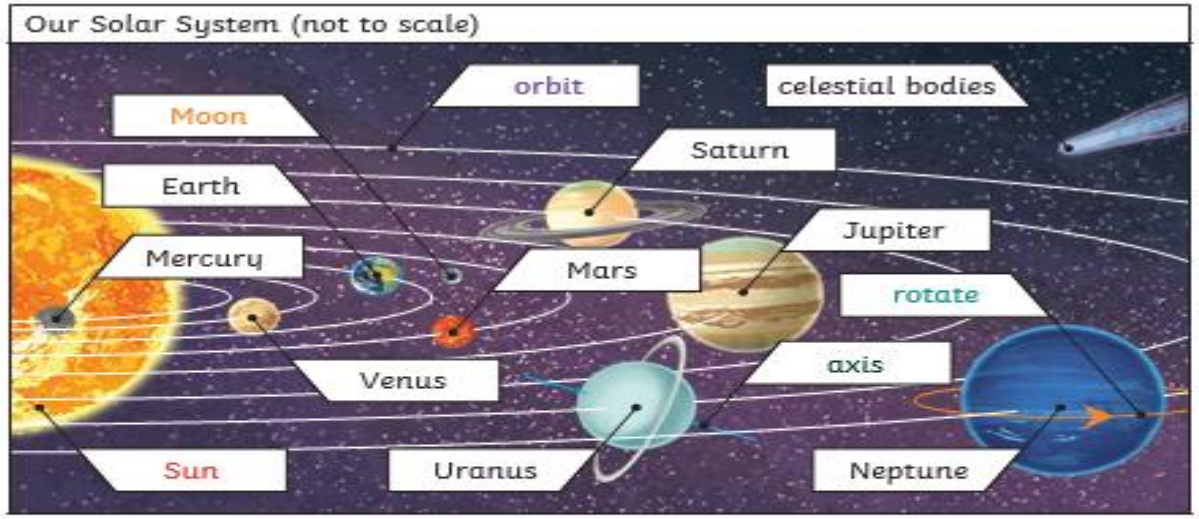
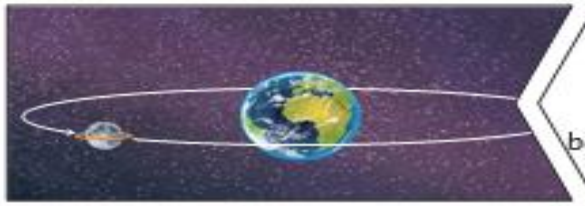
Year 5 SEN Knowledge Organisers

Science

Year 5 Earth and Space

 sun	It is a huge star that Earth and other planets in our solar system orbit.
 moon	A natural satellite which orbits Earth and other planets.
 sphere	A 3D shape.
 star	A giant ball of gas.
 planet	A large objects that orbits a star.
 satellite	Any object in space that orbits something else.



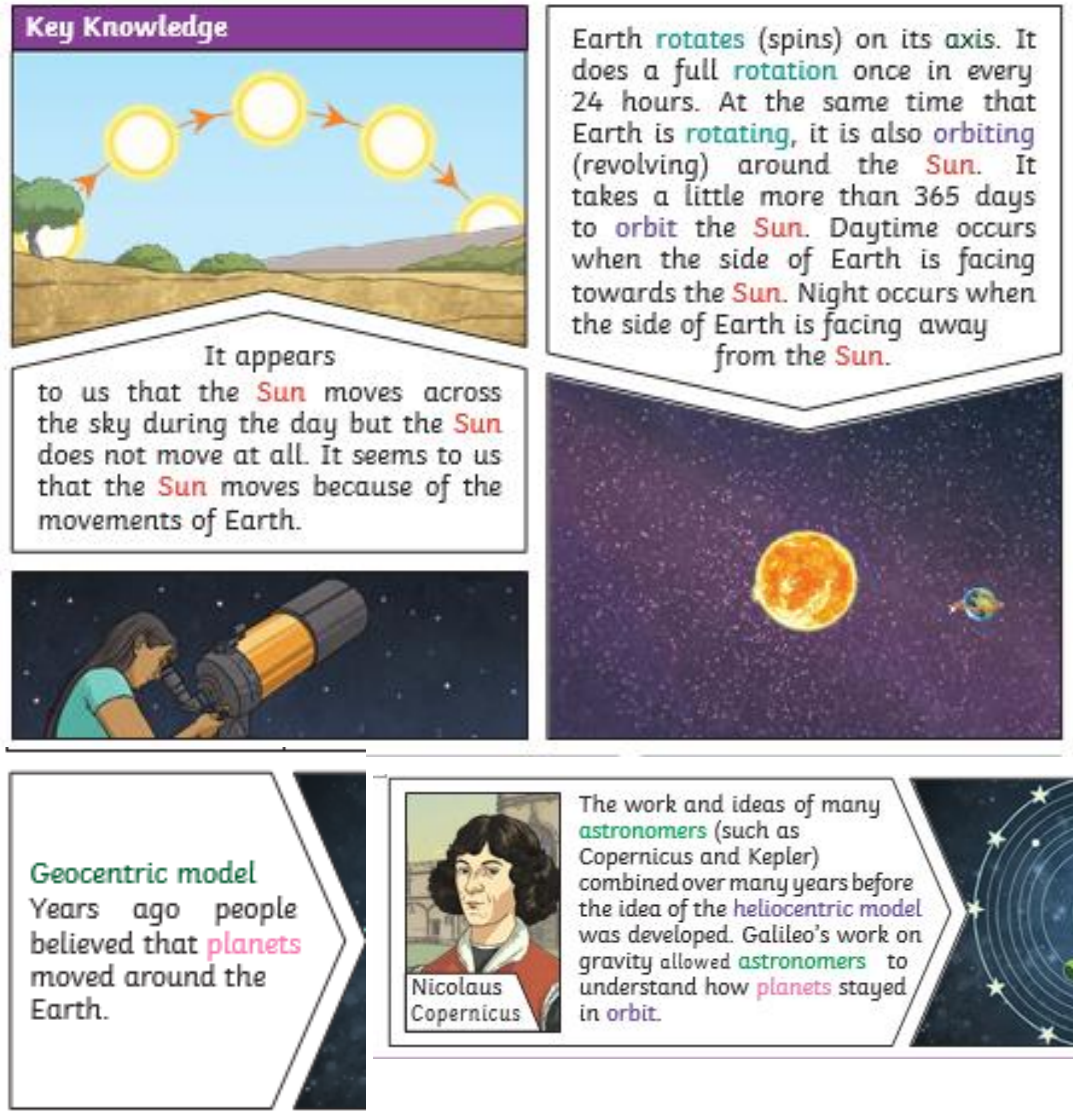


The Moon orbits Earth in an oval-shaped path while spinning on its axis. At various times in a month, the Moon appears to be different shapes. This is because as the Moon rotates round Earth, the Sun lights up different parts of it.

Mercury, Venus, Earth and Mars are rocky planets. They are mostly made up of metal and rock. Jupiter, Saturn, Uranus and Neptune are mostly made up of gases (helium and hydrogen) although they do have cores made up of rock and metal.

Year 5 Earth and Space

 orbit	To move around another object.
 axis	An imaginary line that something rotates around.
 sphere	To move around another object.
 rotate	To spin.
 astronomer	Someone who is an expert on space science.

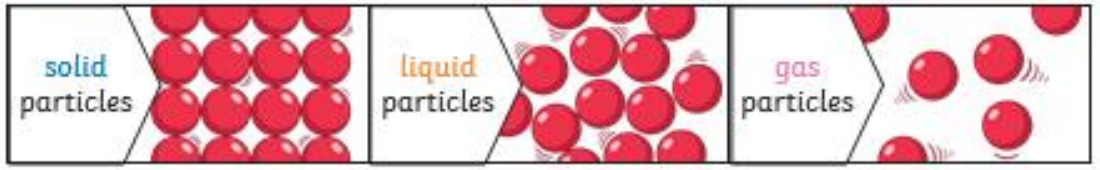


Year 5 Properties and changes of materials

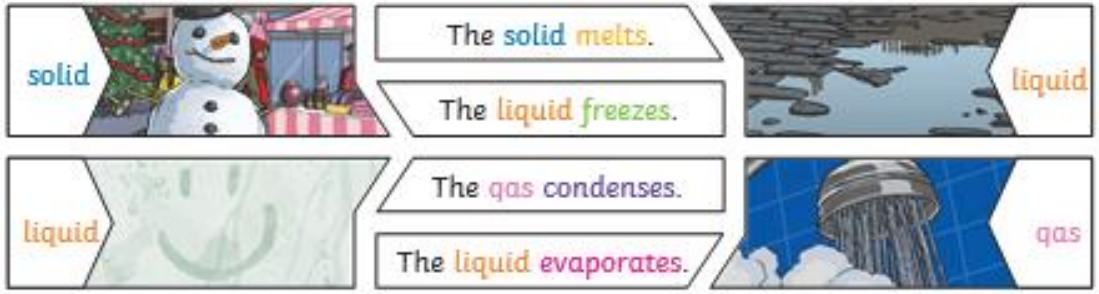
materials	The thing something is made out of.
liquid	It can flow and take shape of a container.
melting	The process of heating a solid until it changes to a liquid.
solid	The solid particles are together and they hold their shape.
gas	The particles are further apart and are free to move around.
°C freezing	This is when Liquid cools and turns into a solid.

Different materials are used for particular jobs based on their properties: electrical conductivity, flexibility, hardness, insulators, magnetism, solubility, thermal conductivity, transparency.

For example, glass is used for windows because it is hard and transparent. Oven gloves are made from a thermal insulator to keep the heat from burning your hand.

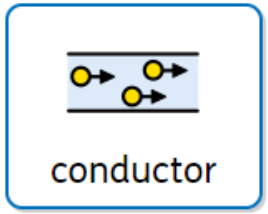
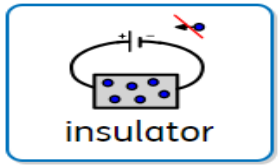


Changes of State



Year 5 Properties and changes of materials

Key vocabulary

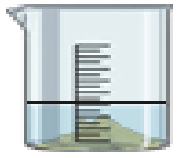
conductor		A conductor is a material that heat or electricity can easily travel through. Most metals are both thermal conductors (they conduct heat) and electrical conductors (they conduct electricity).
Insulator		An insulator is a material that does not let heat or electricity travel through them. Wood and plastic are both thermal and electrical insulators.
Transparency		A transparent object lets light through so the object can be looked through, for example glass or some plastics.

Dissolving

A solution is made when solid particles are mixed with liquid particles. 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.



Reversible changes, such as mixing and dissolving solids and liquids together, can be reversed by:

Sieving	Filtering	Evaporating
		
Smaller materials are able to fall through the holes in the sieve, separating them from larger particles.	The solid particles will get caught in the filter paper but the liquid will be able to get through.	The liquid changes into a gas, leaving the solid particles behind.

Irreversible changes often result in a new product being made from the old materials (reactants). For example, burning wood produces ash. Mixing vinegar and milk produces casein plastic.

Year 5 Animal Including humans

fertilisation
The male and female sex cells fuse together.

prenatal
The cells develop and grow into a foetus inside the mother's uterus. After around nine months, the baby is born.

infancy
Rapid growth and development. Children learn to walk and talk.

childhood
Children learn new skills and become more independent.

adolescence
The body starts to change over a few years. The changes occur to enable reproduction during adulthood. Much more independent.

early adulthood
The human body is at its peak of fitness and strength.

middle adulthood
Ability to reproduce decreases. There may be hair loss or hair may turn grey.

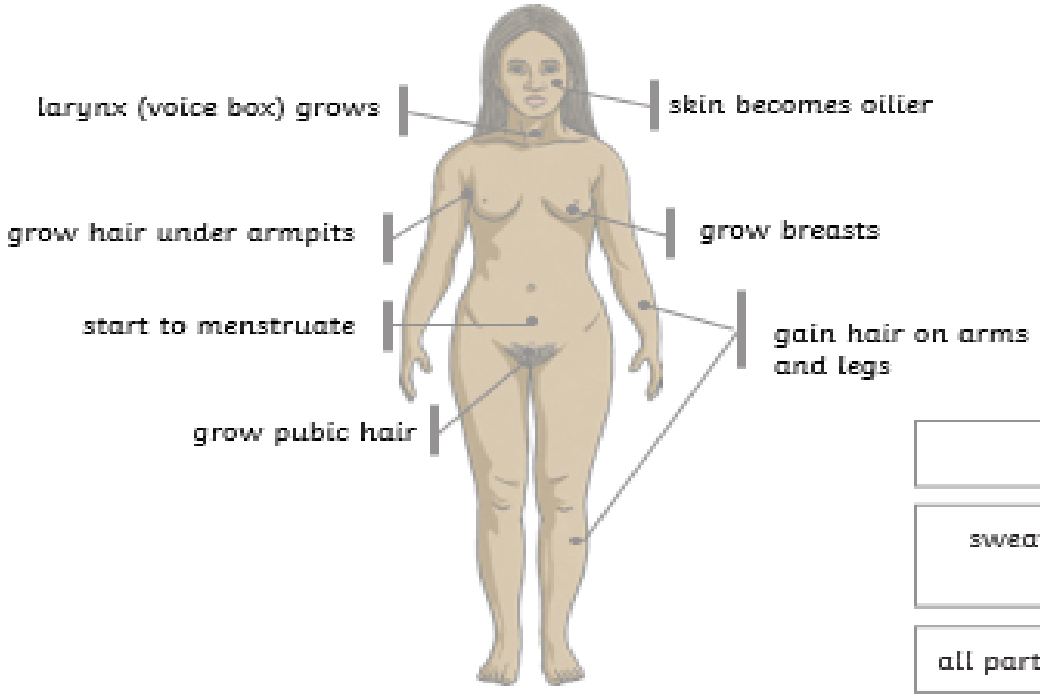
late adulthood
Leading a healthy lifestyle can help to slow down the decline in fitness and health which occurs during this stage.

Key Vocabulary

fertilisation	The process of the male and female sex cells fusing together.
prenatal	The stage of development from the time of **fertilisation** to the time of birth.
gestation	The process or time when prenatal development takes place before birth.
reproduce	To produce young.
asexual reproduction	A process where one parent produces new life.
sexual reproduction	A process where two parents – one male and one female – are required to produce new life.
life cycle	The changes a living thing goes through, including reproduction.

Year 5 Animal Including humans

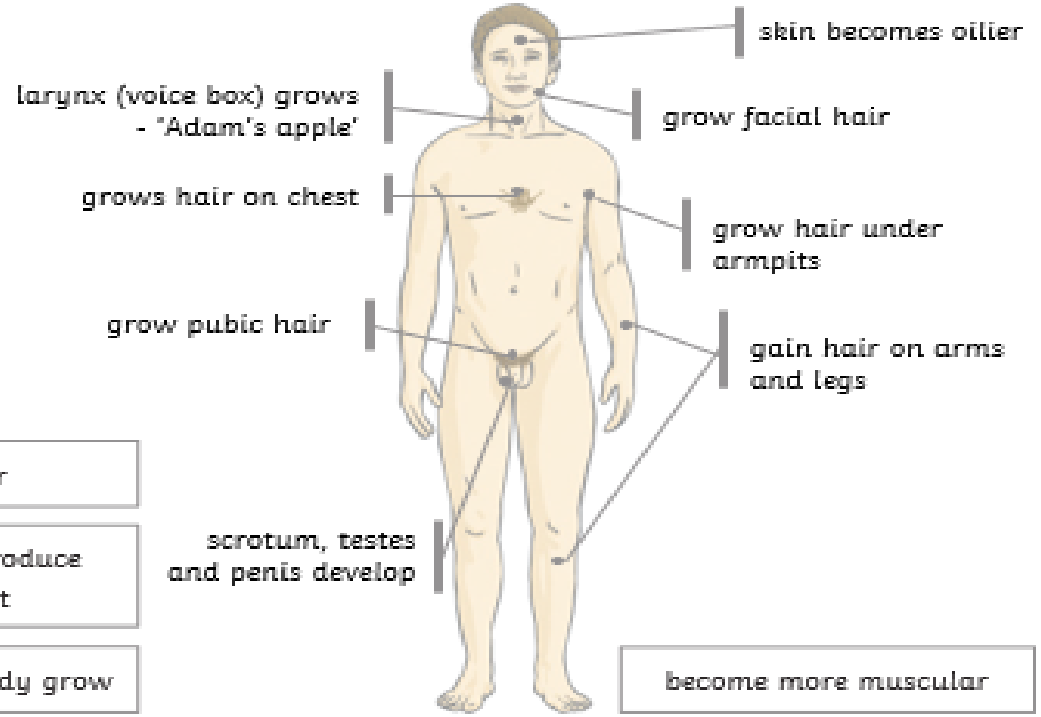
Key Knowledge



grow taller

sweat glands produce more sweat

all parts of the body grow



Key Vocabulary

adolescence	The social and emotional stage of development between childhood and **adulthood**.
puberty	The physical stage of development between childhood and **adulthood**.
menstruation	When the female body discharges the lining of the uterus. This happens approximately once a month.
adulthood	The stage of development when a human is fully grown and mature.
life expectancy	The length of time, on average, that a particular animal is expected to live.

Year 5 Living things and their habitats

sexual reproduction	When two living things are needed to create offspring.
Asexual reproduction	When one living thing is needed to create an offspring.
fertilisation	The act of male and female sex cells mixing to develop an egg.
life cycle	The journey or stages in a life of a living thing.
gestation	The length of pregnancy.
metamorphosis	The journey or stages in a life of a living thing.

Humans develop inside their mothers and are dependent on their parents for many years until they are old enough to look after themselves.

Amphibians such as frogs are laid in eggs then, once hatched, go through many changes until they become an adult.

Some animals, such as butterflies, go through **metamorphosis** to become an adult.

Birds are hatched from eggs and are looked after by their parents until they are able to live independently.

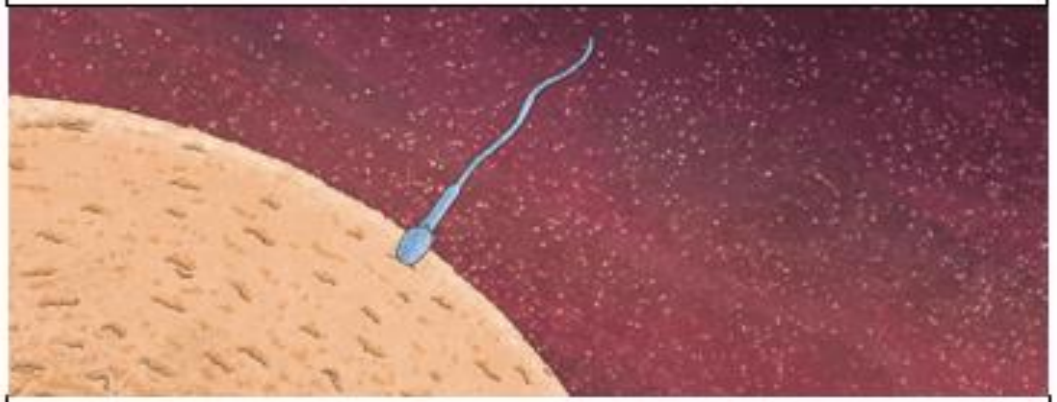
Year 5 Living things and their habitats

Some living things, such as plants, contain both the male and female sex cells. In others, such as humans, they contain either the male or female sex cell.

Reproduction in mammals

Mammals use **sexual reproduction** to produce their offspring.

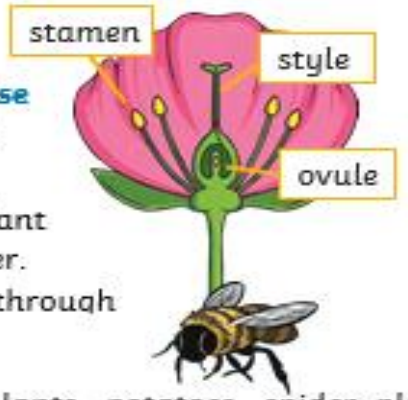
- The male sex cell, called the sperm, **fertilises** the female sex cells.
- The **fertilised** cell divides into different cells and will form a baby with a beating heart.
- The baby will grow inside the female until the end of the **gestation** period when the baby is born.



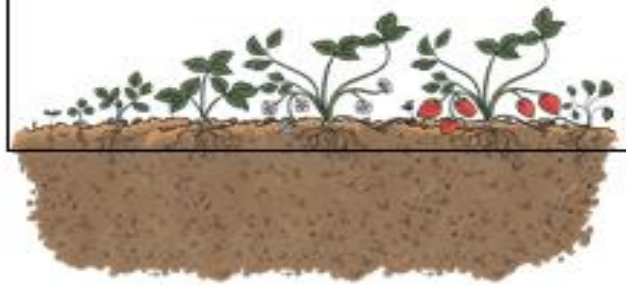
Echidnas and platypus are mammals but they lay eggs rather than giving birth to live young.

Plants

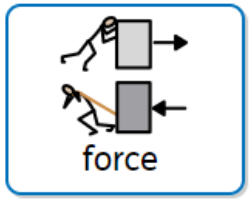
Most plants contain both the male sex cell (pollen) and female sex cell (ovules), but most plants can't **fertilise** themselves. Wind and insects help to transfer pollen to a different plant. The pollen from the stamen of one plant is transferred to the stigma of another. The pollen then travels down a tube through the style and fuses with an ovule.



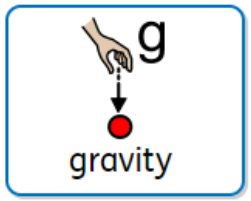
Some plants, such as strawberry plants, potatoes, spider plants and daffodils use **asexual reproduction** to create a new plant. They are identical to the parent plant.



Year 5 Forces

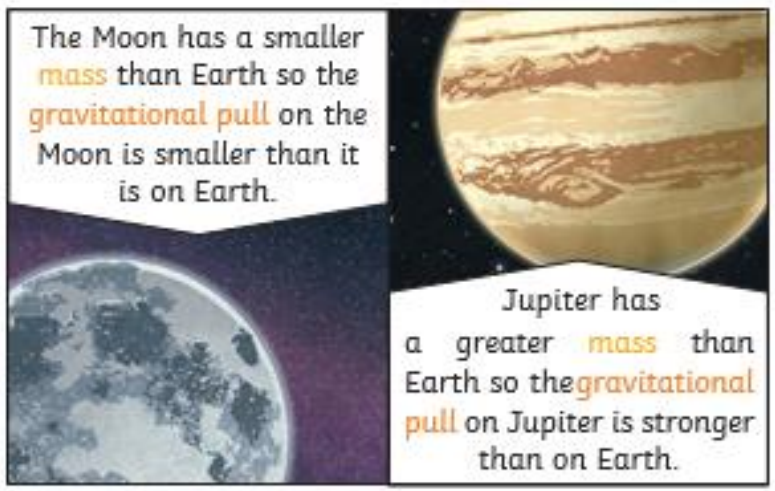


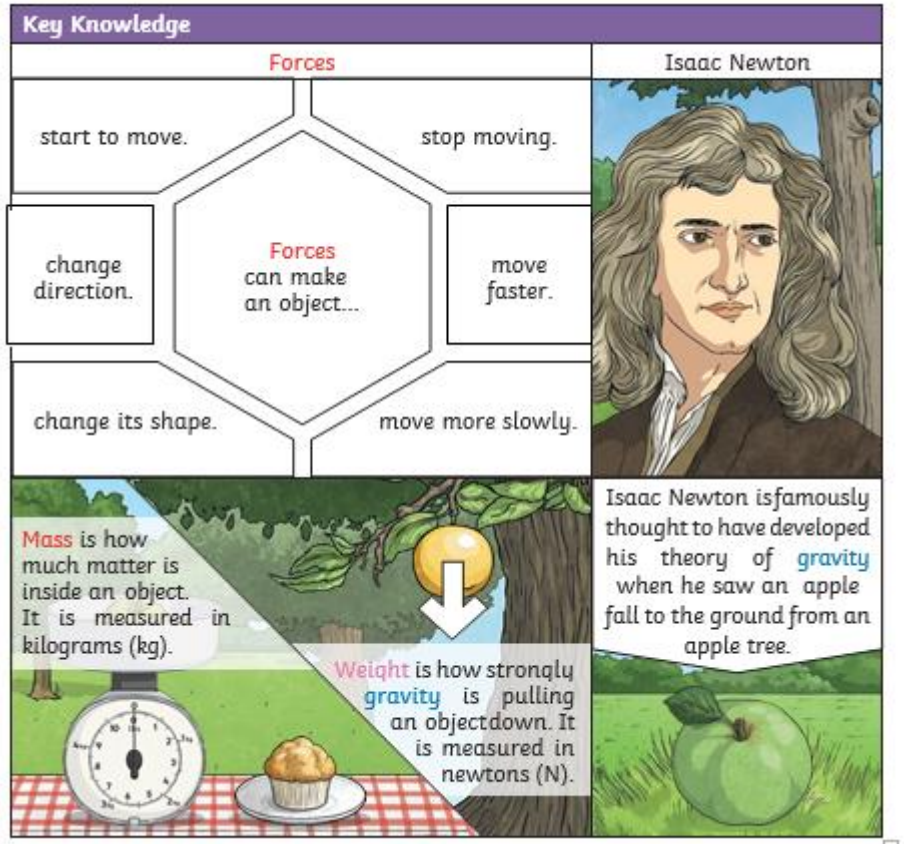
A force can be a push or pull.



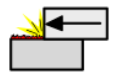
A pulling force.

The measure of the force of gravity on an object.





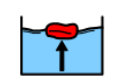
Year 5 Forces


friction

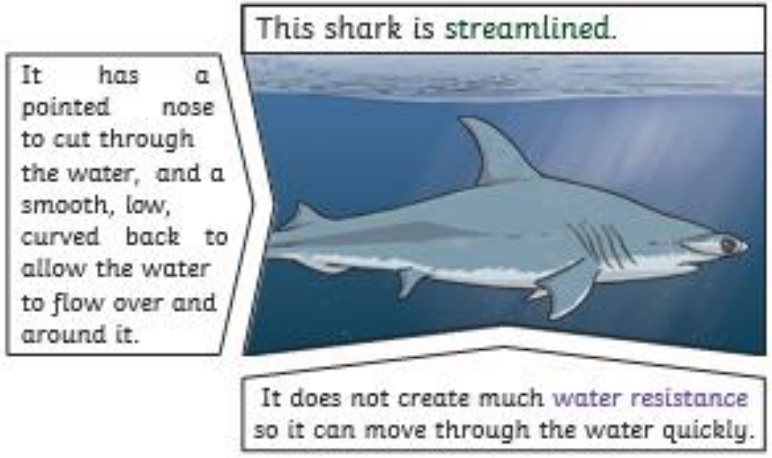
A force that acts between two surfaces that are trying to move.


air resistance

A type of friction caused by air pushing against a moving object.


buoyancy

A upward force that a liquid applies to objects.



Key Knowledge

Examples of forces in action:

Water resistance and air resistance are forms of friction. Friction is sometimes helpful and sometimes unhelpful. For example, air resistance is helpful as it stops the skydiver hitting the ground at high speed. Friction on a bike chain can make the bike harder to pedal so it is unhelpful.

Pulleys	Gears/Cogs	Levers
		
Pulleys can be used to make a small force lift a heavier load. The more wheels in a pulley, the less force is needed to lift a weight.	Gears or cogs can be used to change the speed, force or direction of a motion. When two gears are connected, they always turn in the opposite direction to each other.	Levers can be used to make a small force lift a heavier load. A lever always rests on a pivot.