

Science Knowledge Organiser- Year 4 Habitats

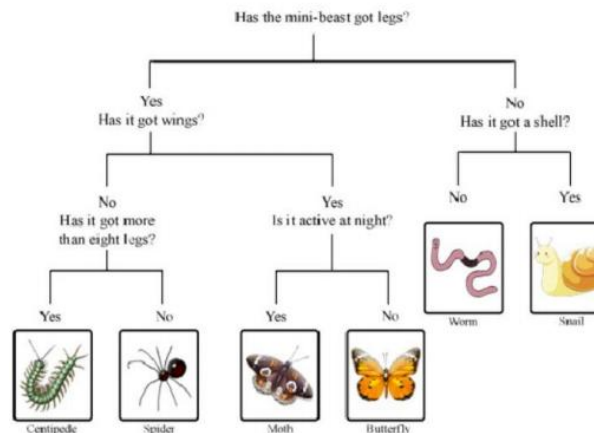
Animal classifications

Vertebrates
Have a backbone

- mammals 
- reptiles 
- fish 
- amphibians 
- birds 

Invertebrates
Do not have a backbone

- insects 
- arachnids 
- crustaceans 
- molluscs 
- annelids 



Movement
Respiration
Sensitivity

Nutrition
Excretion
Reproduction
Growth

How can environments change?

Natural changes

This could be caused by flooding, fire, earthquakes etc

Human have an impact on the environment:

Positive impact

This could be:

- setting up a nature reserve
- tree planting
- creating a garden pond.

Negative impact

This could be:

- littering
- deforestation
- air pollution
- plastics in the oceans

Environments change all the time, e.g. leaves fall from the trees during Autumn. Sometimes the changes are not expected and have a drastic effect on the living things there.



forest fire



air pollution



flooding



water pollution

Food chain diagram;

Producer → Consumer → Consumer



Prey

→

Predator

Significant scientists

Jane Goodall
(Born 1934)



Jane Goodall is an expert on wild chimpanzees. She is known for her ground breaking discoveries about their behaviour. She has shown us the urgent need to protect chimpanzees from extinction.

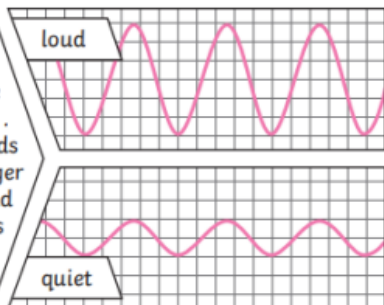
Seirian Sumner



Dr Seirian Sumner is an evolutionary biologist and behavioural ecologist. She specialises in social evolution and behaviour in insects (bees, wasps and ants).

Science Knowledge Organiser- Year 4 Sounds

The size of the **vibration** is called the **amplitude**. Louder sounds have a larger **amplitude**, and quieter sounds have a smaller **amplitude**.



The closer we are to the sound source the louder it will be.



A train arriving at a station sounds loud.

The further away from a sound the fainter it will be.



A train in the distance sounds quieter.

As well as travelling through air (gas), sound can travel through solids and liquids:



Sound sources are where a sound comes from. The **volume** is the loudness of a sound

Significant scientist

Christian Doppler
(1803-1853)



Christian Doppler was an Austrian mathematician and physicist. He is celebrated for his principle known as the Doppler effect. This describes how noises sound different as you move toward or away from a noisy object.

How do we hear sound?



1. Banging the drum produces vibrations.

2. The sound travels through the air to our ears.

3. The vibrations cause parts of our body inside our ear to vibrate. This allows us to hear the sound.



Pitch



The longer bars on the xylophone make a **lower** sound.

The shorter bars on the xylophone make **higher** sounds.

Volume

The volume (loudness) of a sound depends on the size of the vibrations.



If we blow an instrument harder, we make a louder sound.

Sound insulators can be used to **muffle** sound



Science Knowledge Organiser- Year 4 States of Matter

Significant scientist

Bernard Palissy
(1510-1590)



Bernard Palissy was a French potter and scientist. He is often credited as the man who 'discovered' the modern theory of the water cycle. He asserted that rainfall alone was sufficient for the maintenance of rivers.

Melting and freezing



Melting is a change of state from solid to liquid. The melting point of water is 0°C .

Freezing is a change of state from liquid to solid. The freezing point of water is 0°C .

Boiling is a change of state from liquid to gas. Water boils when it is heated to 100°C .



Evaporation and condensation



Evaporating puddles

Evaporation is the change from a liquid to a gas at the surface of the liquid.

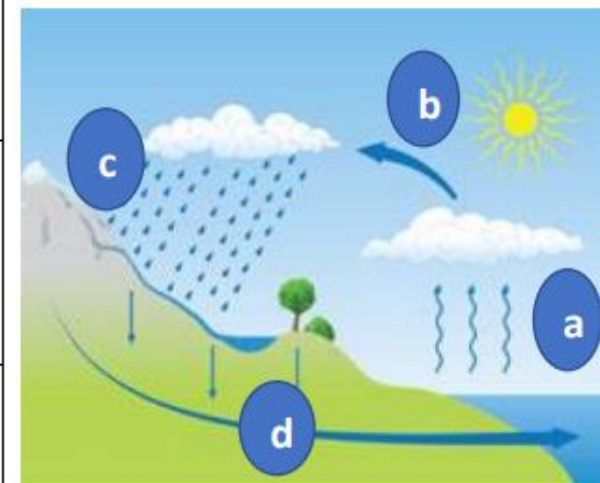


Condensation in the bathroom

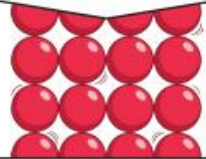
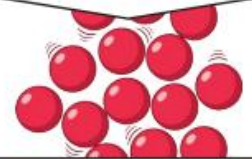
Condensation is the change from a gas to a liquid, caused by cooling.

a	Water evaporates into the air The sun heats up water at the surface of seas, rivers, lakes and turns it into water vapour. The water vapour rises into the air.
b	Water vapour condenses into clouds Water vapour in the air cools and changes back into tiny drops of liquid water, forming clouds.
c	Water falls as rain snow, sleet etc When too much water has condensed the water droplets in the clouds get too heavy and water falls back down to Earth in the form of rain, snow, sleet etc. This is called precipitation.
d	Water returns to the sea. Rainwater runs over the land and collects in lakes or rivers which take it back to the sea. The cycle starts all over again

The Water Cycle



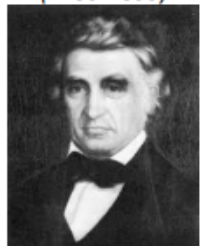
There are three states of matter.

Solid	Liquid	Gas
		
Particles in a solid are close together and cannot move. They can only vibrate.	Particles in a liquid are close together but can move around each other easily.	Particles in a gas are spread out and can move around very quickly in all directions.

Science Knowledge Organiser- Year 4 Animals including humans

Significant scientist

William Beaumont
(1785-1853)



William Beaumont was a surgeon in the U.S. Army. He carried out lots of experiments and research on human digestion. As a result, he provided the world with new information about the digestive process in living human beings.

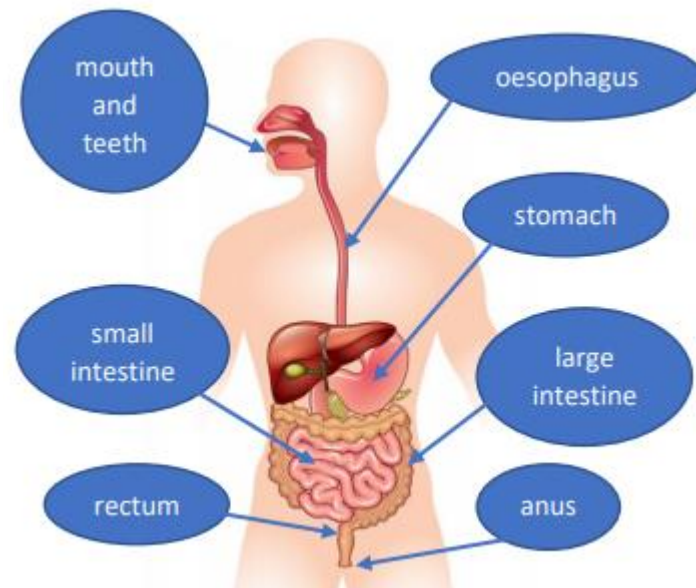
Lion skull



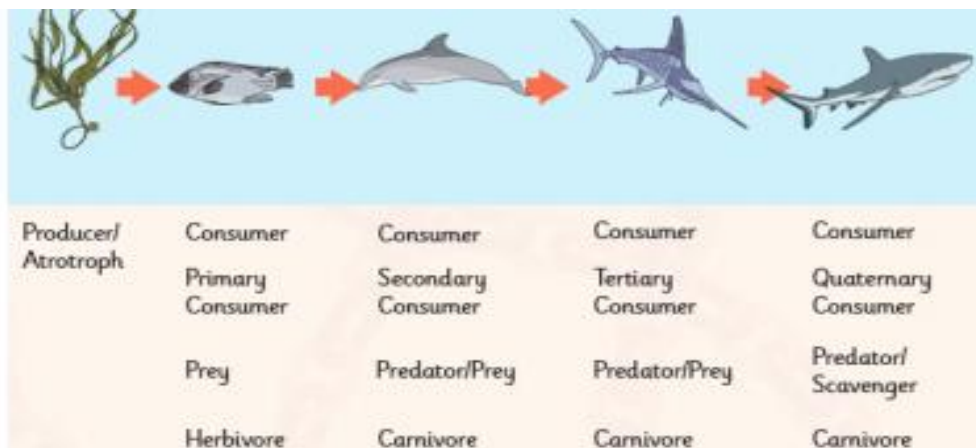
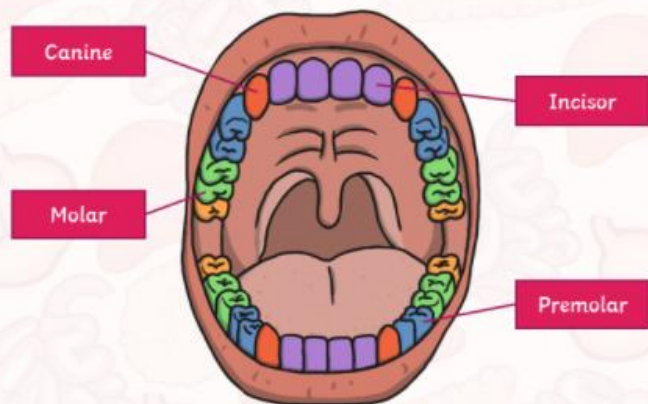
Lions are carnivores. They have big canine teeth to help them catch their prey.

The main parts of the digestive system:

- Food enters the body through the **mouth**
- The **teeth** start to break the food down. **Saliva** is added and the tongue rolls the food into a ball.
- After swallowing, the food passes down the **oesophagus** to the stomach
- In the **stomach** the food is broken down further by being churned around and some chemicals are added.
- Food passes into the **small intestine**. Here **nutrients** are removed from the food to be used elsewhere in the body.
- The rest passes into the **large intestine** where **water** is removed to be used elsewhere in the body.
- What is left is then stored in the **rectum** until it leaves the body through the **anus** when you go to the toilet.

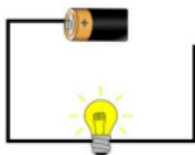


Humans have four different types of teeth and each one has a different role.

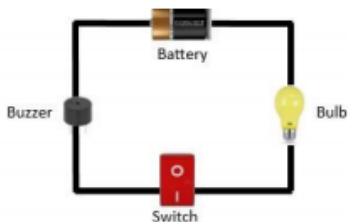


Science Knowledge Organiser- Year 4 Electricity

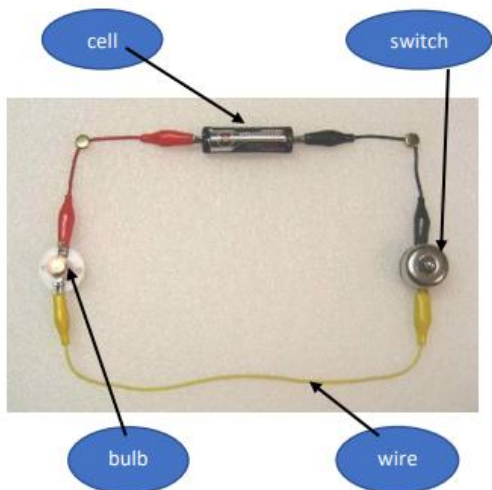
This circuit will not work as it is not complete.



This circuit is complete so the buzzer will sound and the bulb will light.



Electrical circuit with a bulb



The switch opens and closes the circuit. The bulb lights in this circuit because the switch is on.

Significant scientist

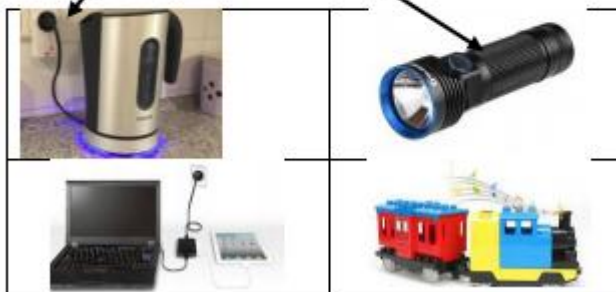
Thomas Edison
(1847-1931)



Thomas Edison was an American inventor. He is sometimes described as America's greatest inventor. He invented the first practical incandescent light bulb.

Appliances that run on electricity

Some plug into the mains and others run on batteries.



Mains electricity



Batteries



Conductors and insulators

Conductors

Some materials let electricity pass through them easily. These are known as electrical conductors. Many metals are good electrical conductors, such as iron, copper and steel.



Insulators

Some materials do not allow electricity to pass through them. They are known as insulators. Plastic, wood, rubber and glass are good electrical insulators.



- 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**.