

Topic: Properties and changes of materials

Year: 5

Strand: Chemistry

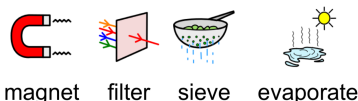
What should I already know?

The names, physical properties and uses of everyday materials.
Compare and groups materials based on their properties
How magnets and electrical circuits work
Some materials which are magnetic
How shapes of solid objects can be changed by squashing bending twisting and stretching
Materials that are solid liquid and gases and their particle structure
Some materials change state when they are heated or cooled and the temperature at which this happens
The roles of melting evaporation and condensation in the water cycle and the effect temperature has on the rate of evaporation
Some rocks are permeable

Vocabulary

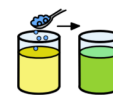
Burning	On fire
Conductor	A substance that heat or electricity can pass through.
Dissolves	When a substance mixes completely with a liquid and disappears
Evaporation	To turn from liquid into gas
Filtering	Using a material with tiny holes (a filter) to remove solid particles from a liquid or gas.
Flexible	A material that can bend easily without breaking.
Insoluble	Will not dissolve
Insulator	Does not let heat or electricity pass through
Irreversible	Impossible to change back
Mixture	Two substances mixed together but not dissolving or changing.
Particle	A tiny amount or small piece
Reversible	Able to change back
Soluble	Able to dissolve
Solute	The substance that has been dissolved
Solution	A mixture where one substance has been dissolved in another.
Thermal	Related to heat

What should I know by the end of this unit?

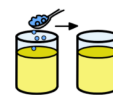
What is dissolving?	When the particles of a solid mix completely with the particles of a liquid it is called dissolving. Materials that dissolve are soluble. Materials that do not dissolve are insoluble
Can materials be separated after they have been mixed?	Some materials can be separated after they have been mixed. Methods of separating include:  magnet filter sieve evaporate
Can changes to materials be reversed?	Some changes such as dissolving, mixing and changes of state can be reversed. Some changes such as burning, rusting and mixing bicarbonate of soda make a new material and cannot be reversed.
What is thermal conductivity?	Materials which are good thermal conductors allow heat to pass through them easily. Thermal conductors are used to make objects which need heat to pass through such as saucepans which need the heat to travel to the food. Thermal insulators do not let heat travel through them easily. They are used to keep heat in one place for example woollen jumpers and flasks.



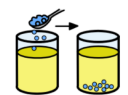
mixture



solution



soluble



insoluble

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Topic: Animals including humans

Year: 5

Strand: Biology

What should I already know?

Animals can be grouped into vertebrates and then into mammals, birds, fish, reptiles and amphibians.
Human, flower, butterfly, frog and chicken life cycles
Reproduction and growth are two of the seven life processes.

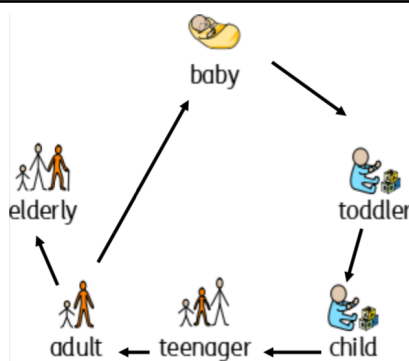
What should I know by the end of this unit?

What are the main stages of the human life cycle?
Foetus - an unborn animal or human in the early stages of development
Newborn - a baby that has just been born
Infancy - a period of rapid change. Toddlers learn to walk and talk at this stage.
Childhood - children grow, learn new things and become independent.
Adolescence - the body starts to change and prepare for adulthood.
Hormonal changes take place over a few years. This is known as puberty.
Early adulthood - this is when humans are usually at their fittest and strongest
Middle adulthood - changes such as hair loss may happen. There are some hormonal changes.
Late adulthood/old age - decline in fitness and strength

What is puberty?
Puberty is the change that happens in adolescence when the body starts to change because of hormones.
Some changes include growth in height, more sweat, hair growth, growth of sex organs.
Females begin to menstruate.
Hormones can cause changes to feelings such as stress, confusion and extreme emotions.

Vocabulary

Adolescence	The period of your life in which you develop from being a child into being an adult
Adulthood	The state of being an adult
Development	The gradual growth or formation of something
Foetus	An animal or human being before it is born
Gestation	The process in which babies grow inside their mother's body before they are born
Hormones	A chemical, usually occurring naturally in your body, that makes an organ of your body do something
Independent	If someone is independent they do not need help or money from anyone else
Infancy	The period of your life when you are a very young child
Life cycle	The series of changes that an animal or plant passes through from the beginning of its life until the end
Life processes	There are seven processes that tell us that living things are alive
Menstruation	The approximately monthly discharge of blood by non-pregnant women from puberty to middle adulthood
Puberty	The stage in someone's life when their body starts to become physically more adult
Reproduction	When an animal or plant produces one or more individuals similar to itself
Toddler	A young child who has only just learnt to walk



Stephenson Memorial Primary School - Science

Topic: Forces

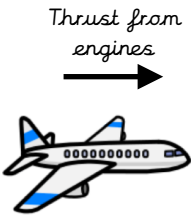
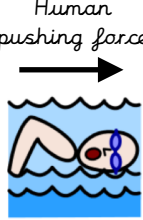
Year: 5

Strand: Physics

What should I already know?

Know what a force is and that forces can be contact or act at a distance
 Know that forces allow objects to start or stop moving or change direction
 Friction is the resistance force when there is contact between two objects
 Gravity is a force that causes objects to fall to earth.
 The magnets have poles, and that similar poles repel and opposite poles attract

What should I know by the end of this unit?

What is gravity?	Gravity is a non contact force. Everything is pulled to the Earth by gravity. This causes unsupported objects to fall.
What are air resistance, water resistance and friction?	<p>Air resistance is a type of friction caused by air pushing against a moving object. Water resistance is a type of friction caused by water pushing against a moving object. Friction is a force that acts between 2 surfaces or objects that are moving across each other. Friction can be helpful and unhelpful.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  <p>Thrust from engines</p> <p>Air resistance</p> </div> <div style="text-align: center;">  <p>Human pushing force</p> <p>Water resistance</p> </div> </div>

What are mechanisms?

Levers, pulleys and gears are mechanisms.

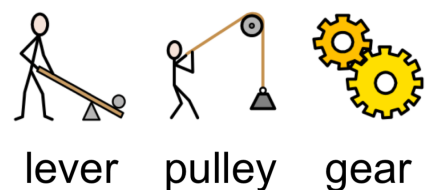
Levers allow us to do heavy work with less effort. For example, trying to pick up a heavy box is easier with a lever. A lever rests on a pivot.

Pulleys also help lift heavy objects. Objects are attached to ropes and pulley wheels, and so instead of lifting we can pull the pulley rope downwards.

Gears are toothed wheels that fit together. Connected gears always turn in opposite directions. Gears change the speed of a force or direction of a motion.

Vocabulary

Contact	The touching of two things
Direction	The way something travels
Friction	The resistance of motion when one object rubs against another
Force	The pulling or pushing effect that something has on something else
Gear	A simple machine with toothed wheels that fit together
Gravity	The force which causes things to fall to earth.
Lever	A simple machine to help lift things
Motion	Changing position or moving
Pivot	The centre point on which a lever rests
Pulley	A simple machine with a set of wheels and a rope
Resistance	A force which slows down a moving object
Simple machine	A basic mechanical device that uses force. A mechanism.
Speed	How fast an object moves



What should I already know?

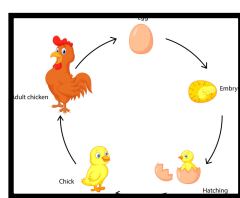
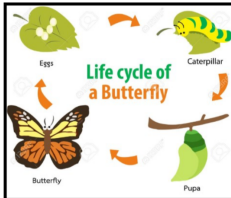
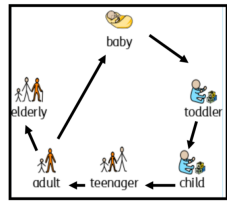
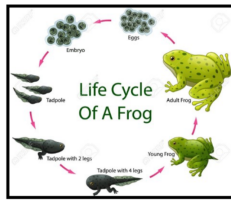
Animals, including humans, have offspring which grow into adults.
Life cycle of humans, chickens, butterflies and frogs.
The life cycle of flowering plants, including pollination, seed formation and seed dispersal.
The parts of a plant including petal, stigma, anther, style, ovary, sepal.
Reproduction is one of the seven life processes.

Vocabulary

Anther	The part of a flower that produces and releases the pollen
Dispersed	Scattered, separated or spread through a large area
Dissect	To carefully cut something up in order to examine it scientifically
Embryo	An unborn animal or human in the very early stages of development
Fertilisation	Male and female gametes meet to form an embryo or seed
Gamete	The name for the two types of male and female cell that are joined together to make a new creature
Germination	When a seed begins to grow
Life cycle	The series of changes there is an animal or plant passes through from the beginning of its life until the end
Metamorphosis	To changes into something completely different
Ovary	A female organ which produces female gametes
Petal	Thin coloured or white parts which form part of the flower
Pollen	A fine powder produced by flowers. It fertilises other flowers of the same species so that they produce seeds
Pollination	To fertilise with pollen
Reproduction	When an animal or plant produces one or more individual similar to itself
Seed	The small hard part from which a new plant grows
Stigma	The top of the centre part of a flower which takes in pollen

What should I know by the end of this unit?

Comparisons between the life cycles of different animals



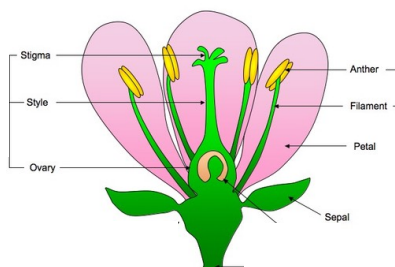
What is reproduction?

Reproduction is when an animal or plant produces one or more individuals similar to itself.

1. Sexual reproduction needs two parents with male and female gametes. Offspring will be similar but not identical to parents.
2. Asexual reproduction only needs one parent. Offspring will be identical to the parent.

How do plants reproduce?

Male gametes are found in the pollen. Female gametes are found in the ovary. Pollination occurs when pollen from the anther is moved to the stigma by insects. The pollen travels down and meets the ovule. Seeds are formed. This is called fertilisation. Seeds are dispersed so that germination can begin again. Some plants such as daffodils and potatoes can produce offspring using asexual reproduction.

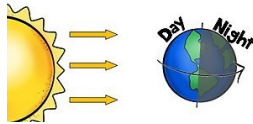


What should I already know?

There are four seasons.
Daylight hours vary throughout the year.
The sun is a source of light but the moon is not.
Shadows are formed when an object blocks light.

What should I know by the end of this unit?

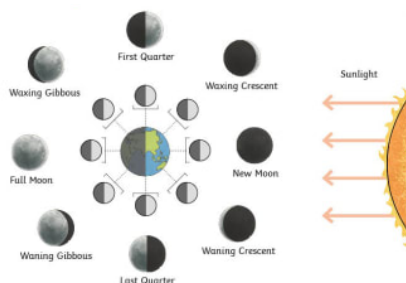
What causes night and day?
The Earth rotates on its axis anticlockwise and makes a complete rotation over 24 hours (a day). As earth rotates, half faces the sun (day) and half faces away from the sun (night). This is why we have time zones.



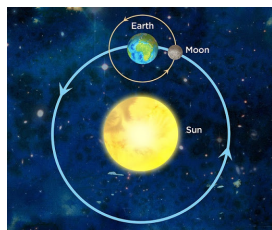
As the earth rotates the sun appears to move across the sky and shadows change in size and orientation

Year length and seasons
The Earth takes 365 $\frac{1}{4}$ days to orbit the Sun. The extra quarter of a day means every four years on Earth is a leap year. The earth is slightly tilted and this causes the seasons.

The moon
The moon orbits the Earth anticlockwise and takes approximately 28 days. The moon spins once on its axis every time it orbits Earth. This means that we only see one side of the moon. The moon looks different from Earth depending on where it is in its orbit. This is called the phases of the moon.



The earth, moon and sun are approximately spherical.
The Earth orbits the Sun.
The moon orbits the Earth.

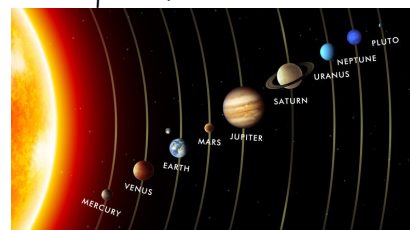


Vocabulary

Asteroid	A rock that orbits the Sun
Comet	A bright object with a long tail that travels around the Sun
Galaxy	An extremely large group of stars and planets
Heliocentric	The Sun at the centre
Leap year	A year which has 366 days. The extra day is the 29th February. There is a leap year every four years.
Meteorite	A rock from outer space that has landed on Earth
Orbit	The curved path in space that is followed by an object going round a planet, moon or star
Planet	A large, round object in space that moves around a star
Revolve	Spin
Solar system	The Sun and all the planets that go round it
Star	A ball of burning gas in space
Time zones	The areas the world is divided into based on time.
Universe	The whole of space and all the stars, planets and other forms of matter and energy in it

What is the solar system?

There are eight planets in our solar system (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune). Pluto is a dwarf planet.



They all orbit the Sun,
There are also asteroids meteoroids and comets in the solar system.
The solar system is in a galaxy called the Milky Way. The galaxy is in the universe.