

KS1 Year B

Previous Learning

All children should know that objects are things that you can touch or see.

- Most children should recognise that objects are made from materials.

Some children should know some materials that objects are made from e.g. **glass, wood, plastic** etc.

- Children should be able to use some words to describe materials e.g. **shiny, rough, soft, hard**.
- Children should know that objects feel and look different based on the material they are made from.

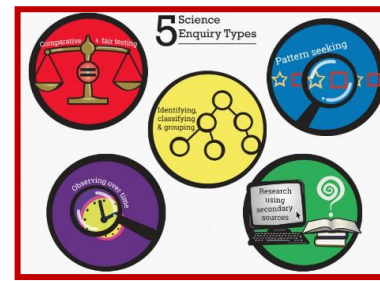
Key Learning

Which **materials** are some **objects** made from?

- Materials are used for different purposes based on their properties.
- Objects can be made from different **materials**. For example, spoons can be made from **wood, plastic** or **metal**.
- **Glass** can be used to make windows, but **metal** cannot.



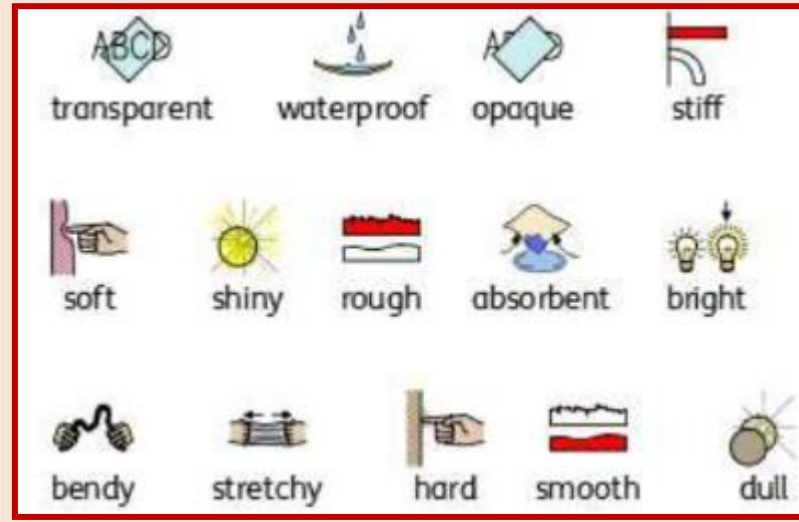
Everyday Materials Chemistry 2023 2024



Key Learning

What words can I use to describe **materials**?

- Materials can be described using more than one word.
- Windows need a material that is **transparent** so that you can see through it.
- Spoons are made from **metal**, because it is **waterproof** and can be easily cleaned. However, spoons can be made from **plastic** for children because it is **light** and cannot hurt their teeth.
- A garden spade needs to be made from a **strong, hard** material.



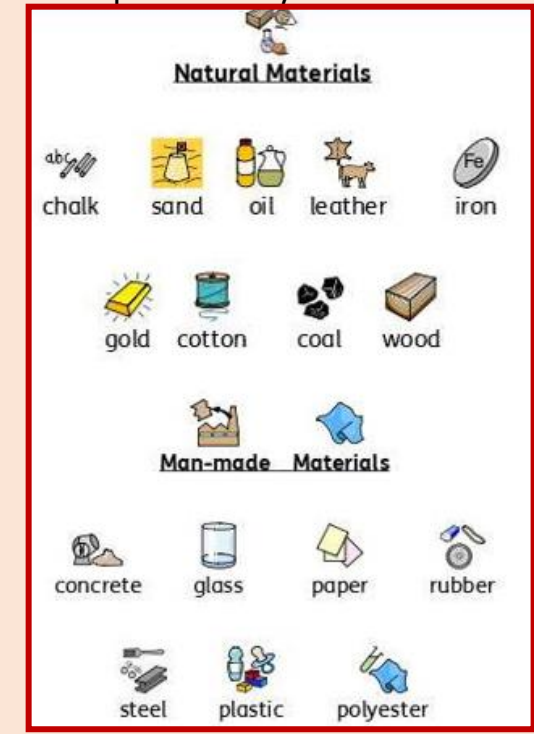
Key Scientists

Charles Goodyear, Galileo Galilei,
Angelo Barovier, Benvenuto Cellini

Key Learning

Which materials are **natural**, and which are **man-made**?

- Some materials are **natural** while others are **man-made**.
- **Natural** materials are materials which are found in nature.
- **Man-made** materials are materials which have been produced by humans.



Previous Learning

All children should know:

- The names of some common animals.
- Humans and animals produce children

Some children should know:

- There are five types of **vertebrates** (mammals, fish, reptiles, amphibians, birds)
- **Vertebrates** are animals that have a **backbone**.
- Some animals are suitable to be kept as pets but others are not.
- Some animals give birth to live young but others lay eggs.
- Doctors and nurses give us **medicine** when we are poorly..

Key Learning

What humans need to be healthy?

To keep **healthy**, humans need:

- to eat a **balanced diet** and **healthy** food
- some **exercise** to keep their **muscles** and **bones healthy**
- to take **medicines** that are given by doctors and nurses when feeling poorly
- to keep good **hygiene** by washing regularly, having clean clothes, brushing teeth and hair.



Key Learning

What do all animals need to **survive**?

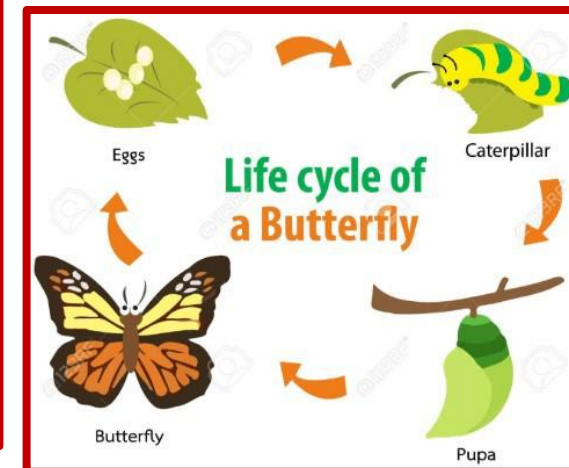
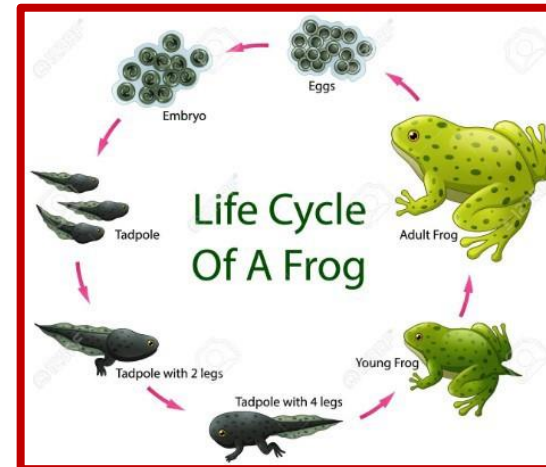
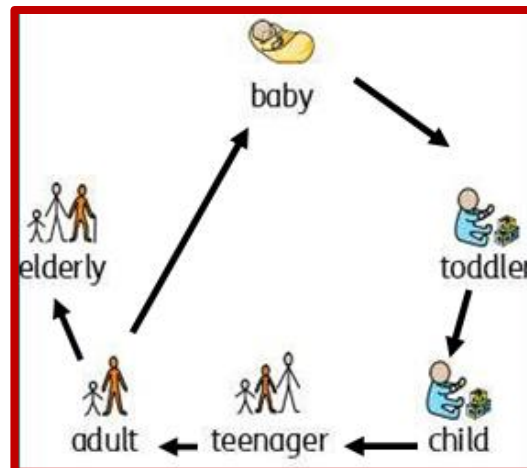
- All animals need water, air and food to survive.



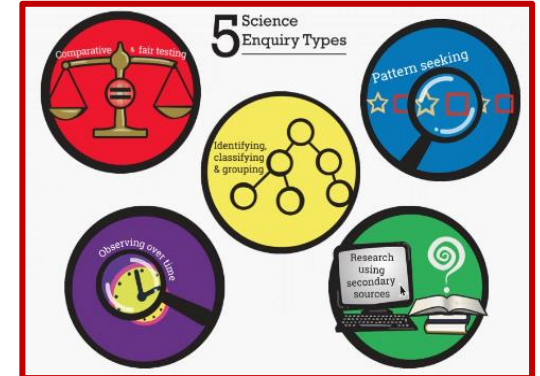
Key Learning

What is a **life cycle**?

- A **life cycle** is the series of changes that an animal or plant passes through from the beginning of its life until its death.
- Animals, including humans, have **offspring** which grow into adults.

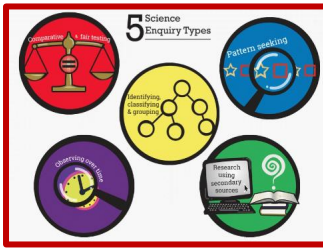


Animals Including Humans 1 Biology 2023 2024



Key Scientists

Charles Darwin, Hippocrates, Margot Bagot-Stack, Florence Nightingale, Jean Fernel, Alexander Flemming, Louis Pasteur



Living Things and Their Habitats

Biology

2023 2024

Previous Learning

All children should know:

- The names of some common animals.
- The names of some common plants and trees.

Some children should know:

- Some animals are suitable to be kept as pets but others are not.
- Animals, including humans, have **offspring** which grow into adults.

Some children may know:

- Which things are living, dead and things which have never been alive.
- All animals need water, air and food to **survive**
- Animals can be grouped into **vertebrates** and **invertebrates**
- Animals can be grouped into **carnivores**, **herbivores** and **omnivores**
- Different **vegetation** belts and **biomes** around the world.

Key Scientists

Gerald Durrell, Theophrastus, Carl Linnaeus, Terri Irwin, Jean Baptiste Lamarck, Herman Feifel

Key Learning

What is a **habitat**?

- A **habitat** is a place where living things, such as animals and **plants**, can find all of the things they need to **survive**. This includes food, water, air, space to move and grow and some shelter.
- Some **habitats** are large, like the ocean, and some are very small, such as under a log.
- Some **habitats** in our local area include the river and woodlands. Other habitats include the coast and the forest.



Key Learning

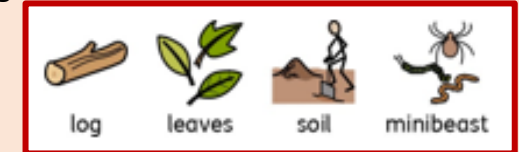
How do **animals** and **plants** depend on each other?

- Animals and **plants** depend on each other to **survive**. For example, worms **depend** on **plants** because they feed on dead leaves, but **plants** depend on worms who make the soil healthy by digging holes and allowing air in.
- Birds also need worms because they eat them. Worms are a **source** of food for birds.
- This called a **food chain**.

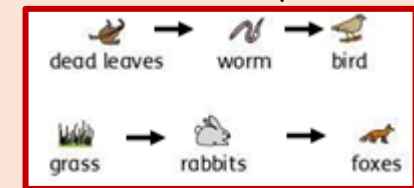
Key Learning

What is a **micro-habitat**?

- **Microhabitats** are very small **habitats** where **minibeasts** may live.
- Examples of **microhabitats** include under stones, in grass, under fallen leaves and in the soil.
- **Minibeasts** that can be found there include worms, snails, ants, centipedes, millipedes, and butterflies and they help to keep the **microhabitat** healthy.
- **Minibeasts** are able to **survive** in their **habitats** because they can find the things they need to **survive** there, such as food and water. For example, caterpillars can **survive** on leaves as they give them food.



- If there were no worms, there would be less birds as there would be more competition for food. The soil would not be as healthy without worms.



- All living things (or things that were once living) have a part to play in **food chains**. Without them, other animals and **plants** may not be able to survive.

Previous Learning

All children should know:

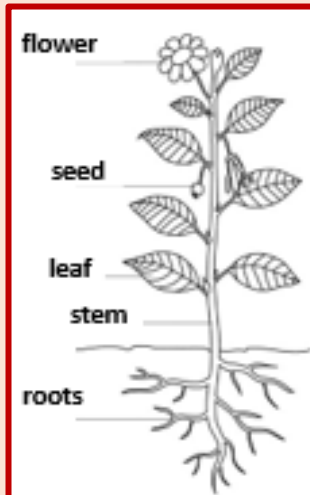
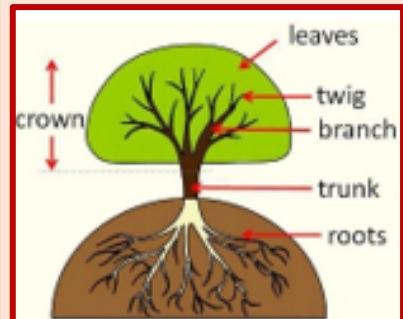
- Plants can grow.

Some children should know:

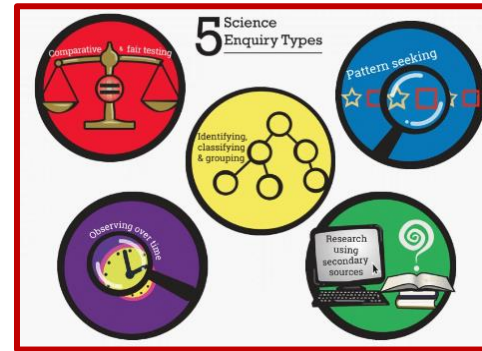
- Plants are made up of different parts.
- Plants are living things that require **water**, **warmth**, nutrients and **light** to grow.
- We can eat some plants.
- We can eat different parts of a plant such as **roots**, **stems**, **leaves** and **flowering vegetables**.
- Some of the parts of a plant such as **petals**, **fruits**, **roots**, **bulbs**, **seeds**, **stem**, **trunks** and **branches**.

Key Learning

What are the parts of **common trees** and **plants**?



Plants Biology 2023 2024



Key Learning

Deciduous and **evergreen trees**.

- **Deciduous trees** lose their **leaves** in the autumn every year. Their **leaves** are generally broad, flat and have veins running through them.
- **Evergreen trees** have green **leaves** all year round. Their **leaves** are generally thick, waxy and narrow like needles.



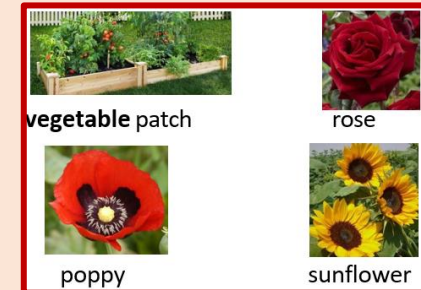
Key Scientists

Theophrastus, Charles Darwin, Katherine Esau, Agnes Arber, William Douglas Cook, Carl Linnaeus, Ludwig Beissner, Mike Baillie

Key Learning

The names of some **common garden plants**.

- People may grow **plants** in their **gardens** and care for them.
- They may grow **flowering plants** which are beautiful to look at or **beans** and **seeds** to grow **plants** for food.
- When **plants** are grown for food, this may be called a **herb garden** or **vegetable patch**.



Key Learning

The names of some **common wild plants**.

- A **wild plant** will grow by itself.
- It does not need to be cared for.
- If it grows somewhere unwanted, it may be a **weed**.



KS2 Year B

Previous Learning

All children should know:

- All animals need water, air and food to survive.
- The different ways in which humans are healthy.
- What **carnivores**, **omnivores** and **herbivores** are.

Most children should know:

- Animals get **nutrition** from what they eat.
- The parts of the human body and what they do.
- Humans and some animals have skeletons and **muscles** for support, protection and movement.

Key Learning

What is the role of our **teeth** and how do we look after them?

- Teeth are used for cutting and chewing food.
- They start the **digestive process** which gives us the energy we need to live.
- Humans look after their teeth by brushing and flossing and ensuring that they do not eat foods high in sugar.
- Not looking after teeth can lead to an increase in **plaque** and **tooth decay**.

Investigate

- Investigate the amount of sugar in drinks and learn how sugar leads to an increase in plaque and how this destroys tooth enamel.
- Compare the teeth of carnivores, omnivores and herbivores. What do you notice?
- Match animals to their teeth and explain your reasons for this.



Aiskew, Leeming Bar
Church of England Primary School
"Rooted in love and growing together
to become lifelong learners"

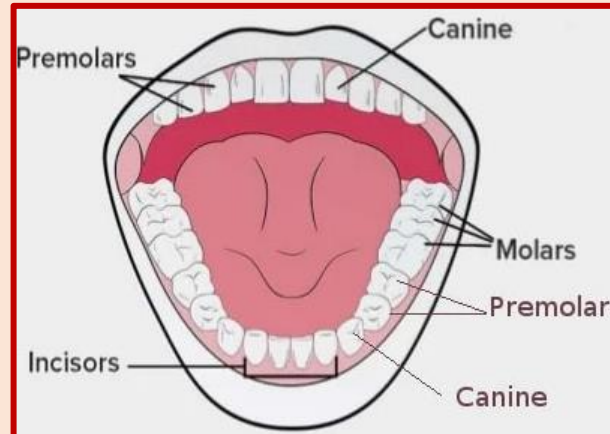
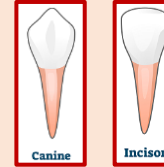
Teeth
Biology
2023 2024



Key Learning

What are the different names and functions of human **teeth**?

- **Canines** are pointed for tearing and ripping food - these are usually used when chewing meat.
- **Incisors** are shovel shaped and help bite lumps out of and cutting food.
- **Premolars** and **molars** are flat and they grind and crush food.



Key Scientists

Pierre Fauchard, HN Wadsworth, Hesy-Re, Edward H Angle

Previous Learning

All children should know:

- We have four **seasons**: Spring, Summer, Autumn and Winter.
- The properties of a sphere.

Most children should know:

- The sun is a source of light, but the moon is not.
- A **shadow** is caused when an object blocks light from passing through it.

Key Scientists

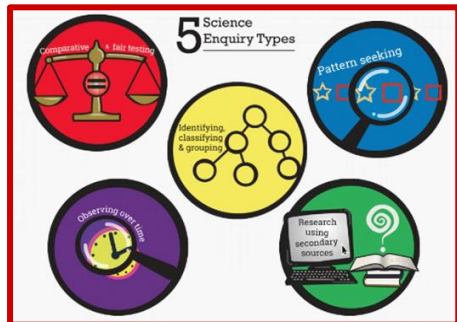
Eratosthenes, Galileo Galilei, Nicolas Copernicus, Ptolemy, Jocelyn Bell Burnell, Carolyn Porco, Johannes Kepler, Aristarchos of Samos, Tycho Brahe, Nancy Graham Norman, William Herschel



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to become lifelong learners

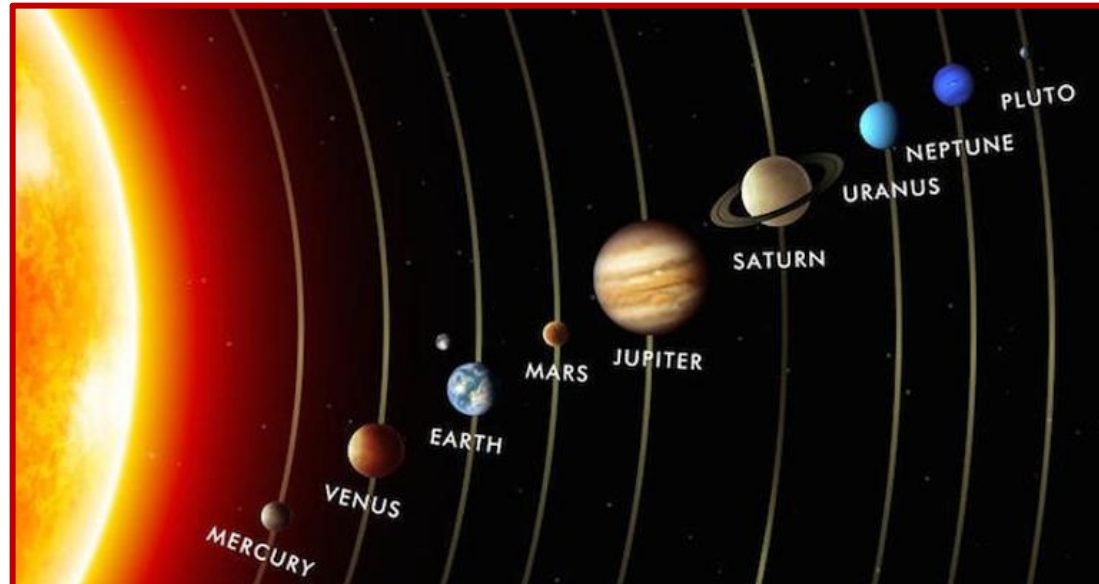
Earth & Space
Physics
2023 2024



Key Learning

What is the Solar System?

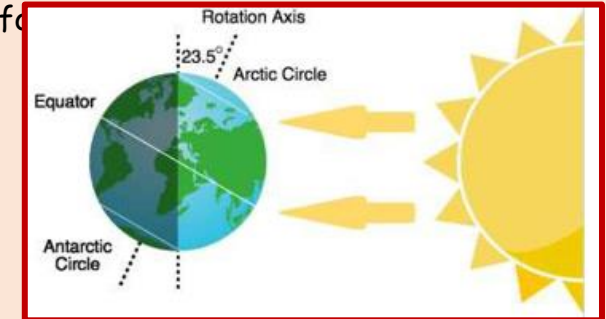
- There are 8 planets in our Solar System (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune). Pluto is a dwarf **planet**.
- They all orbit the Sun, which is a **star**, and they all have moons.
- The first four **planets** are relatively small and rocky, while the four outer **planets** are gas giants (Jupiter and Saturn) or ice giants (Uranus and Neptune).
- 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**.



Key Learning

What causes day and night?

- The Earth **rotates** on its **axis** anti-clockwise and makes a complete **rotation** over 24 hours (a day).
- This makes it appear as the Sun moves through the sky, but the Earth's **rotation** causes day and night.
- Different parts of the Earth experience daylight at different times - this means that it is morning, afternoon and night in different places. This is also the reason why we have **time zones**.
- Because of the Earth's tilt, the poles experience 24 hours of sunlight in the summer, and very few hours of sunlight in the winter.
- As the Earth **rotates**, **shadows** that are fo



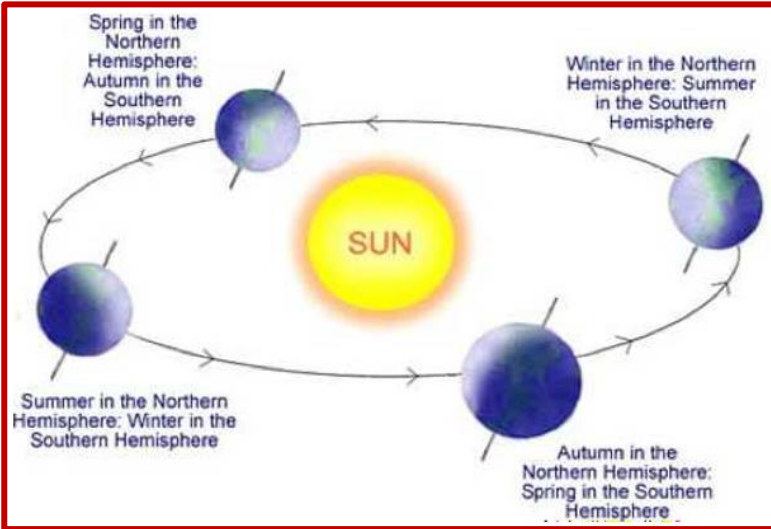
Investigate

- Compare the time of day at different places on Earth.
- Construct shadow clocks and sundials.
- Keep a Moon diary over the course of a month - what do you notice?

Key Learning

Year length and the seasons

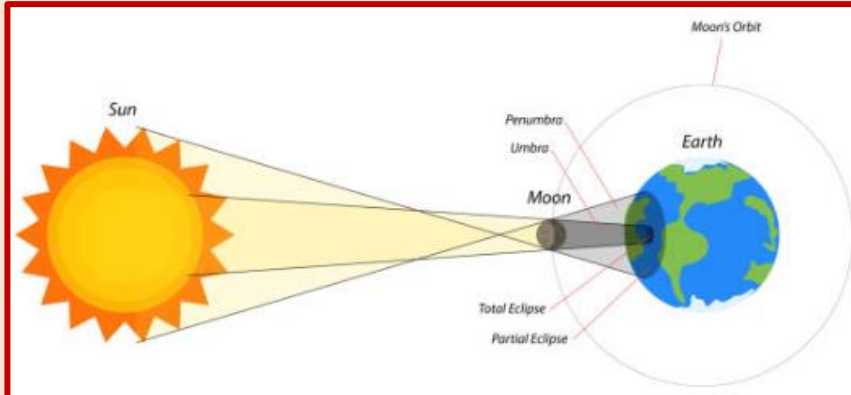
- The Earth takes 365 and a quarter days to **orbit** the Sun.
- Because of the extra quarter day it takes to **orbit** the Sun, every four years on Earth is a **leap year!**
- It is the Earth's tilt that causes the seasons.



Key Learning

When the Moon passes between the Sun and Earth, the **shadow** cast by the Moon falls on the Earth's surface and we would no longer be able to see the Sun.

This is called a **solar eclipse**.



Phases of the Moon

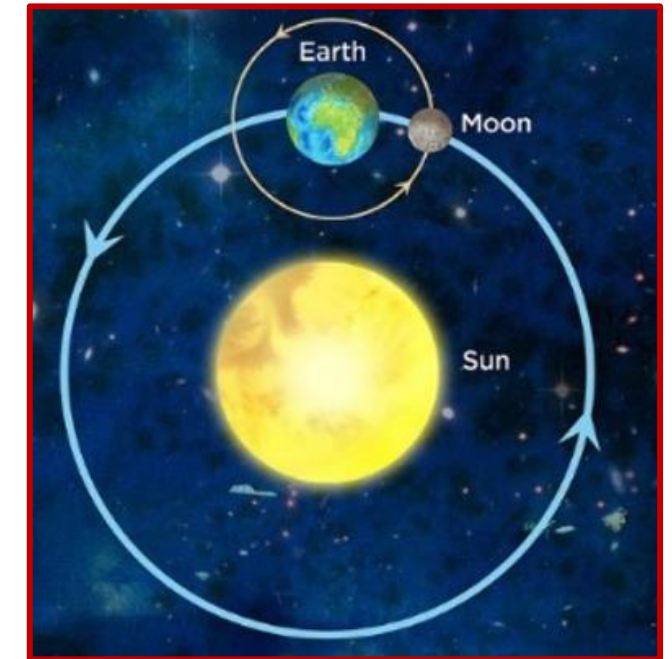
Key Learning

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 has different phases depending on where it is in its **orbit**.
- The Moon's **gravity** causes high and low tides.

Key Learning

- The Sun, Earth and Moon are approximately **spherical**.
- The Earth **orbits** the Sun.
- The Moon **orbits** the Earth.



Previous Learning

Most children should know:

- **Electricity** is a form of **energy** that can be carried by wires and is used for heating and lighting, and to provide **power** for **devices**.
- **Sources** of light and sound may need **electricity** to work.



Key Learning

Where does electricity come from?

- **Electricity** is **generated** using **energy** from natural **sources** such as the Sun, oil, water and wind.
- These can also be called **fuel sources**.

Key Learning

How does a **circuit** work?

- A complete **circuit** is a loop that allows **electrical current** to flow through **wires**.
- A **circuit** contains a **battery (cell)**, **wires** and an **appliance** that requires **electricity** to work (such as a **bulb**, **motor** or **buzzer**).
- The **electrical current** flows through the wires from the **battery (cell)** to the **bulb**, **motor** or **buzzer**.
- A switch can break or reconnect a circuit.
- A switch controls the flow of the electrical current around the circuit. When the switch is off, the current cannot flow. This is not the same as an incomplete circuit.

Key Learning

Which appliances run on electricity?

- Some **appliances** use **batteries** and some use **mains electricity**.
- **Batteries** come in different sizes depending on how much and for how long the **appliance** is used.
- Common **appliances** that use **electricity**.



Key Learning

What are **electrical conductors** and **insulators**?

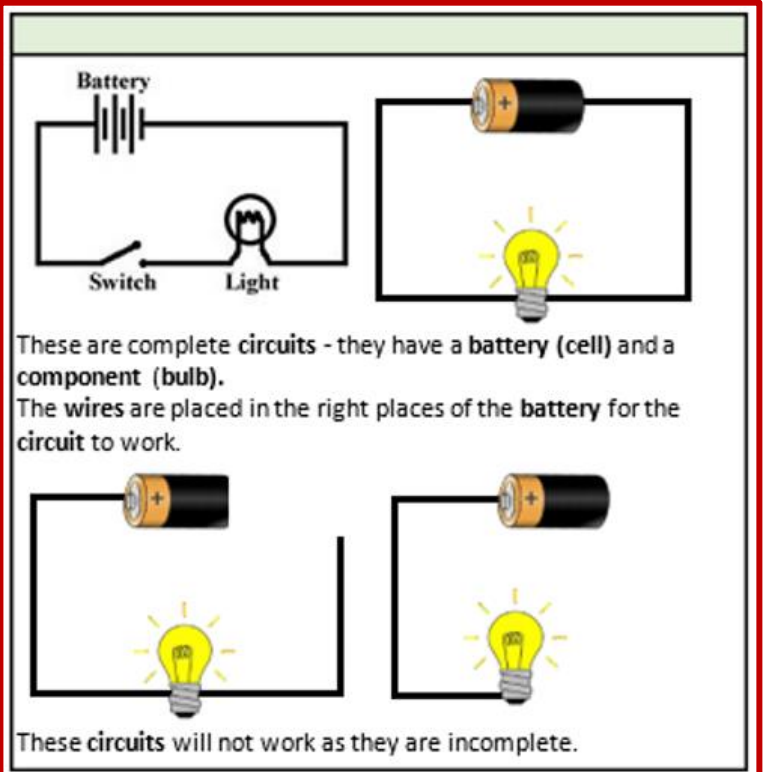
- When objects are placed in the **circuits**, they may or may not allow **electricity** to pass through.
- Objects that are made from materials that allow **electricity** to pass through to create a complete **circuit** are called **electrical conductors**.
- Objects that are made from materials that do not allow **electricity** to pass through and do not complete a **circuit** are called **electrical insulators**.

Electricity Physics 2022 2023



Key Scientists

Alessandro Volta, Stephen Gray, Charles du Fay, Ewald von Kleist, Benjamin Franklin



These are complete **circuits** - they have a **battery (cell)** and a **component (bulb)**.

The wires are placed in the right places of the **battery** for the circuit to work.

These circuits will not work as they are incomplete.

Investigate

Investigate which materials are **electrical conductors** and **insulators**.
Make a variety of circuits, name the parts.

Previous Learning

All children should know:

- **Electricity** is a form of **energy** that can be carried by wires and is used for heating and lighting, and to provide **power** for **devices**.
- **Sources** of light and sound may need **electricity** to work.

Most children should know:

- Where **electricity** comes from.
- Which **appliances** need **electricity**.
- What a **circuit** is, the **components** of a circuit and how it works.

Some children should know:

- What **electrical conductors** and **insulators** are.
- What happens when a **switch** is added to a circuit.
- What **forces** and **resistance** are.

Key Learning

Investigate!

- Investigate what happens when the voltage of the battery changes.
- Investigate what happens when the length of wires changes.
- Investigate what happens when you add a resistor to a circuit.
- Use ammeters to measure the current in a circuit.

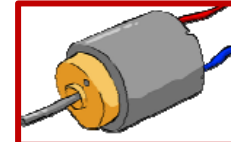


Key Learning

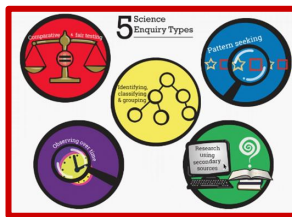
Use circuit symbols.

- Match **circuit** symbols to their meanings and their words.
- Use circuit symbols when representing a simple circuit in a diagram.

Symbol	Component
	ammeter
	battery
	bulb
	buzzer
	cell
	motor
	resistor
	switch (open)
	switch (closed)



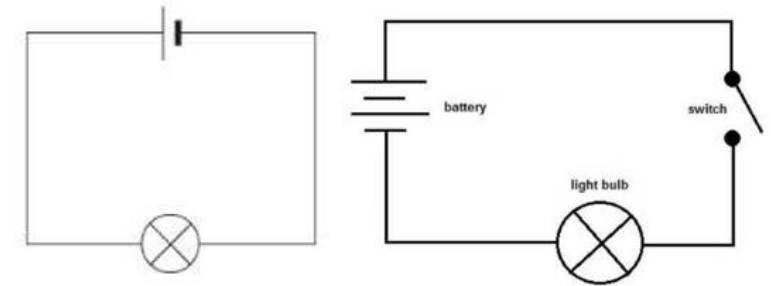
Electricity Physics 2022 2023



Key Scientists

Alessandro Volta, Stephen Gray, Charles du Fay, Ewald von Kleist, Benjamin Franklin

Key Learning



Key Learning

Investigate!

- Predict then investigate what happens when more batteries are added to a circuit.
- Predict, then investigate what happens when more bulbs, motors are added to a circuit. Explain why this happens.
- Systematically identify the effect of changing one component at a time.
- Design and make a useful **circuit** such as a game or burglar alarm.

Previous Learning

All children should know:

- What a **force** is and be able to explain that a push and a pull are types of **forces**.
- That when **forces** are applied to an object, they allow them to move or stop moving.
- The strength of a **force** determines how far and fast an object moves.

Some children should know:

- **Friction** is the **resistance of motion** when there is contact between two **surfaces**.
- The **force** that causes objects to move downwards towards the ground is **gravity**.
- That **magnets** have poles, and that opposite poles **attract**, while similar poles **repel**.

Key Learning

What is gravity?

- Gravity is the forces that pulls objects down towards the centre of the Earth.
- Gravity stops things from floating away into space.
- When things go into the air (like a football) gravity pulls them back down.

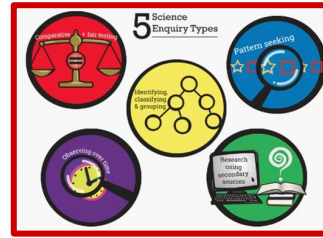
Issac Newton is famously thought to have developed his theory of gravity when he saw an apple fall to the ground from an apple tree.



Weight is how strongly gravity is pulling an object down. It is measured in newtons (N).



Forces Physics 2023 2024



Key Learning

Investigate!

- Testing water resistance when swimming.
- Recognising the impact of mechanisms on forces when using pulleys, levers and gears.
- Choosing a feature of a spinner to investigate, e.g. size of wings, height dropped or number of paperclips.

Key Scientists

Isaac Newton, Aristotle, Galileo Galilei, Albert Einstein, Leonardo da Vinci, Simon Stevin

Key Learning

The moon has a smaller mass than Earth so the gravitational pull on the Moon is smaller than it is on Earth.



Jupiter has a greater mass than Earth so the gravitational pull on Jupiter is stronger than on Earth.

Key Learning

Types of force

- **Magnetism**
- Magnets attract or repel each other or other objects.



-North and South attract. But North and North, or South and South will repel.

- **Air Resistance**

-Air resistance slows down moving objects, because air slows you down as you move through it.
-To travel faster through the air, things need to be streamlined.



- **Water Resistance**

-Water resistance slows down moving objects, because water slows you down as you move through it.
-To travel faster through the water, things need to be streamlined.



- **Friction**





-Friction happens when two surfaces touch each other.
-Friction gives us grip
-Friction produces heat
-Rougher surfaces slow things down a lot
-Smoother surfaces don't slow things down as much



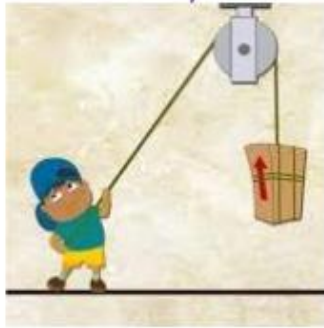


Key Learning

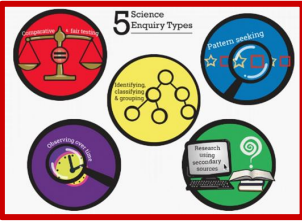
What is a force?

- A force is either: push or a pull.

Forces can make things...	Speed up, slow down, change shape and change direction.
A force that speeds something up.	The child is pushing the car to speed it up. 
A force that slows something down.	 The girl is pulling the dog to slow it down.
A force that changes the shape of something.	The can is being squeezed so that it changes shape and becomes smaller. 
A force that changes the direction of something.	 When the ball is hit with the racket, it will change direction.

Key Learning

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.



The Digestive System

Biology

2023 2024



Previous Learning

All children should know:

- All animals need water, air and food to survive.
- The different ways in which humans are healthy.
- What **carnivores**, **omnivores** and **herbivores** are.

Most children should know:

- Animals get **nutrition** from what they eat.
- The parts of the human body and what they do.
- Humans and some animals have skeletons and **muscles** for support, protection and movement.

Key Scientists

William Beaumont, Ivan Pavlov, Franciscus Sylvus, Rene de Reamur.

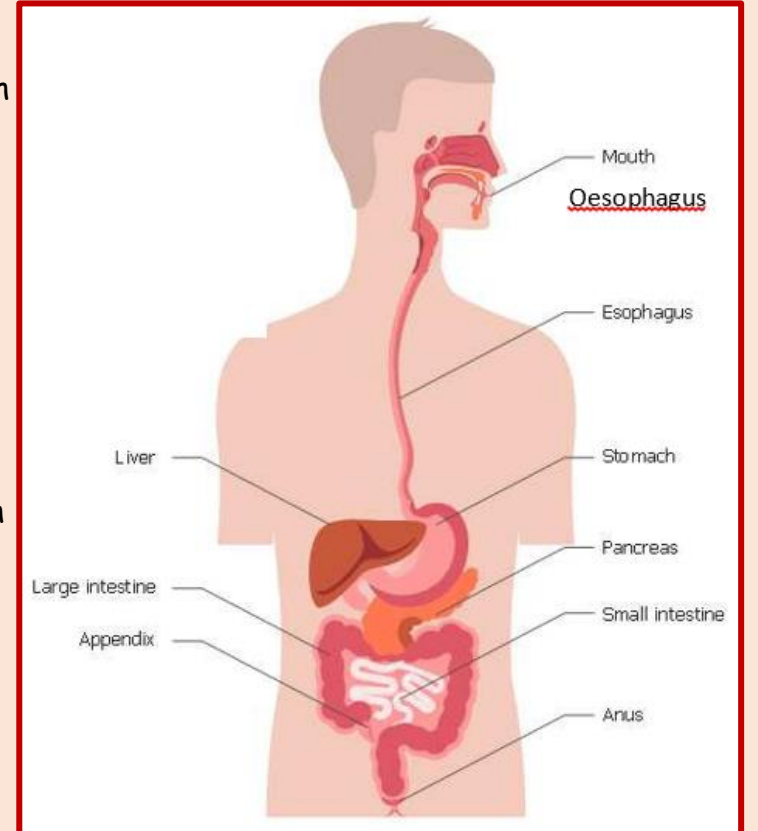
Investigate

- Identify parts of the **digestive** system and explain their functions.
- Create a presentation to show how our food is **digested**.

Key Learning

How does the **digestive** system work?

- The **digestive** system begins with the mouth and teeth where food is **ingested** and chewed.
- **Saliva** is mixed with the food which helps break it up.
- When the food is small enough to be swallowed, it is pushed down the **oesophagus** by **muscles** to the **stomach**.
- In the **stomach**, food is mixed further.
- The mixed food is then sent to a small **intestine** which **absorbs nutrients** from the food.
- Any leftover broken down food then moves on to the large **intestine**.
- The food minus the nutrients arrives in the rectum where **muscles** turn it into **faeces**. It is stored here until it is pushed out by the anus. This is called **excretion**.



Previous Learning

All children should know:

- Which things are living, and which are not.
- Classification of animals (e.g. amphibians, reptiles, birds, fish, mammals, invertebrates).
- Animals that are **carnivores**, **herbivores** and **omnivores**.
- Animals have offspring which grow into adults.
- The basic needs of animals for survival (water, air and food).
- The importance of exercise, hygiene and a balanced diet.
- Animals get **nutrition** from what they eat.
- Some animals have skeletons for support, protection and movement.
- The different types of teeth in humans.
- The life-cycle of a human and how we change as we grow.
- The basic parts of the digestive system
- **Respiration** is one of the seven life processes.

Key Learning

Choices that can harm the **circulatory system**.

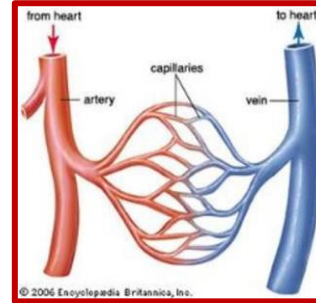
- Some choices, such as smoking and drinking alcohol can be harmful to our health.
- Tobacco can cause short-term effects such as shortness of breath, difficulty sleeping and loss of taste and long-term effects such as lung disease, cancer and death.
- Alcohol can cause short-term effects such as addiction and loss of control and long-term effects such as organ damage, cancer and death.

Key Learning



What is the circulatory system?

- The **circulatory system** is made of **heart**, **lungs** and the **blood vessels**.
- Arteries carry oxygenated blood from the heart to the rest of the body.
- **Veins** carry **deoxygenated** blood from the body to the **heart**.
- **Nutrients, oxygen** and **carbon dioxide** are exchanged **via the capillaries**.



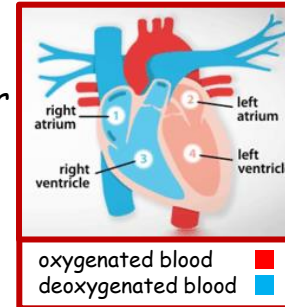
Key Learning

Why is exercise so important?

- tone our muscles and reduce fat
- increase fitness
- make you feel physically and mentally healthier
- strengthens the heart
- improves lung function
- improves skin

The Heart

- The **heart** is composed of four chambers; the right **atrium**, the right **ventricle**, the left **atrium** and the left **ventricle**.
- How often your **heart** pumps is called your **pulse**.



The Circulatory System

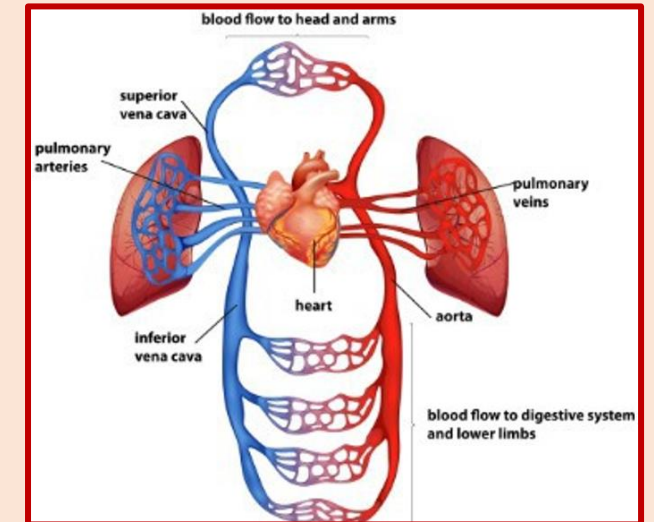
Biology
2023 2024



Key Scientists

Aristotle, Leonardo da Vinci, William Harvey, Antoine Lavoisier, Marianne Lavoisier - loads more

The Circulatory System



1. The right **atrium** collects **deoxygenated** blood from the body, via the vena cava. It sends blood to the right ventricle.
2. The right **ventricle pumps** the **deoxygenated** blood to the **lungs**. Here the blood picks up **oxygen** and disposes of **carbon dioxide**.
3. The **lungs** send **oxygenated** blood back to the left **atrium** which pumps it to the left **ventricle**.
4. The left **ventricle** pumps the blood to the rest of the body, **via the aorta**.