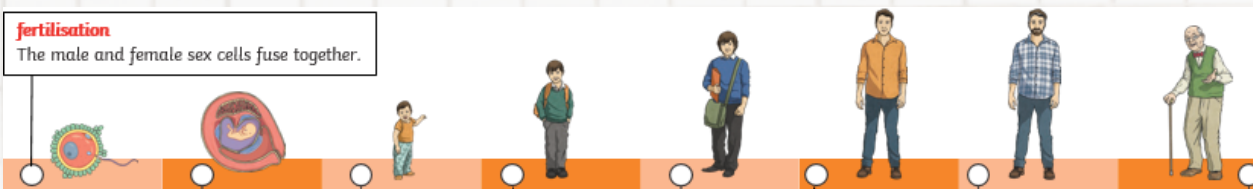


ANIMALS INCLUDING HUMANS

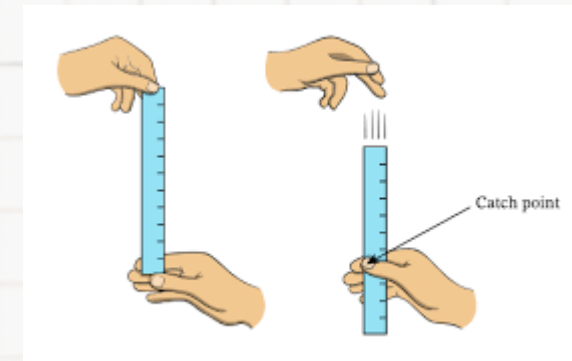
Stages of human growth

- Baby- the cells develop and grow into a foetus inside the mother's uterus, after around 9 months a baby is born.
- Infancy/Toddler- Children learn to walk and walk.
- Childhood - the period of a person's life between infancy and adolescence, typically from around ages 4 to 11. During this time, children experience significant development.
- Adolescence/teenager (puberty) - Puberty is the journey between adolescence and adulthood to reproduce. The changes, which may happen during puberty: possibly getting spots, body odour, voice breaks, body hair, periods. Hormones control these changes. They can be physical or emotional.
- Adulthood - A time of physical and intellectual maturity, often associated with taking on more responsibilities and making independent choices
- Old age - Our cells do not regenerate as quickly in old age and our immune system becomes weaker.



Reaction time

- Reaction time is how quickly the body responds to a stimulus.
- Reaction time depends on how the brains processes information and make decisions.



LIVING THINGS AND THEIR HABITATS

Life cycles of different species

All living things have a life cycle which includes growth and reproduction, eventually ending in death and decay.

Most animals reproduce sexually. This involves two parents, a male and a female. The sperm from the male fertilises the female egg inside her body.

Mammal

Mammals reproduce by sexual reproduction. The embryo grows inside the female.

Female mammals give birth to live young and produce milk to feed their young. As an adult the male will mate with an adult female and reproduce.



Bird

Female birds lay eggs with hard shells. These may or may not be fertilised. The baby hatches from the egg and is fed by the parents.



Amphibian

Amphibians reproduce by sexual reproduction. Some amphibians go through a process of metamorphosis.

The female lays a mass of eggs which are fertilised by the male. After 2-25 days the tadpoles hatch from the eggs. This grows into a frog who will then continue the cycle.



Insect (Complete Metamorphism- butterfly)

Fertilised eggs are laid by the female. The eggs hatch into a larvae (caterpillar). This forms a case around itself called a chrysalis where it turns into a butterfly.



Insect (Incomplete Metamorphism- newt)

The female lays fertilised eggs in or near the water. The eggs hatch into nymphs. The fully grown nymph crawl out of the water and shed their skin, emerging as a dragonfly.



Monotremes

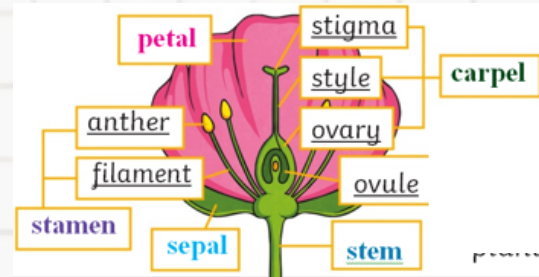
The only living mammal which lays eggs as opposed to bearing live young

Groups find information about different species and prepare a presentation. Talk like an expert to inform the class about what they have found out.

LIVING THINGS AND THEIR HABITATS

Dissecting a flower

The parts of the flower are pollen, anther, filament, stamen, sepal, stem, ovule, ovary, style, stigma, and carpel.

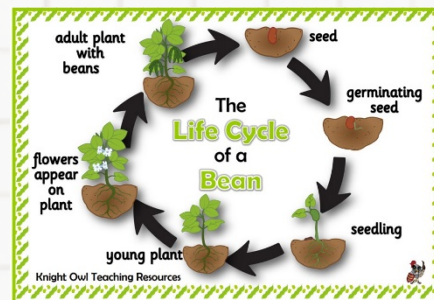


Sexual and asexual reproduction

- *Flowers contain male sex organs called stamens and female sex organs called carpel.*
- *Pollen must be moved to a part of the carpel called the stigma for reproduction to take place. This is called pollination.*
- *Seeds are the product of sexual reproduction. The plant that grows from them are not identical to the parent plants.*
- *Asexual reproduction creates new plants that are identical to the parent.*
- *Asexual reproduction needs only one parent to make an offspring.*

Life cycle of a bean

- *The seed has an embryo inside when the pollen fuses with the flower's stigma.*
- *Once the seed receives water, warmth and air the shoot and the root start to grow.*
- *The green leaves which grow allow the plant to use sunlight to make food (photosynthesis).*
- *Roots grow deeper in search of nutrients and water.*
- *Flowers, once pollinated, grow into beanpods.*
- *The cycle recommences.*



PROPERTIES OF MATERIALS

Uses of everyday materials

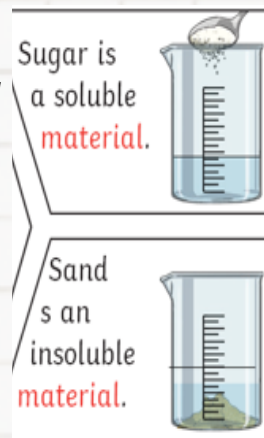
- Different materials are suitable for different things because they possess unique properties that make them well-suited to specific tasks.
- These properties, such as strength, flexibility, conductivity, and transparency show how a material can be used, for example, a strong, rigid material like metal is ideal for building structures, while a transparent material like glass is used for windows



Soluble and insoluble

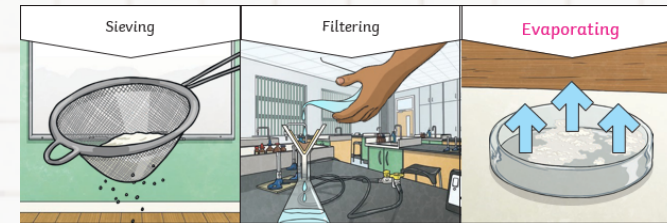
When substances dissolve it looks like it has disappeared but it in fact makes a transparent liquid called a solution.

- Substances that dissolve in water are called soluble substance e.g. sugar and water and salt and water.
- Substances that don't dissolve in water are called insoluble substances.



Separating a solution

- Sieving separates a solid and a liquid e.g. sand and water.
- Filtering can be done by passing a mixture through filter paper, the water is able to pass through tiny gaps but sand or glitter cannot.
- Evaporating can separate salt from water by boiling the solution. The water will evaporate and the salt will be left behind.



Irreversible change

- Mixing can cause an irreversible change e.g. vinegar and bicarbonate of soda.
- Burning can cause an irreversible change e.g. burning wood to get ash.



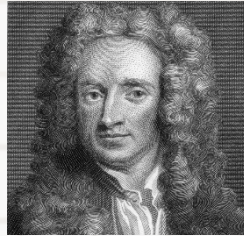
FORCES

Gravity

Gravity is a force which pulls everything towards the centre of the earth and causes objects to fall.

Newton's Law of Universal Gravitation explains that every object in the universe attracts every other object. The strength of this attraction, or force, depends on how big the objects are and how far apart they are.

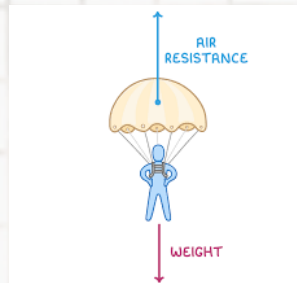
Galileo (Italian scientist) dropped two objects from the tower of Pisa, proving all objects fall at the same rate, regardless of their mass.



Air resistance and water resistance

Air resistance and water resistance are forces against motion caused by having to move air and water out of their way.

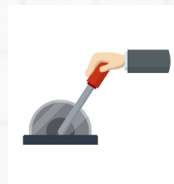
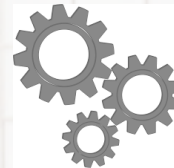
Some objects/animals are streamlined to minimise the effects of air and water resistance.



The unit of measurement for a force is Newtons.

Friction

Friction is a force against motion that makes it harder to move an object across a surface or slows down an object's movement due to the two surfaces rubbing against each other.



Pulleys, levers and gears

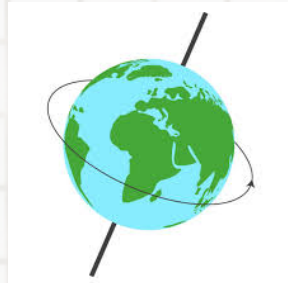
- A pulley is a mechanism used for lifting heavy objects by applying a pulling force to one end of the rope attached to the load which passes over a wheel.
- A gear is a mechanism that consists of a wheel and teeth which slot together. Gears change the direction of movement and the force.
- A lever is long, rigid arm that rests on a pivot. A force is applied to part of the lever to lift the load at another point on the lever. Some objects require large forces to make them move: gears, pulleys, levers can reduce the force needed to make things **move**.

EARTH AND SPACE

Earth's rotation

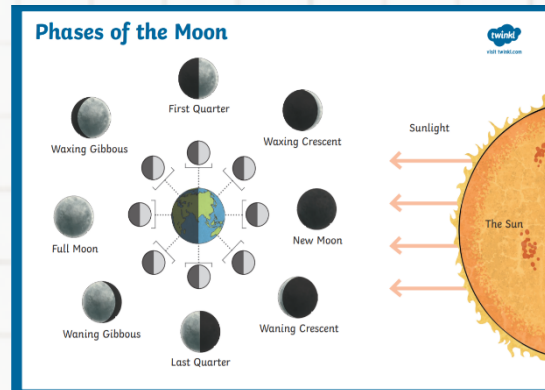
The Earth rotates on its axis every 24 hours and this causes day and night.

The portion of the Earth which is facing the Sun is lit up. The places lit-up experience day-time, whilst the others are in darkness and so experience night.



Phases of the moon

- The moon follows a cycle which includes full moon, waning phases, new moon and waxing phases. It is a continuous cycle.*
- Waning means the moon appears to be getting smaller.*
- Waxing means the moons appears to be getting bigger.*



Movement of the Earth, Sun and Moon

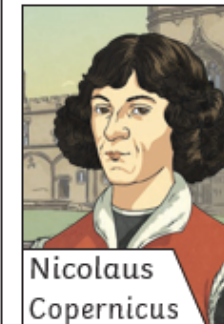
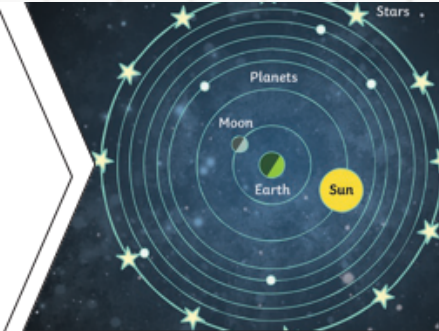
Describe the Sun, Earth and Moon as approximately spherical bodies

The moon orbits the Earth but does not have anything orbiting it. It will take 28 days (a lunar cycle) to orbit the Earth.

Geocentric vs Heliocentric

Geocentric theory

believed that the Earth was at the centre of the solar system and all planets orbited the Earth. Aristotle believed this theory along with others.



Nicolaus Copernicus

Heliocentric theory was the belief that the Sun is at the centre of our solar system with other planets orbiting it. Copernicus and other **astronomers** believed this theory along with others and his work greatly supported this.

