
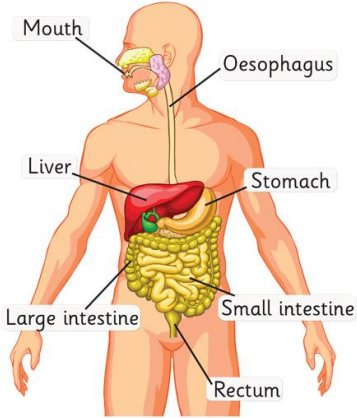




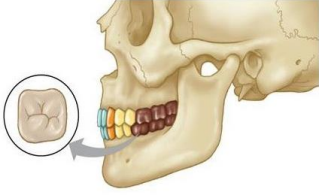


Term: Autumn 1

Year: 4

Biology: Teeth and the Digestive System

BIG QUESTION: WHAT DO OUR BODIES DO WITH THE FOOD THAT WE EAT?

Types of Teeth	Key Knowledge & Vocabulary	Do All Animals Have the Same Teeth?
<p>Incisor</p>  <p>Incisors are narrow-edged teeth used to cut into food.</p>	<p>THE DIGESTIVE SYSTEM</p>  <p>Digestive system The parts of the body that work together to turn food and liquids into the building blocks and fuel the body needs.</p> <p>Digestion The process of breaking food down into simpler substances that the body can use.</p> <p>Saliva A watery fluid that moistens chewed food.</p> <p>Oesophagus A tube made of muscle through which chewed food passes for digestion.</p> <p>Stomach The organ in the body that receives food that has been swallowed and begins to digest it.</p> <p>Small intestine The upper part of the intestine, in which food is mostly digested and from where food is absorbed into the body.</p> <p>Large intestine Where food waste is formed into faeces, stored and finally excreted.</p> <p>Absorb The act of soaking up a substance.</p> <p>Acid Digestive juices released into the stomach from glands in the stomach wall.</p> <p>Enzymes Substances that create chemical reactions.</p>	<p>Herbivore</p>  <p>Herbivores eat plants and have sharp incisors and wider, flatter molars. They do not have any canines.</p>
<p>Canine</p>  <p>Canines are the sharpest teeth and are used to tear and crush food.</p>		<p>Carnivore</p>  <p>Carnivores eat meat and have long pointed canines, sharp incisors and very few molars at the back.</p>
<p>Premolar and Molar</p>  <p>Premolars have flat biting surfaces to tear and crush food. Molars are the largest teeth and are used to grind, tear and crush food.</p>		<p>Omnivore</p>  <p>Omnivores eat a variety of food and have incisors, canines and molars.</p>

Andreas Vesalius (1514 – 1564)

Andreas Vesalius was a doctor and surgeon during the Renaissance. He revolutionised the fields of biology and medicine when he published the first complete textbook of human anatomy.



Andreas became a doctor in 1537 and he spent a lot of time studying and learning about human anatomy, or the parts of the body, in great detail. 'The Seven Books on the Structure of the Human Body' provided the most accurate description of the human body at that time.

Learning Links

Builds on:
Y3 Biology: Skeletons and Muscles

What I am learning now:
Y4 Biology: Teeth & the Digestive System

Leads to:
Y5 Biology: Changes as Humans Age



Science Knowledge Organiser



Term: Autumn 2

Year: 4

Chemistry:
States of Matter

BIG QUESTION: IS FORM FIXED?

States of Matter

Key Knowledge & Vocabulary

Is water always wet?

Solids



- stay in one place and can be held
- keep their shape
- does not flow like liquids
- always take up the same amount of space
- can be cut or shaped

Liquids



- can be poured easily
- are not easy to hold
- change their shape depending on the container they are in
- always take up the same amount of space

Gases



- often invisible
- do not have a fixed shape
- spread out and change their shape and volume to fill up whatever container they are in
- can be squashed

Matter

The stuff that things are made of. Everything around us is made of matter, from the air that we breathe, to the water that we drink, and even our own bodies. Matter takes on different forms, depending on how the atoms are arranged.

Particles and atoms

All matter is made up of tiny particles called atoms

States of matter

The form matter takes, depending on how the atoms are arranged - solids, liquids and gases.



Boiling point

The temperature at which a substance enters a rapid rate of evaporation and can change state from a liquid to a gas.

Melting point

The temperature at which a substance can change state from a solid to a liquid.

Melt/melting

When a solid changes into a liquid, the process is called melting.

Solidify/solidifying

When a liquid changes into a solid, the process is called solidifying.

Evaporate/evaporation

Evaporation is the process in which a liquid changes into a gas as a result of increased energy in its particles.

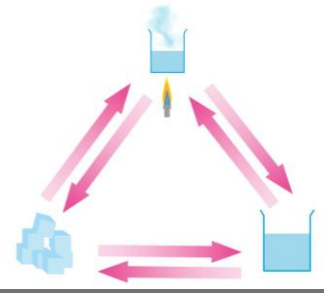
Condense/condensation

Condensation is the process in which a gas changes into a liquid when it cools or loses heat energy.

Precipitation

Water that falls to Earth as hail, mist, rain, sleet or snow.

Changing States of Matter



Melting and Solidifying

Heating can change a solid to a liquid. As we heat a solid, we give the particles more **energy**. This causes the particles to **vibrate** more rapidly. As they vibrate, they break free from their fixed position and are able to move freely, causing the solid to melt into a liquid.



Evaporating and Condensing

This change is reversible and it is also possible to cool the liquid down until the particles are unable to move around each other and can only vibrate in a fixed position. The liquid has become a solid again.



The Water Cycle

1. Water **evaporates** into the air. The sun **heats up** water on land, in rivers, lakes and seas and turns it into **water vapour**. The water vapour **rises** into the air.

2. Water vapour condenses into clouds. Water vapour in the air **cools** down and changes back into tiny drops of liquid water, forming clouds.



3. Water falls as **precipitation**. The clouds get **heavy** and water falls back to the ground in the form of rain or snow.

4. Water returns to the sea. Rain-water runs over the land and collects in lakes or rivers, which take it **back to the sea**. The cycle starts all over again.

Learning Links

Builds on:

Y3 Chemistry: Rocks, Soils & Fossils

What I am learning now:

Y4 Chemistry: States of Matter

Leads to:

Y5 Chemistry: Materials

Term: Spring 1

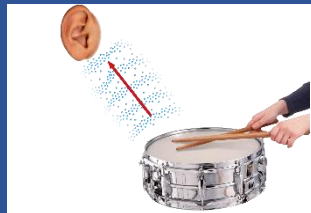
Year: 4

Physics: Sound

BIG QUESTION: HOW DO WE HEAR DIFFERENT SOUNDS?

How is sound made?

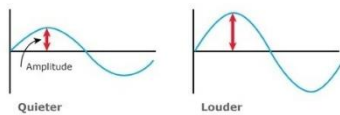
Vibrations



Sound is created when something **vibrates** and sends **waves** of energy or **vibrations** into our ears.

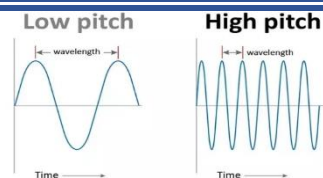
Volume

The size of the **vibration** is called the **amplitude**.



Louder sounds have a **larger amplitude** and quieter sounds have a **smaller amplitude**.

Pitch



Pitch is a measure of how **high** or **low** a sound is. **Faster vibrations** make a **higher pitched** sound. **Slower vibrations** make a **lower pitched** sound.

Key Knowledge & Vocabulary

Amplitude

The size of a vibration. A larger amplitude makes a louder sound.

Ear

An organ used for hearing.

Eardrum

A part of the ear which is a thin, tough, layer of tissue that is stretched out like a drum skin. It separates the outer ear from the middle and inner ear. Sound waves make the eardrum vibrate.

Insulation

To soundproof or prevent sound from passing through. To take in sound energy and muffle sound.

Particles

Solids, liquids and gases are made from particles. They are so small we are unable to see them.

Pitch

How low or high a sound is.

Sound

A type of energy made by vibrations.

Sound Waves

Vibrations travelling from a sound source.

Vacuum

A space with nothing in it – not even air.

Vibrate/Vibration

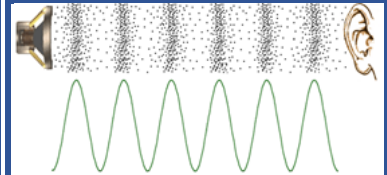
Invisible waves that move steadily back and forth.

Volume

The loudness of a sound.

How does sound travel?

Sound waves



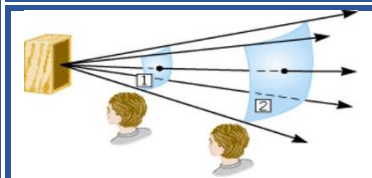
Sound travels as a **wave**, **vibrating** the **particles** in the medium (solid, liquid or gas) it is travelling in.

Through a medium



Sound travels from its **source** through the air or another **medium** (a solid, a liquid or a gas) to the **ear**. Sound cannot travel through a **vacuum**.

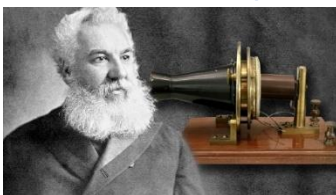
Getting fainter



As the **distance** from the sound source **increases**, the same amount of energy is spread over a greater area, so the **intensity** is **less**.

Scientists

Alexander Graham Bell (1847-1922) was a Scottish-born inventor who studied how **vibrating** objects make **sounds**.



After creating an electric messaging machine, he devised a way of sending and receiving the sounds in the human voice. The result was the **telephone**.

Delia Derbyshire (1937 – 2001) developed **electronic music** by playing notes on a tape and then speeding them up or slowing them down.

She produced the Doctor Who theme tune which was created entirely with electronics.



Learning Links

Builds on:
Y3 Physics: Light

What I am learning now:
Y4 Physics: Sound

Leads to:
Y6 Physics: Light

Term: Spring 2

Year: 4

Physics: Electricity

BIG QUESTION: CAN WE CONTROL ELECTRICITY?

Electricity

Electrical Appliances



Electrical Conductors



An **electrical conductor** lets electricity pass through it. Conductors are often **metal**, e.g. iron and gold, but also include **carbon** and **water**.

Electrical Insulators



An **electrical insulator** doesn't let electricity pass through it, e.g. **wood**, **leather** and **plastic**. Plastic is used to cover electrical wires because it is a good insulator.

Key Knowledge & Vocabulary

Electricity

A form of energy that can be carried by wires and used for heating, lighting and sound. Electricity can be used to make machines and devices work.

Appliance

A machine or device that you use in your home to do a particular job, such as cooking or cleaning. Appliances are often electrical.

Cell and Battery

A device that stores electrical energy as a chemical. A cell is a single unit and a battery is a collection of cells.

Circuit

A complete route which an electrical current can flow around.

Conductor

A material that electricity can pass through it.

Current

A flow of electricity through a wire or circuit.

Energy

A supply of power. The ability to do work. The power from electricity can make machines work or provide heat.

Insulator

A material that does not allow electricity to pass through it.

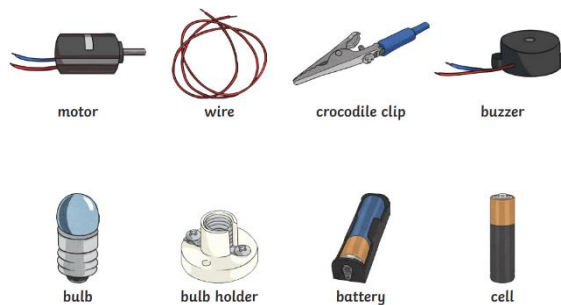
Mains

Electricity supplied through wires to buildings from a power station.

Switch

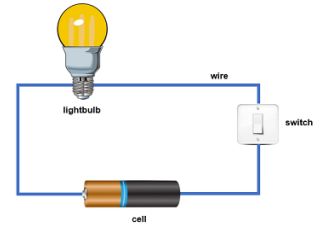
A control for an electrical device which you use to turn the device on or off. When it is off, a switch breaks the circuit to stop the flow of electricity.

Electrical Circuit Components



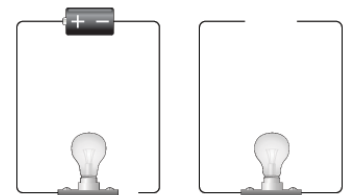
Circuits

Complete Circuit



Electricity can flow around the circuit so the components will work. The bulb will light.

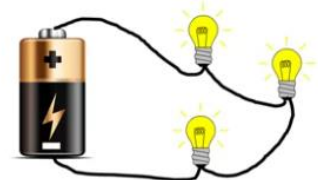
Incomplete Circuit



There is a **break in the circuit** that prevents the electricity from flowing.

The components will not work.

Series Circuit



A **circuit** where the **components** are connected in a **loop**. Electricity flows through each component in a **single pathway**.

Remember to Stay Safe Around Electricity



- Electricity can be dangerous if not used correctly.
- Only use equipment as instructed.
- Connect equipment correctly.
- Disconnect equipment after use.
- Report any damaged or broken equipment. Do not use it.



Learning Links

Builds on:

Y3 Physics: Forces and Magnets

What I am learning now:

Y4 Physics: Electricity

Leads to:

Y6 Physics: Electricity

Term: Summer 1

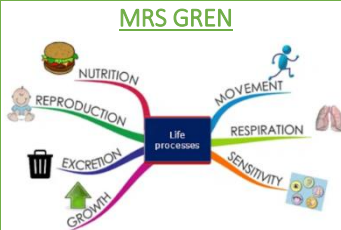
Year: 4

Biology: Living Things and their Habitats

BIG QUESTION: LIVING THINGS, WHAT'S THE SAME, WHAT'S DIFFERENT?

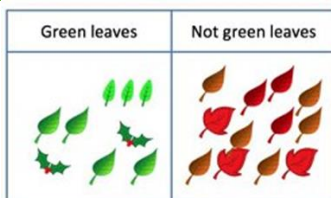
Identify and Classify

Life Processes



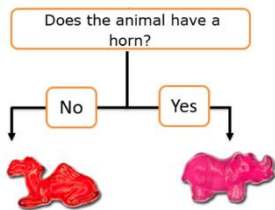
The basic functions carried out by living things to stay alive are called **life processes**.

Same? Different?



Living things can be divided into **groups**, or **classified**, by looking at **similarities** and **differences**.

Classification Keys



A **classification key** is a tool used to group things and help us to identify them.

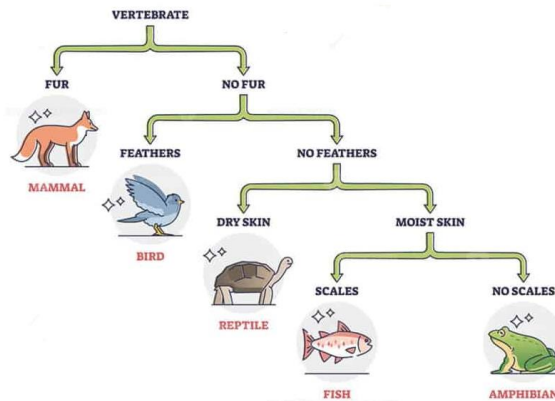
Key Knowledge & Vocabulary

Characteristics

The distinguishing features or qualities that are specific to a species.

Classification

Grouping living things by similarities and differences.



Endangered species

A plant or animal which does not have many of their species living and may become extinct.

Environment

The conditions in which an organism exists or lives.

Extinct

When a species has no more members alive.

Food Chain

A food chain shows how living things get their food.

Habitat

A natural environment where a plant or animal lives.

Invertebrate

An animal that doesn't have a backbone or spine.

Life processes

The things that all living things do: **M**ovement, **R**espiration, **S**ensitivity, **G**rowth, **R**eproduction, **E**xcretion, **N**utrition.

Organism

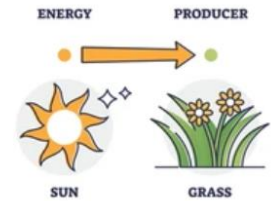
Another word for a living thing (plant or animal).

Vertebrate

An animal that has a backbone or spine.

Food Chains

Producer



Plants create or **produce** their own food using energy from the sun.

Consumer



Animals need to eat plants or animals to get their energy. They are **consumers**.

Predators and Prey



Animals that eat other animals are **predators**. Animals that are eaten by other animals for food are **prey**.

Are Living Things in Danger?

Plants and animals rely on their **environment** to give them everything they need to survive. When **habitats change**, it can be dangerous for the plants and animals that live there.

Natural Changes

Earthquakes, storms, floods, droughts, wild fires, the seasons.



Changes Caused by Human Behaviour

Negative: deforestation, littering, pollution, urban development

Positive: protecting endangered species, cleaning bodies of water, creating nature reserves, recycling

Learning Links

Builds on:

Y2 Biology: Living Things and their Habitats

What I am learning now:

Y4 Biology: Living Things and their Habitats

Leads to:

Y5 Biology: Living Things and their Habitats