

Year 4
Science Knowledge
Organisers

All Living Things



KNOWLEDGE ORGANISER

Vocabulary:

Classification – grouping things based on their characteristics so they can be identified.

Characteristics – features or qualities of a specific species.

Vertebrate – animals with a backbone.

Invertebrate – animals without a backbone.

Environment – the surroundings or conditions in which a person, animal, or plant lives.

Habitat – the specific area or place that an animal lives.

Endangered – when there are not many of a species left and scientists are concerned that they may become extinct.

Extinct – when a species has no more members living on the planet then it has become extinct.

To stay alive and healthy all living things need certain conditions to carry out the 7 life processes:

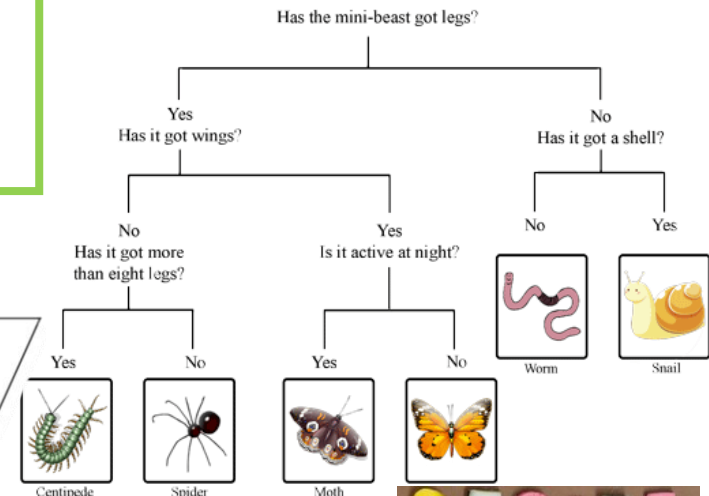
Movement
Respiration
Sensitivity
Growth
Reproduction
Excretion
Nutrition

Changes to an environment can be **natural** or caused by **humans**.

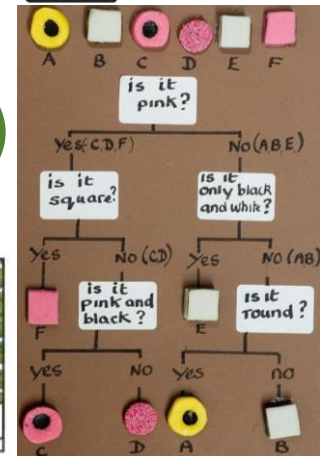
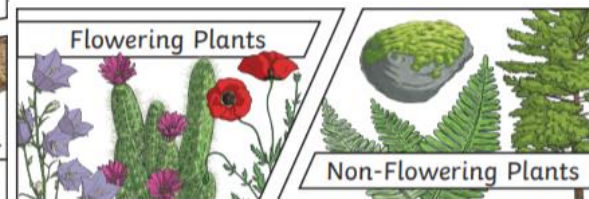
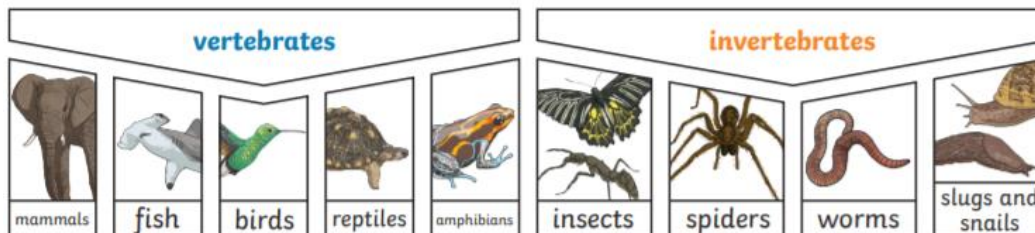
Natural	Human-Made
• earthquakes • storms • floods • droughts • wildfires • the seasons	• deforestation • pollution • urbanisation • the introduction of new animal or plant species to an environment • creating new nature reserves

Plants and animals rely on the environment to give them everything they need. So, when habitats change, it can be **very dangerous**.

You can use **classification keys** to help group, identify and name a variety of living things.



Changes to an environment can have **positive** as well as **negative** effects.



Animals including Humans



KNOWLEDGE ORGANISER

Vocabulary:

Digestive system – the group of organs in your body involved with the digestion of food.

Digestion – this is the way the body breaks down food so that the body can absorb it.

Herbivore – animals that only eat plants.

Carnivore – animals that only eat other animals.

Omnivore – animals that eat both plants and other animals.

Food chain – animals eat plants or other animals. The way this happens can be shown in a food chain.

Producer – a plant that produces its own food.

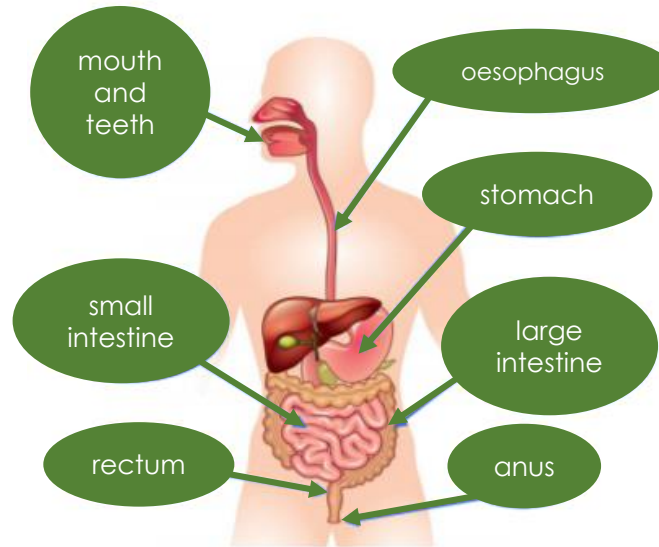
Consumer – animals that eat plants in the food chain.

Predator – animals that catch and eat other animals.

Prey – animals that are hunted and eaten by predators.

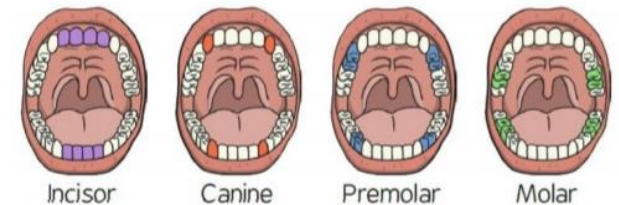
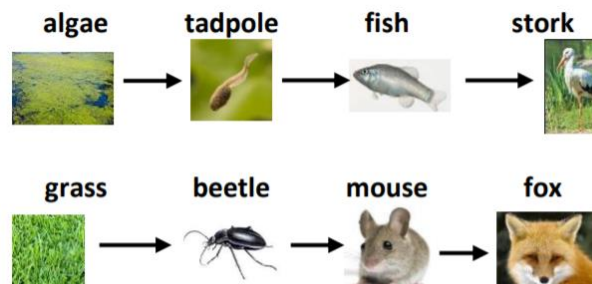
→ = is eaten by

The Digestive System



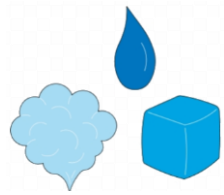
- Food enters the body through the mouth
- The teeth start to break the food down. Saliva is added and the tongue rolls the food into a ball.
- After swallowing, the food passes down the oesophagus to the stomach
- In the stomach the food is broken down further by being churned around and some chemicals 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.

Food chains:



Humans have 4 types of teeth:

- **Incisors** → cut food.
- **Canines** → tear food.
- **Premolars** → crush food.
- **Molars** → grind food.



States of Matter

Y4



KNOWLEDGE ORGANISER

Solids, Liquids and Gases

All matter exists in three states: solids, liquids and gases.

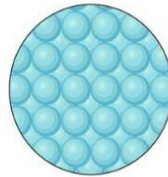
SOLIDS:

- Hold their shape
- Rigid
- Fixed volume

Eg. Ice cubes, rocks, glass, most metals



SOLID



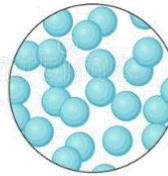
LIQUIDS:

- Do not hold their shape
- Can be poured
- Take the shape of a container but have a fixed volume

Eg. Water, oil, blood and milk



LIQUID



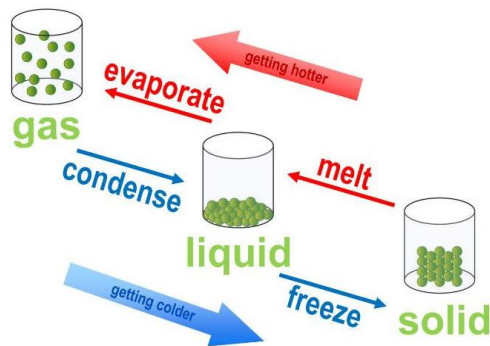
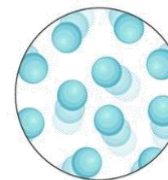
GASES:

- Do not hold their shape
- Fill the space they are in
- Don't have a fixed volume

Eg. Oxygen, carbon dioxide, helium



GAS



States of matter **can change** depending on the temperature.

Liquid → Solid = **Freezing**

Solid → Liquid = **Melting**

Liquid → Gas = **Evaporation**

Gas → Liquid = **Condensation**

Changing states of matter play an important part in the **water cycle**:

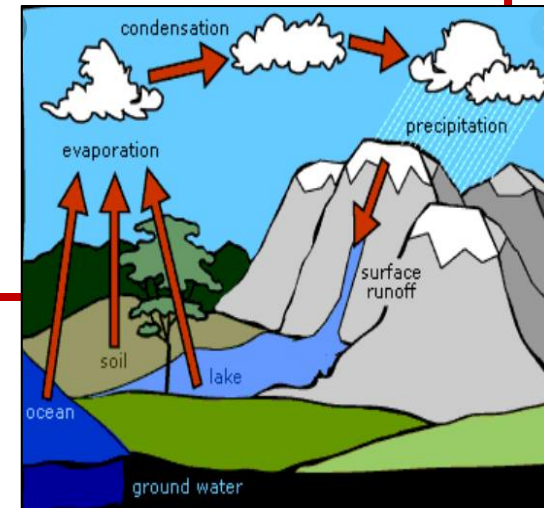
EVAPORATION - Energy from the sun heats up the surface of the Earth. This causes the temperature in rivers, lakes and oceans to rise, and evaporate into the air.

CONDENSATION - As the water vapour rises, it cools in the higher air and turns back into liquid – condensation. This creates clouds.

PRECIPITATION - When too much water has condensed, the clouds become too big for air to hold them. Precipitation occurs.

Rainwater runs over the land and collects in lakes or rivers and back to the sea.

The cycle then starts again!



We measure temperature with a thermometer in °C



SOUND



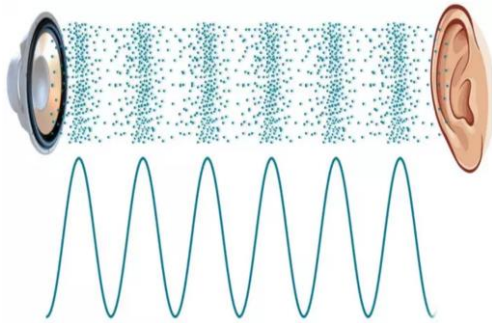
Y4



KNOWLEDGE ORGANISER

How do we hear sounds?

- Sounds are created when something vibrates (shakes back and forth).
- This creates soundwaves which travel to the ears of the listener.
- When a bell is struck, the metal of the bell vibrates. These vibrations create waves in the air (sound waves).
- When they reach our ears, they make our eardrums vibrate, and we hear the sound of the bell ringing.



We can wear ear defenders to protect our ears from very loud sounds.

Vocabulary:

Sound – something you can hear.
We hear sounds with our ears.

Sound source – the source is producing a sound when a part of it vibrates.

Vibrations – Sounds are made when something vibrates. This means it moves quickly backwards and forwards.

Sound wave – sound is created when something vibrates and sends waves of energy (vibrations) into our ears.

Pitch – how high or low a sound is.

Volume – how loud or quiet a sound is.

Sound insulation – a property of a material that blocks sound.

Pitch is how high or low a sound is.

Pitch is caused by the frequency of vibrations (how many times vibrations go back and forth per second).

The higher the rate of vibrations, the higher the pitch. Lower pitch sounds have a lower rate of vibrations.



Lower Pitch



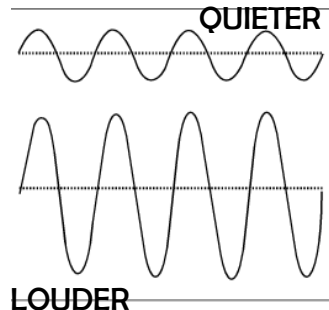
Higher Pitch

Some sounds are too high or low for humans to hear!

Volume is how loud or quiet a sound is.

The volume of a sound depends on the amount of energy that the vibrations contain.

Vibrations **with lots of energy** create large soundwaves. When these large soundwaves arrive at your ears, they push harder on your eardrums and create **a louder sound**.



ELECTRICITY



Y4



KNOWLEDGE ORGANISER

-**Electricity** is a type of energy.

-It is used to power lots of different things, including many items that we use in everyday life.

-Electricity can flow through wires and cables, and can be stored in batteries (sometimes called cells).

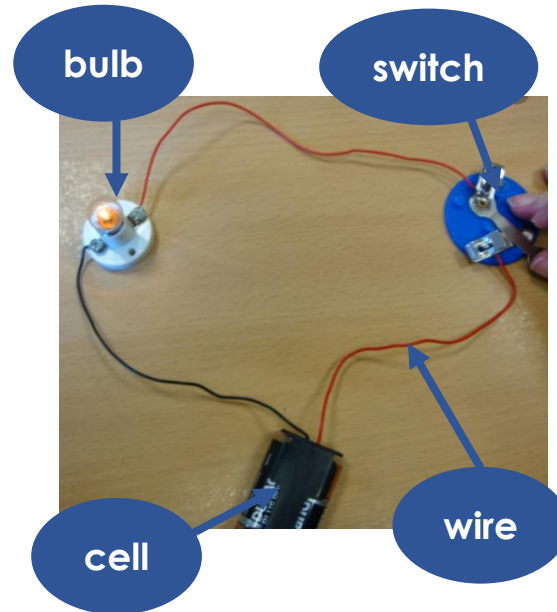
-Some materials **conduct** electricity, and others do not (**insulators**).

There are 2 types of electric current:

mains

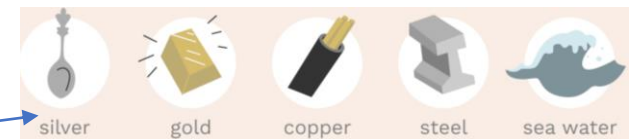
battery

Many everyday appliances rely on electricity for them to work. Some appliances use mains electricity (are plugged into a socket) and others have a battery to make them work.



The **switch** opens and closes the circuit. When the switch is closed, the circuit is **complete** so the bulb will light up.

A **conductor of electricity** is a material that will allow electricity to flow through it. Metals are good conductors.

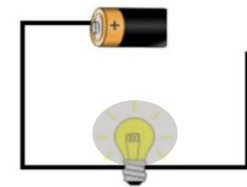


Materials that are **electrical insulators** do not allow electricity to flow through them. Wood, plastic and glass are good insulators.

Complete circuits:

Electricity can only flow around a **complete circuit** that has no gaps.

This circuit will not work as it is not complete.



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

