

Science Knowledge Organiser

Year 1

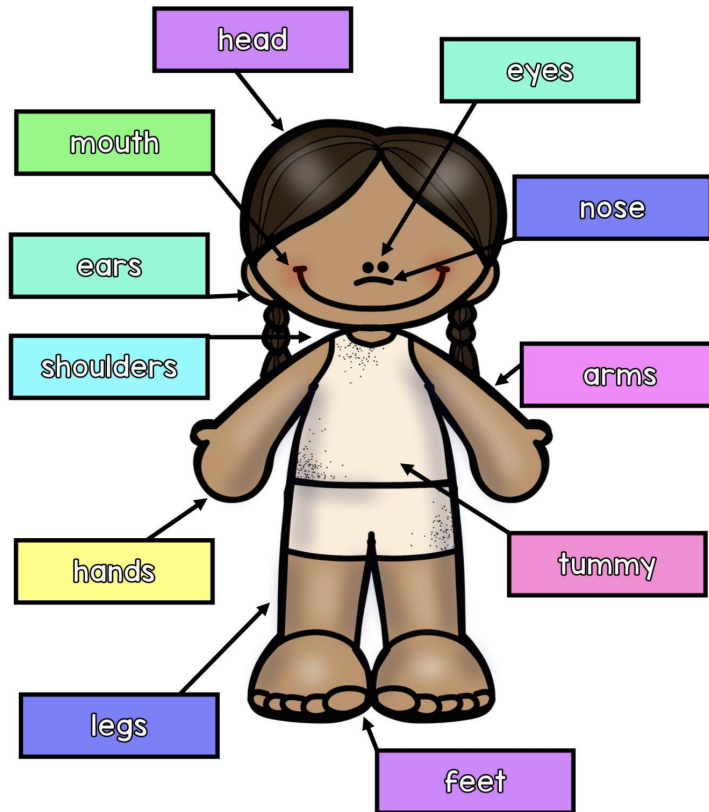
Autumn (i)

How do our senses help us?

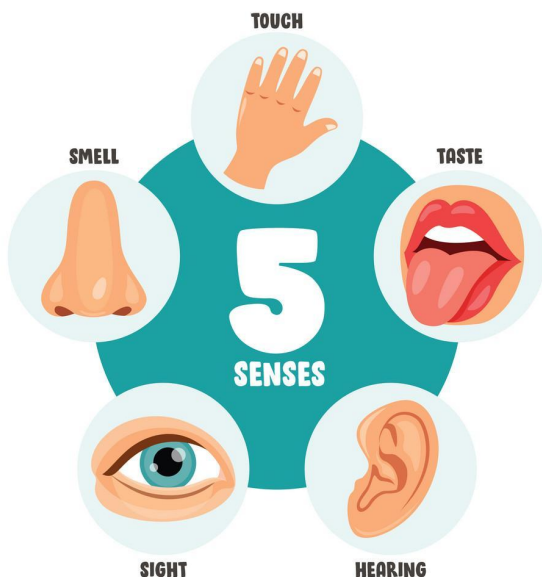
Portable Knowledge - The main body parts that can be seen; arms, legs, chest, stomach, knee, ankle.

The 5 senses; sight, smell, taste, touch, hearing.

To know the main body parts.



To know the senses and link them to body parts.



Core vocabulary

Senses- the ability to see, hear, touch, taste and smell.

Sight -- the ability to see

Hearing- the ability to hear sounds

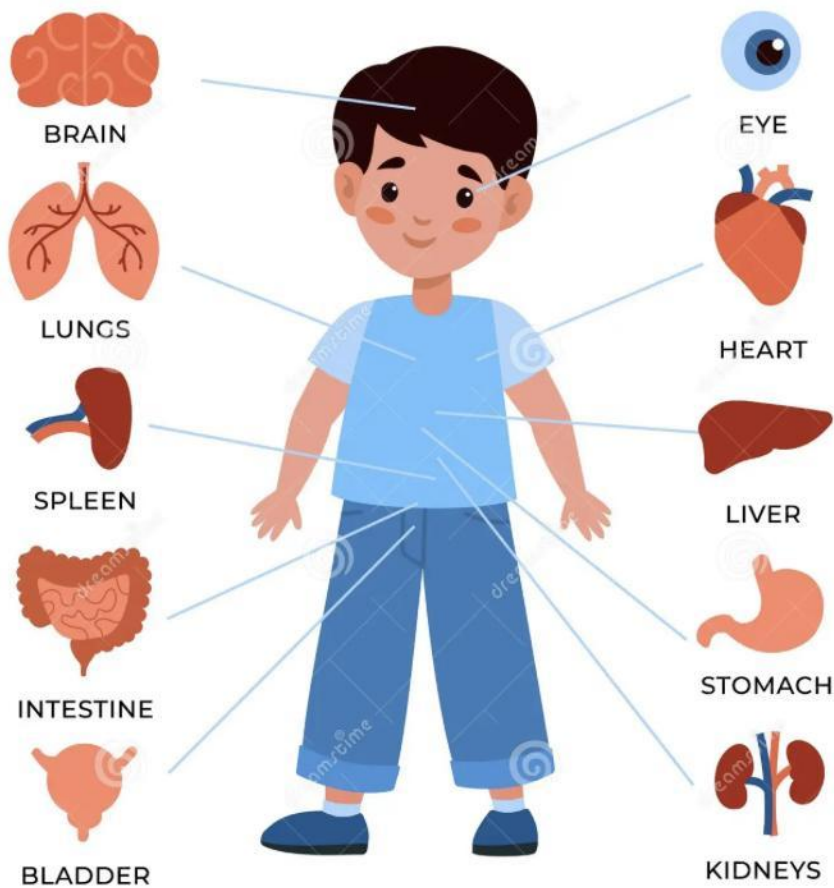
Touch - the act of feeling something or someone

Taste - to explore the flavour of something

Smell - to detect the odour or scent of something

Distance - the length of the space between two points

To know some parts of the body that can NOT be seen.



To make scientific observations of similarities and differences such as eye and skin colour.



Science Knowledge Organiser

Year 2 Autumn (i)

How do seeds and bulbs grow into plants?

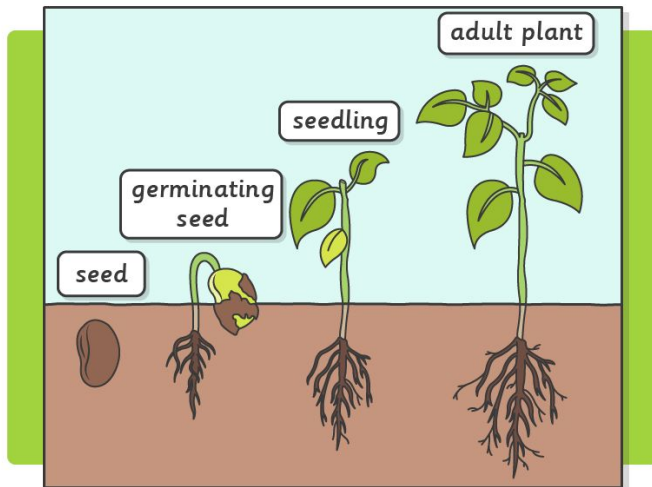
Substantive Knowledge- what will we learn?

To sort things that are living, dead and that have never been alive

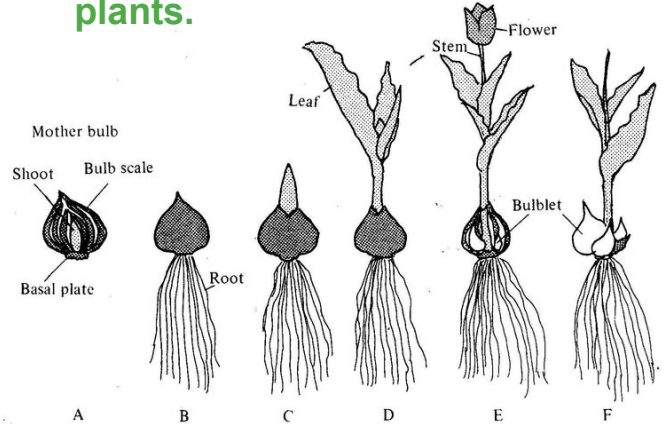


Which of these images represent something that is
a) alive?
b) dead
c) has never been alive?
How do you know you are right?

To observe, describe and record how seeds grow into mature plants.



To observe, describe and record how bulbs grow into mature plants.



To know what plants need to grow and stay healthy.

Plant Needs

Portable knowledge- what we need to remember:

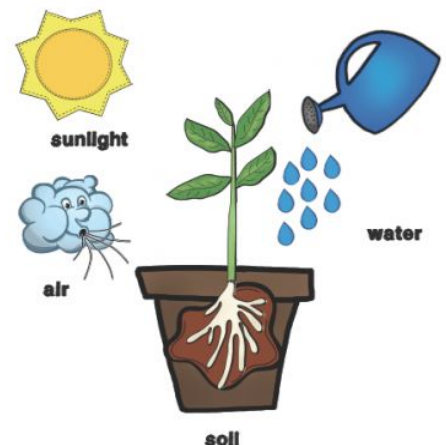
Seeds need water, the right temperature and oxygen to germinate.

Core Vocabulary

bulb- the part of some plants, mostly under the dirt, that stores food while the plant is resting from growing (a storage organ)

mature- fully developed or fully grown

germination- the phase of plant growth when the seed begins to sprout



Science Knowledge Organiser

Year 3 Autumn (i)

What types of rock can we find out about?

Substantive Knowledge- Sedimentary rock is formed in layers by the building up of mineral or organic particles and can crumble easily.

Igneous rock is formed when magma cools and sets. It is very hard because the crystals are interlocked.

Pre-teach opportunity- can you do this?

What physical differences can you spot for the different types of rock?

Types of Rocks



Sedimentary rock is formed in layers by the building up of mineral or organic particles and can crumble easily.

Igneous rock is formed when magma cools and sets. It is very hard because the crystals are interlocked.



Igneous

Sedimentary

Meta

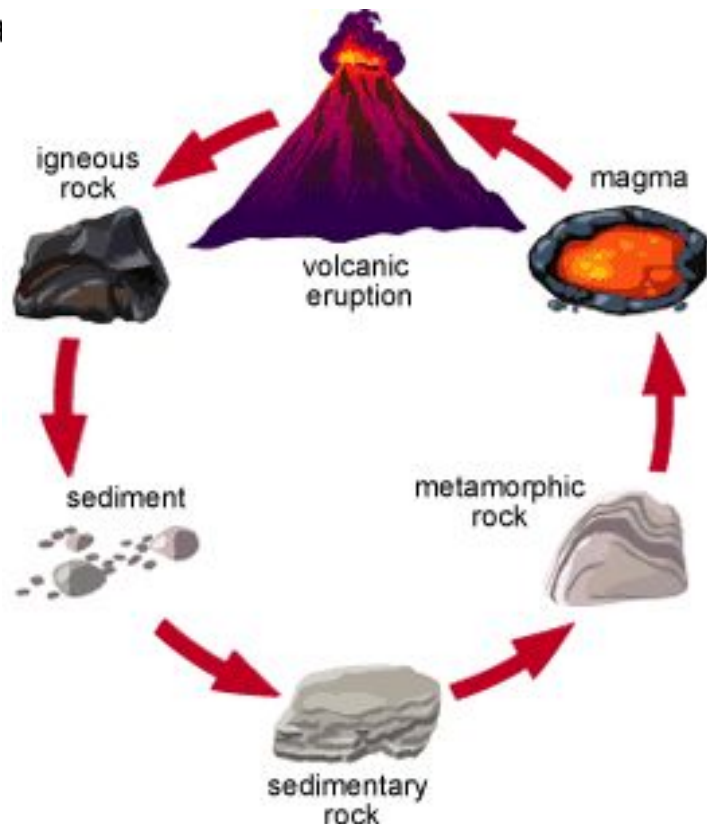
There are three main types of rocks:
igneous, sedimentary, and metamorphic.

Igneous rocks are formed from solidified magma or lava.

Sedimentary rocks are formed from layers of sediment that have been compressed over time.

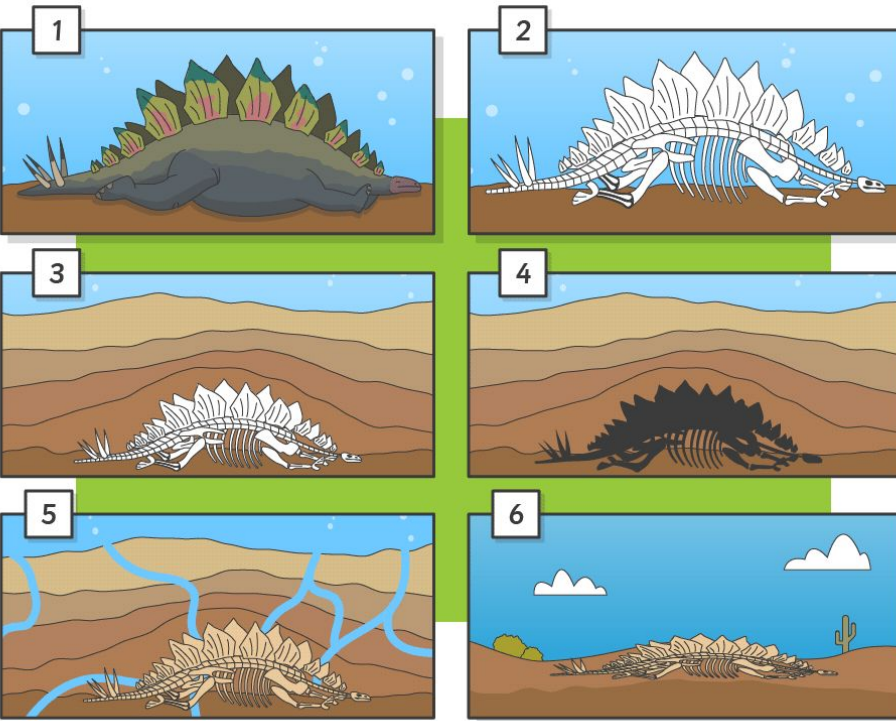
Metamorphic rocks are formed when existing rocks are exposed to heat and pressure, causing them to change form.

The rock cycle describes the process by which rocks are created, broken down, and reformed over time.



The rock cycle

How fossils are formed

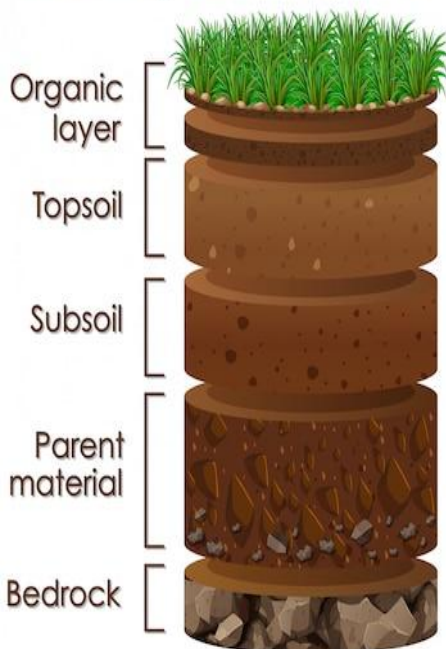


1. An animal dies, its skeleton settles on the sea floor and is buried by sediment.
2. The sediment surrounding the skeleton thickens and begins to turn to stone.
3. The skeleton dissolves and a mould is formed.
4. Minerals crystallise inside the mould and a cast is formed.
5. The fossil is found by paleontologists.

Fossils are formed in sedimentary rocks.

All plants need space, the right temperature, light, water, air and nutrients to grow.

Soil Layers on Earth



Soil is made up of many layers. Depending on the features of the layer, the soil will have different purposes. It is made up mainly of mineral particles, organic materials, air, water and living organisms

Core Vocabulary

Sediment – Very small pieces of solid material that settle at the bottom of liquid.

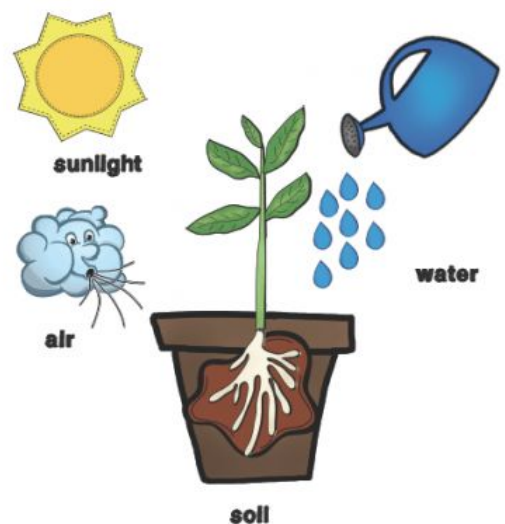
Organic – From living matter.

Minerals – Naturally occurring inorganic substance.

Crystallise – To form crystals.

Expose – To uncover something.

Plant Needs



Science Knowledge Organiser

Year 4

Autumn (i)

Why are reversible changes scientifically useful?

Portable Knowledge -

A solid holds its own shape; a liquid takes the shape of a container and gas fills a container and will escape if there is no lid.

To know how habitats change throughout the year.

Habitats rarely stay the same. In spring and summer, plants emerge and grow; as seasons grow colder, many plants die off, lose their leaves, and many go dormant until the next seasonal growing period. Over longer periods of time, some species disappear, and new species may take their place. Sometimes the actions of people can change habitats.

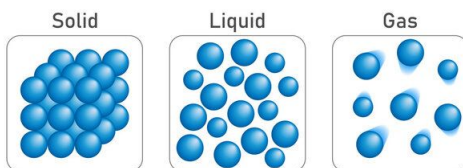


To know the definitions of solids, liquids and gases.

Solids

They stay in one place and can be held.
They keep their shape.
They always take up the same amount of space.
They do not spread out like gases.
Solids can be cut or shaped.
Even though they can be poured, sugar, salt and flour are all solids.

States of matter



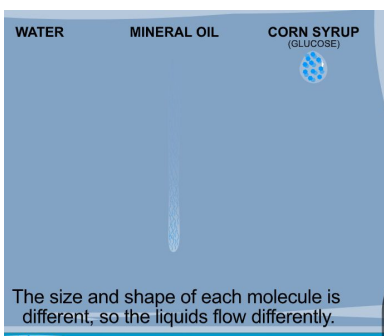
Liquids

They can flow or be poured easily. They are not easy to hold.
They change their shape depending on the container they are in.

Gases

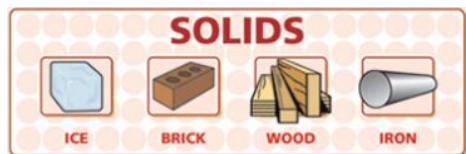
They are often invisible.
They do not have a fixed shape. They spread out and change their shape and volume to fill up whatever container they are in.
Gases can be squashed.

To investigate and explain if all liquids behave the same way.

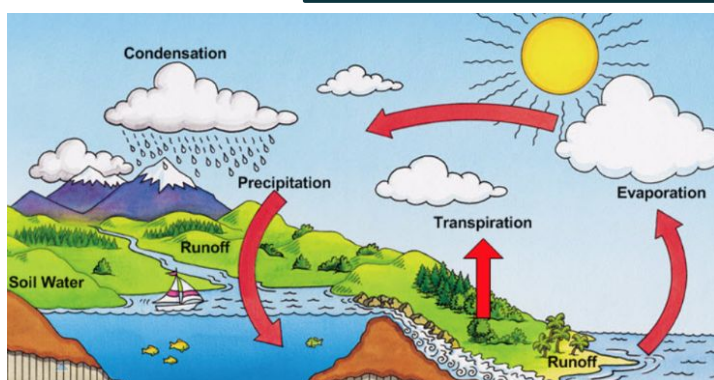


Liquids have their own characteristic properties. Even if liquids look similar, they can have different properties. To compare the properties of liquids, the liquids need to be tested in the same way. This enables us to perform a fair test.

To compare and group materials together according to whether they are solids, liquid or gases.



To know the part played by evaporation and condensation in the water cycle and the role of temperature.



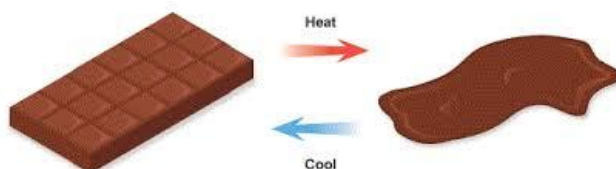
The water cycle describes how water evaporates from the surface of the earth, rises into the atmosphere, cools and condenses into rain or snow in clouds, and falls again to the surface as precipitation.

To define what a reversible change is and give examples of some.

A reversible change is when materials can be changed back to how they were before the reaction took place.

E.g. When ice melts to form water. It could be frozen back to ice again.

Examples include freezing water to make ice or melting chocolate.



Core vocabulary

Evaporation - When water is heated and changes from a liquid to a gas.

Condensation - when water cools down and turns from gas to liquid.

State-there are three states of matter which make up everything.

Reversible- when something changes form but cannot change back to its original state.

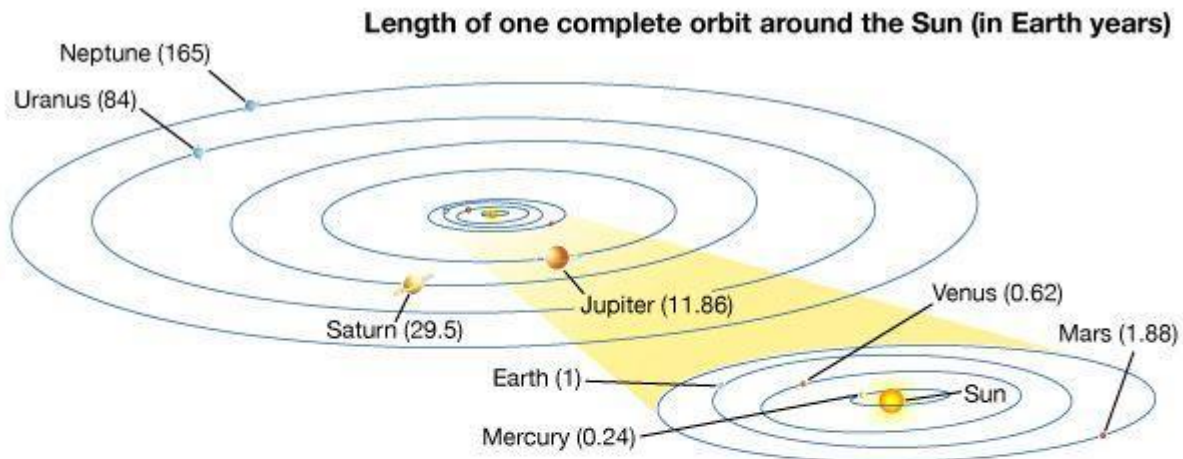
Science Knowledge Organiser

Year 5 Autumn (i)

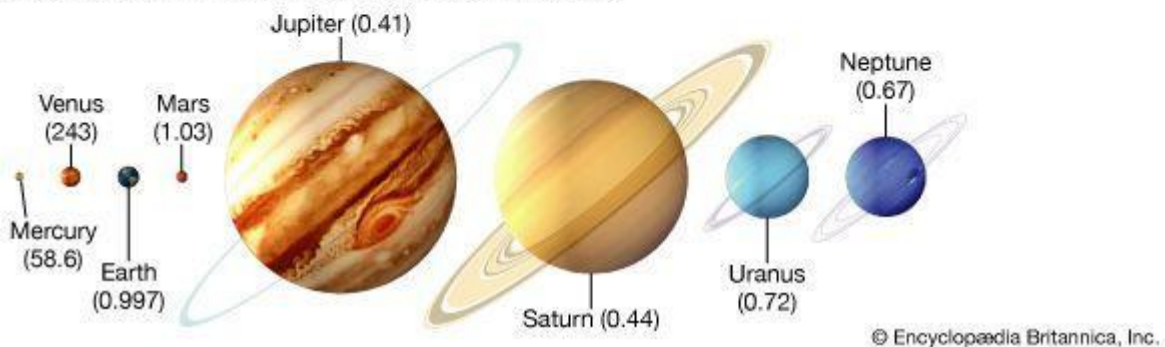
How does the movement of the Earth influence our lives?

Substantive Knowledge- what will we learn?

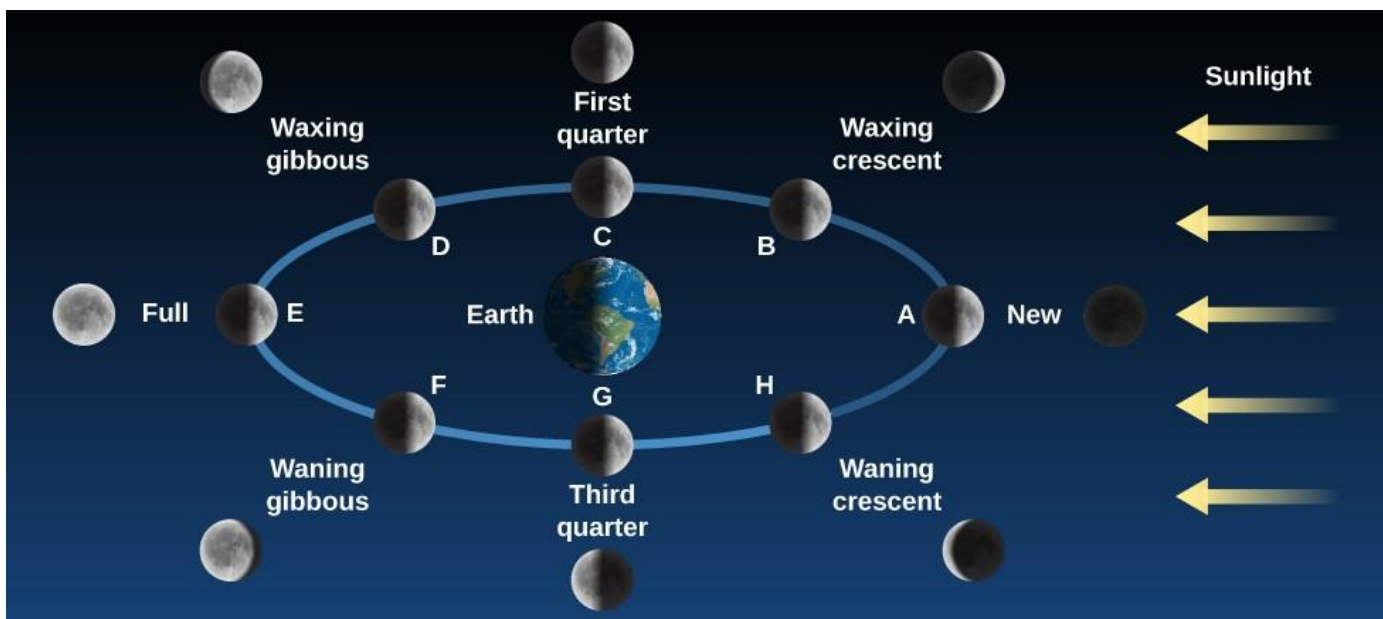
To know and describe the movement of the Earth, and other planets, relative to the Sun in the Solar System.



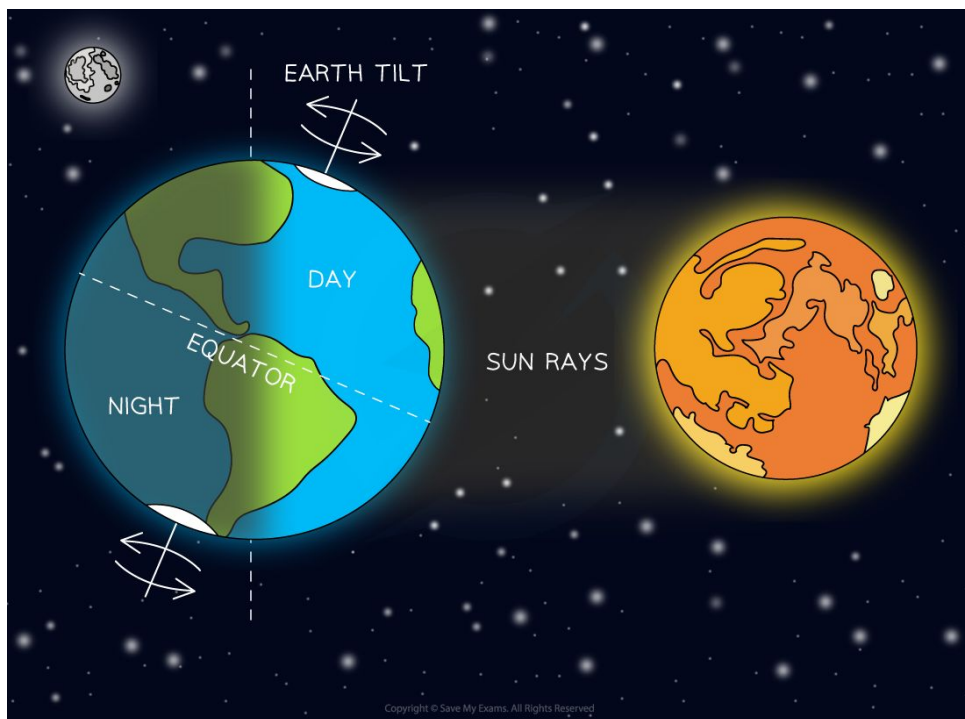
Length of one complete rotation (in Earth days)



To know and describe the movement of the Moon relative to Earth.



To explain day and night and apparent movement of the Sun across the sky using knowledge about the Earth's rotation.



The apparent movement of the sun across the sky is caused by the rotation of the Earth on its axis and its orbit around the sun. This rotation changes the angle at which light from the sun directs itself at the Earth. The path the sun makes across the sky during the day is known as the sun path, or day arc.

To know the Sun, Earth and Moon are approximately spherical bodies.

To identify scientific evidence which has been used to support or refute theory.



What are the arguments for a flat Earth?



Flat Earth Versus Spherical Body



What are the arguments for a spherical Earth?



There have been many theories and scientific evidence over the years to settle this argument- what evidence can you find?

Portable knowledge- what we need to remember:

The movement of the Earth relative to the Sun. The movement of the Moon relative to the Earth. The movement that the Sun, Earth and Moon are approximately spherical bodies. To explain day and night.

Core Vocabulary

axis-an imaginary line about which a body rotates

orbit- the curved path of a celestial object or spacecraft round a star, planet, or moon, especially a periodic elliptical revolution.

Solar (System)-the collection of eight planets and their moons in orbit round the sun, together with smaller bodies in the form of asteroids, meteoroids, and comets.

sphere- a round solid figure, or its surface, with every point on its surface equidistant from its centre.

Science Knowledge Organiser

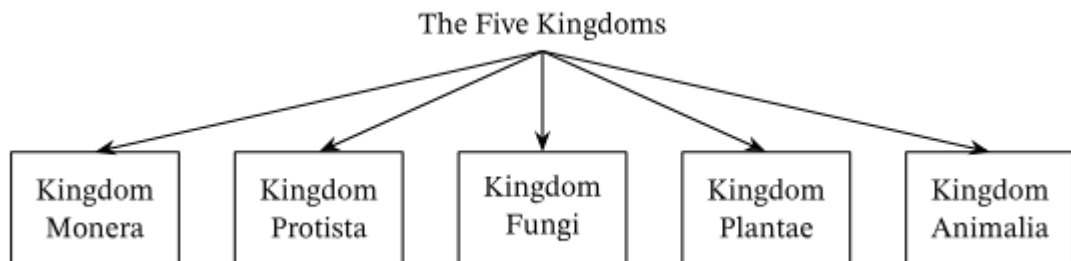
Year 6

Autumn (i)

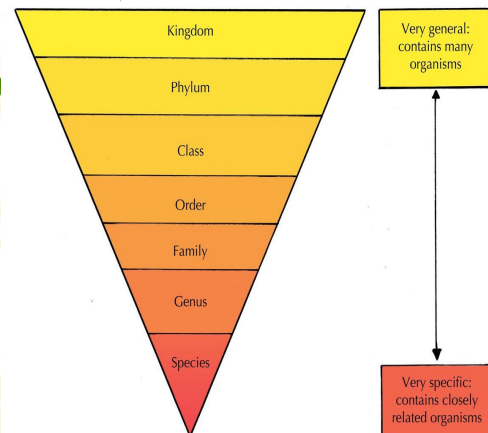
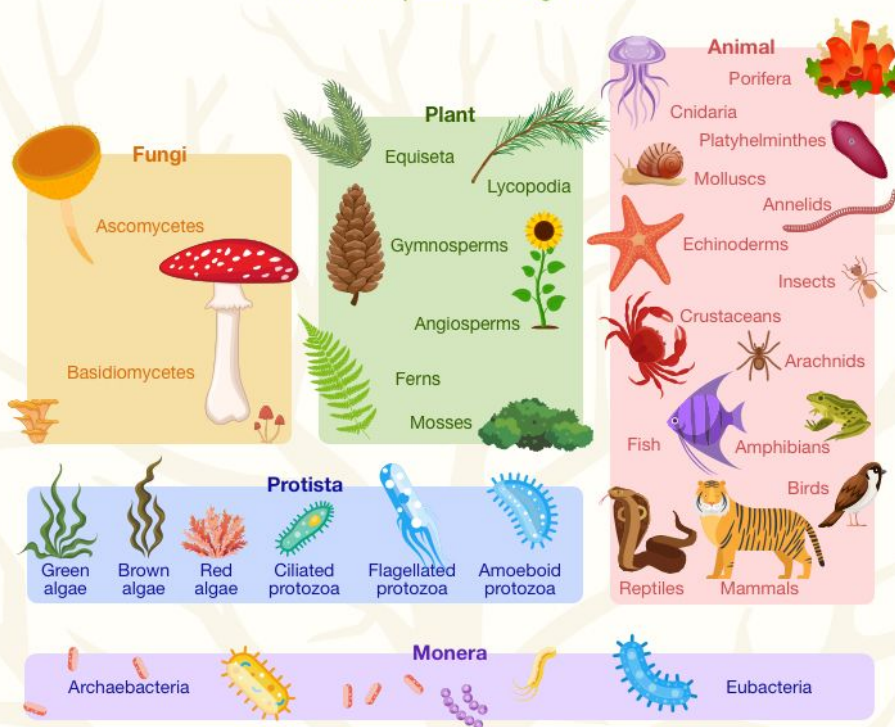
How does classification support scientific knowledge?

Substantive Knowledge

To know how living things are classified into broad groups using classification systems and keys.



The kingdoms of living things and their species at a glance



Think of a living thing...how could you use these systems to classify what kingdom it belongs to?

To work scientifically to classify living things using systems and keys.

How can you be sure you are accurate in your classification choice/ decision?

Core vocabulary

biomes - a large naturally occurring community of flora and fauna occupying a major habitat e.g. forest or tundra.

variation- the differences between individuals of the same species, caused by genetic and environmental factors

criteria- a principle or standard by which something may be judged or decided.

To give reasons for classifying plants and animals on specific characteristics

Plants can be grouped in a variety of ways; one of these ways depends on how the plant disperses its seeds. Plants have evolved to disperse their seeds in a number of ingenious ways, these include: animal dispersion, wind dispersion, explosion dispersion and water dispersion. If plants are not efficient when dispersing their seeds they could die out and face extinction! Seed dispersal is vital to the success of the plant and plant species.

Look at the images of seed dispersal below. Use the clues provided by each image to group the seeds according to their dispersion method



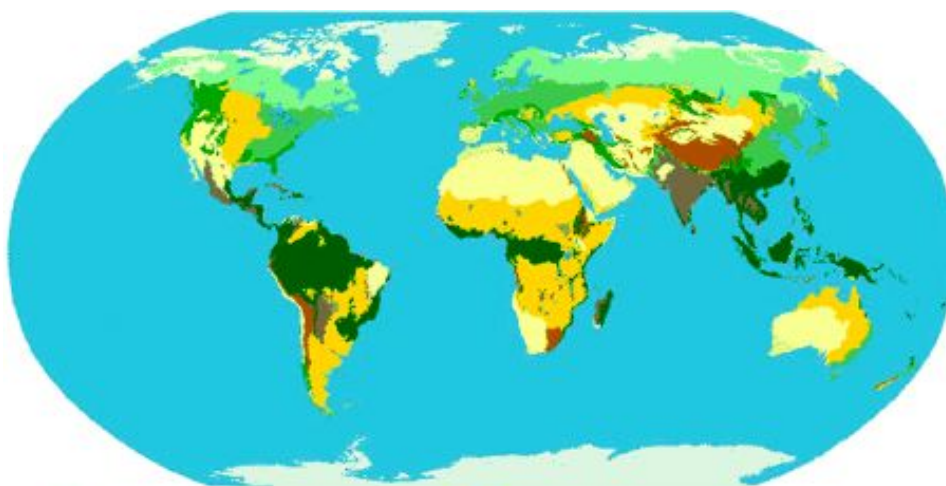
How would you sort the living things below? What would your reasons be? Is there more than one way to sort them?

Can you add another living thing into each of your groups? How did you know what living thing to add?



Scientists classify living things to help explain their relationships to each other and to be able to learn things about newly discovered organisms by noting their similarities to known organisms.

To study living things in different habitats and biomes using classification systems



Can you think of different living things within one of these biomes- how could you classify them?

Are there any living things that can live in more than one habitat?

What characteristic allows them to do this?

Portable knowledge:

Living things can be classified into broad groups using a classification key