They can be used to turn a small force into larger forces.

Pulleys are wheels and ropes that work together to lift heavy objects.



Animals including Humans



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What you should already know:

- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
- Notice that animals, including humans, have offspring which grow into adults.

Vocabulary:

Child – A young human below the age of puberty.

Adolescent – The process of developing from a child into an adult (teenager)

Adult – A person who is fully grown or developed.

Foetus – An unborn or unhatched offspring of a mammal.

Gestation – The process of developing inside the womb between conception and birth.

Reproduction – Creating offspring by a sexual or asexual process.

Puberty – the vocabulary to describe sexual characteristics

Life Expectancy – The average period that you may expect to live.

As humans grow, they undergo many **physical** and **emotional** changes. As a child, we learn new skills such as walking and talking and as we develop into old age, we may get wrinkles and greying hair. These changes are all part of the **human life cycle**:

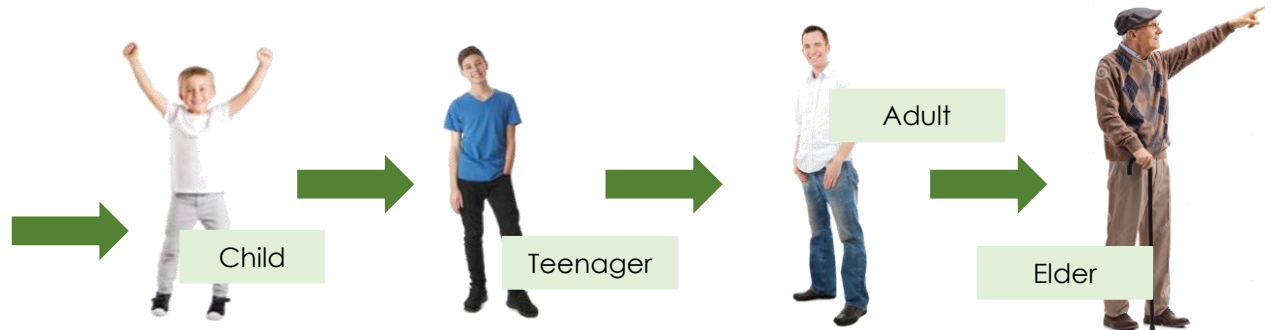
When babies are young, they grow rapidly. They are very dependent on their parents. As they develop, they learn many skills. At **puberty**, a child's **body changes** and **develops** primary and secondary sexual characteristics. This enables the adult to **reproduce**.



Foetus
in the
womb



Baby



Properties + Changes of Materials

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Vocabulary:

Materials – the substance that something is made out of.

Melting – the process of heating a solid until it turns into a liquid.

Freezing – when a liquid cools and turns into a solid.

Evaporating – when a liquid turns into a gas or vapour.

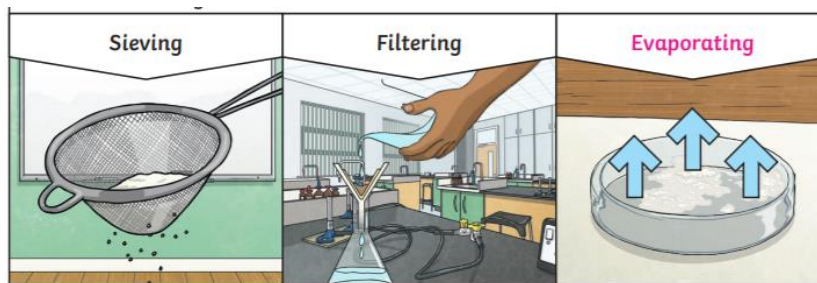
Condensing – when a gas, such as water vapour, cools and turns into a liquid.

Separation – splitting up and sorting different parts of a mixture.

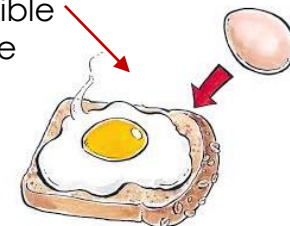
Reversible changes – the change can be reversed to get the starting materials back.

Irreversible changes - the products cannot be changed back so a new product is formed.

Methods of separation:



Example of irreversible change



Dissolving

A **solution** is made when solid particles are mixed with liquid particles – it looks like the solid has disappeared. Materials that will dissolve are known as **soluble**.

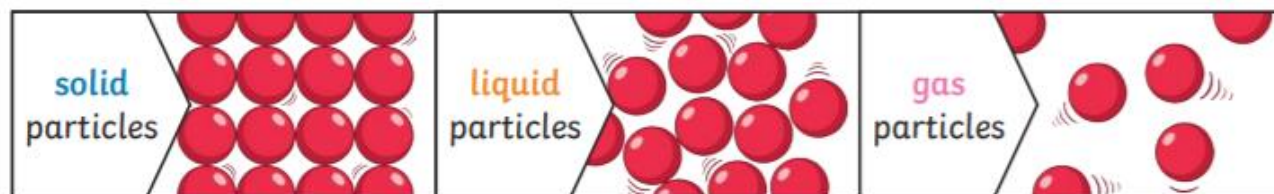
Materials that **won't dissolve** are known as **insoluble**. A **suspension** is when the particles don't dissolve.

Sugar is a **soluble** material



Sand is an **insoluble** material

Conductor
Insulator
Transparent
Opaque
Waterproof
Magnetic



EARTH + SPACE

Y5



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Vocabulary:

Orbits - a curved path of a planet or satellite around an object.

Rotate - to spin. For example the Earth rotates on its own axis.

Axis - an imaginary line that a body rotates around.

Sun - a huge star that Earth and the other planets in our solar system orbit around.

Star - a giant ball of gas held together by its own gravity.

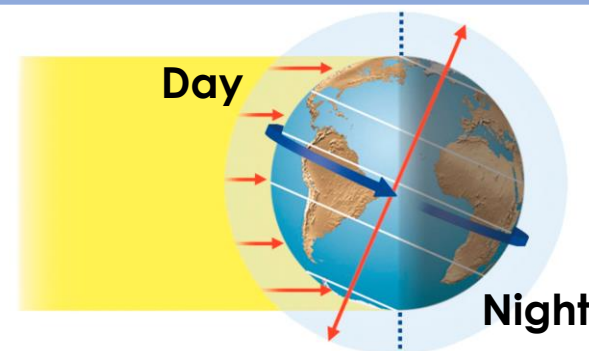
Moon - a natural satellite which orbits Earth or other planets.

Planet - a large object, round or nearly round, that orbits a star.

Spherical bodies - astronomical objects shaped like spheres.

Satellite - Any object or body in space that orbits something else, for example: the moon is a satellite of Earth.

Day and night - Earth rotates (spins) on its axis. It does a full spin once every 24 hours, which is our day and night. Daytime occurs when the side of the Earth is facing the sun and night occurs when the side of the Earth is facing away from the sun.



The first man-made satellite, **Sputnik** was launched by the Soviet Union in 1957.

The **International Space Station** was launched in 1998.

Yuri Gagarin was the first human in space in 1961.

Neil Armstrong was the first person on the moon in 1969.

Phases of the Moon

