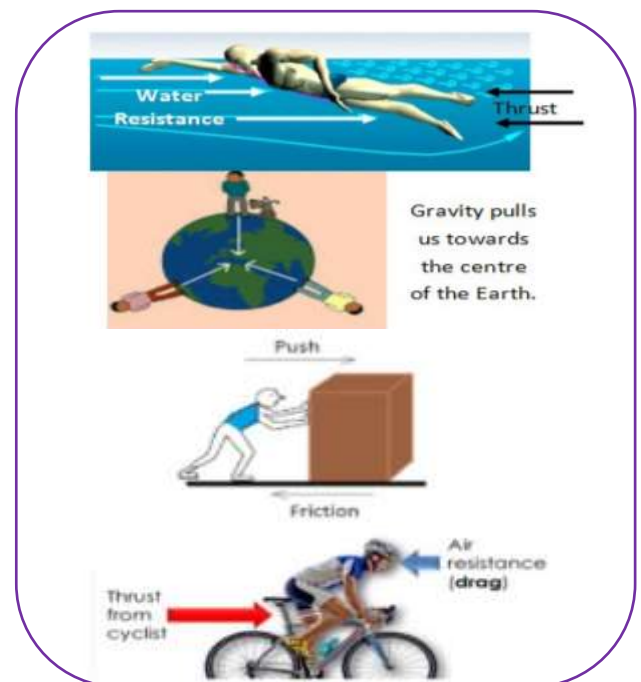


# Forces, Levers and Pulleys: Physics



What? (key knowledge)		Type of Force			
<b>Forces</b>					
<b>What is a force?</b>	A force is either a push or a pull.			<b>What is air resistance?</b>	Air resistance slows down moving objects, because air slows you down as you move through it.
<b>Forces can make things...</b>	Speed up, slow down, change shape and change direction.				
<b>What is gravity?</b>	Gravity is the forces that pulls objects down towards the centre of the Earth.			<b>What is a lever?</b>	A lever is a simple machine which helps us to lift objects.
<b>What is friction?</b>	Friction happens when two surfaces touch each other				
<b>What is water resistance?</b>	Water resistance slows down moving objects, because water slows you down as you move through it.	<b>What is a pulley?</b>	Pulleys also help to lift heavy objects. They include at least one wheel and a length of rope.		

<b>friction</b>	Friction is a force between two surfaces that are sliding, or trying to slide, across each other.
<b>gravity</b>	Gravity is a force which tries to pull two objects towards each other.
<b>air resistance</b>	Air resistance is a type of friction between air and another material. For example, when an aeroplane flies through the air.
<b>water resistance</b>	If you go swimming, there is friction between your skin and the water particles.
<b>levers</b>	A lever can be described as a long rigid body with a fulcrum along its length.
<b>pulleys</b>	Pulley is a simple machine and comprises of a wheel on a fixed axle, with a groove along the edges to guide a rope or cable.
<b>gears</b>	Gears are wheels with teeth that slot together. When one gear is turned the other one turns as well.
<b>parachute</b>	A parachute is a device used to slow down an object that is falling towards the ground. As the parachute opens, the air resistance increases.
<b>Newton</b>	During his lifetime, Newton developed the theory of gravity and made breakthroughs in the area of optics, such as the reflecting telescope.



## Influential Scientist: Isaac Newton



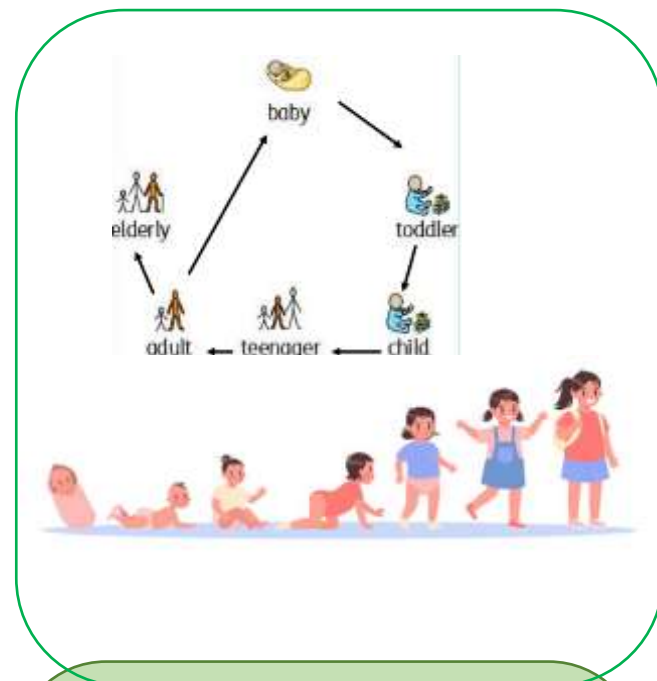
Sir Isaac Newton made many important scientific discoveries, but his most famous one is his theory of gravity.

# Animals including humans: Biology




What? (key knowledge)		Human life cycles	
<b>Human Life Cycles</b>		<b>What happens during adolescence?</b>	This is when the body starts to change to prepare itself for adulthood including hormonal and physical changes
<b>What are the two main types of reproduction?</b>	The two types of reproduction are sexual reproduction and asexual reproduction.	<b>What is puberty?</b>	Puberty is the change that happens in late childhood/early adulthood.
<b>What are the main stages of the human life cycle?</b>	Foetus, newborn, infancy, childhood, adolescence, early adulthood, middle adulthood, late adulthood (old age)	<b>What happens during old age?</b>	During old age, the body begins to become weaker.
<b>Are all gestation periods the same?</b>	Different animals have different gestation periods.		

<b>adolescence</b>	the period of your life in which you develop from a child to an adult
<b>foetus</b>	the later stages of development before an animal or human is born
<b>gestation</b>	the process in which babies grow inside their mother's body
<b>infancy</b>	the period of your life when you are a very young child
<b>reproduction</b>	when an animal or plant produces one or more individuals similar to itself
<b>offspring</b>	a person's children or an animal's young
<b>embryo</b>	an unborn animal or human being in the early stages of development
<b>fertilisation</b>	male or female gametes meet to form an embryo or seed
<b>puberty</b>	the process of physical changes through which a child's body matures into an adult body



**Influential Scientist:  
David Attenborough**



Best known for his work in documenting animal and plant life and his work on conserving habitats.

# Earth and Space: Physics



What? (key knowledge)		The Earth and Moon	
<b>The Solar System</b>		<b>What causes day and night?</b>	The Earth rotates on its axis anti-clockwise and makes a complete rotation over 24 hours.
<b>What is the solar system?</b>	A group of 8 planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune.		<b>How long does it take for the Earth to orbit the Sun?</b>
<b>How do the planets move?</b>	The planets all orbit the Sun. Each have different orbits so some take longer.	<b>What causes seasons?</b>	
<b>Are all planets the same?</b>	The first 4 planets are small and rocky; the outer 4 planets are gas giants or ice giants.		<b>What does the moon orbit?</b>
<b>What shape are the Earth, sun and moon?</b>	Approximately spherical.		

<b>axis</b>	an imaginary line through the middle of something
<b>galaxy</b>	an extremely large group of stars and planets; our galaxy is called the Milky Way
<b>gravity</b>	the force which causes things to drop to the ground
<b>leap year</b>	a year which has 366 days; there is a leap year every 4 years
<b>orbit</b>	the curved path in space that is followed by an object going round a planet, moon or star
<b>planet</b>	a large, roughly round object in space that moves around a star
<b>Solar System</b>	the Sun and all 8 of the planets that go around (or orbit) it
<b>sphere</b>	an object that is round in shape like a ball
<b>universe</b>	the whole of space and all the stars, planets and other forms of matter and energy in it
<b>geocentric</b>	the theory that the Earth formed the centre of the universe; the Sun and planets revolved around the Earth
<b>heliocentric</b>	the theory that the Sun formed the centre of the universe; the planets orbit around the Sun



## Influential Scientist: Nicolaus Copernicus



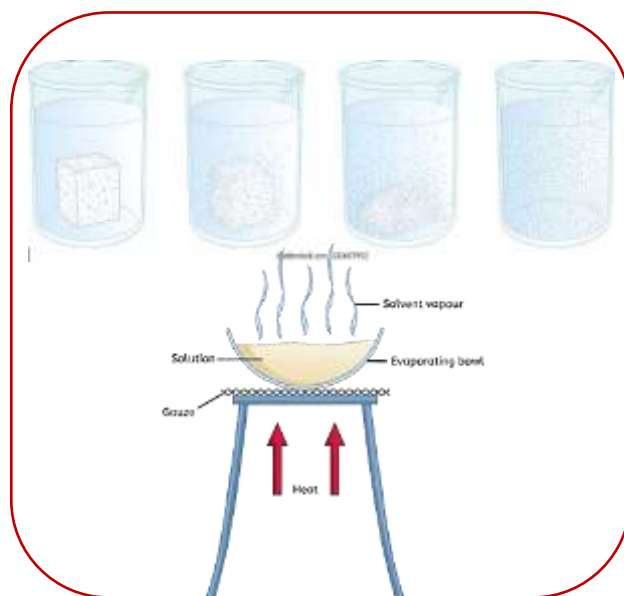
He was the first scientist to propose that Earth and other planets revolve around the sun, or the Heliocentric Theory of the universe.

# Properties and Changes of Materials: Chemistry



What? (key knowledge)		Changes of Materials	
<b>Properties of Materials</b>		<b>What are reversible changes?</b>	A reversible change is a change that can be undone or reversed e.g. melting, dissolving
<b>How can materials be grouped?</b>	Materials can be grouped based on their properties: magnetic, transparent, permeable, soluble		
<b>What are thermal insulators?</b>	Materials that do not let heat travel through them easily	<b>What are irreversible changes?</b>	Irreversible changes are permanent. They cannot be undone.
<b>What are thermal conductors?</b>	Materials which allow heat to move through them easily		
<b>What are electrical insulators?</b>	Have high resistance so do not let electricity travel through them	<b>What is dissolving?</b>	When the particles of a solid mix with the particles of a liquid
<b>What are electrical conductors?</b>	Materials which allow electricity to pass through them easily		
		<b>What is evaporation?</b>	The process of turning from liquid into gas

<b>condensation</b>	small drops of water which form when water vapour or steam touches a cold surface, such as a window
<b>conductor</b>	a substance that heat or electricity can pass through or along
<b>dissolve</b>	when a substance is mixed with a liquid and the substance disappears
<b>evaporation</b>	to turn from liquid into gas
<b>filtering</b>	a device used to remove dirt or other solids from liquids or gases
<b>insoluble</b>	impossible to dissolve, esp. in a given liquid.
<b>insulator</b>	a non-conductor of electricity or heat
<b>permeable</b>	a substance which a gas or liquid can pass through
<b>properties</b>	the ways in which a material behaves
<b>soluble</b>	able to be dissolved
<b>solution</b>	a mixture that contains two or more substances combined evenly



## Influential Scientist: Sir Humphry Davy



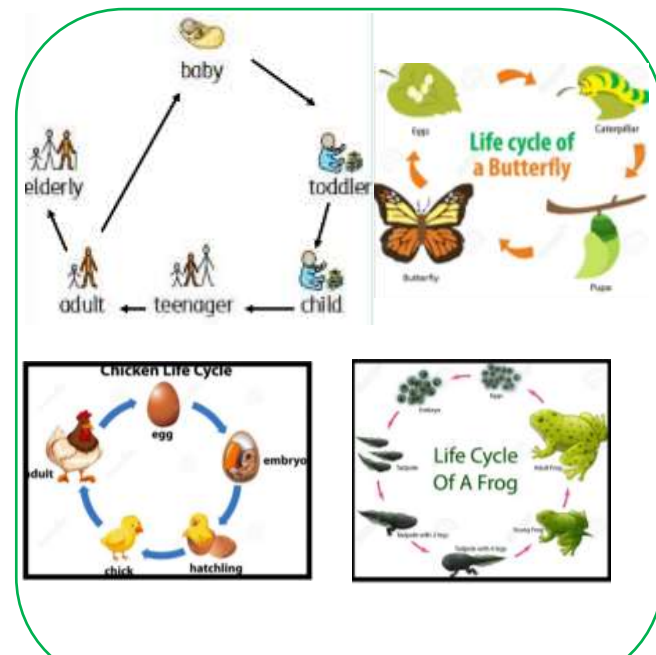
Sir Humphry Davy applied electrolysis to isolate different elements from the compounds in which they naturally occur.

# Living Things and their Habitats: Biology



What? (key knowledge)		Reproduction and life cycles	
What is reproduction?	Reproduction is when an animal or plant produces one or more individuals similar to itself.	How do plants reproduce?	Through the cycle of germination, pollination, fertilisation and seed dispersal. Some can also use asexual reproduction.
What is sexual reproduction?	Requires two parents and will produce offspring that is similar to but not identical to the parent.	Are all life cycles the same?	The life cycles of mammals, birds, amphibians, and insects have similarities and differences.
What is asexual reproduction?	Requires only one parent and will produce offspring that is identical to the parent.	What is metamorphosis?	When a person or thing develops and changes into something completely different.

<b>anther</b>	the part of a stamen that produces and releases the pollen
<b>dispersed</b>	scattered, separated, or spread through a large area
<b>fertilisation</b>	male and female gametes meet to form an embryo or seed
<b>gamete</b>	the name for the two types of male and female cell that join together to make a new creature
<b>germination</b>	if a seed germinates or if it is germinated, it starts to grow
<b>ovary</b>	if a seed germinates or if it is germinated, it starts to grow
<b>ovule</b>	a small egg
<b>pollen</b>	a fine powder produced by flowers. It fertilises other flowers of the same species so that they produce seeds
<b>metamorphosis</b>	a person or thing develops and changes into something completely different
<b>reproduction</b>	when an animal or plant produces one or more individuals similar to itself



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