

## Year 3 Rocks- Autumn 1 Term Knowledge Organiser

What should I already know?

Materials can be grouped and compared based on their properties.

National Curriculum objectives:

- Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.
- Describe in simple terms how fossils are formed when things that have lived are trapped within rock.
- Recognise that soils are made from rocks and organic matter.



## Early Civilisation- How did they influence our lives today?

### Key vocabulary

Igneous rock- rock that has been formed from magma or lava.

Sedimentary rock- rock that has been formed by layers of sediment being pressed down hard and sticking together.

Metamorphic rock-rock that has started out as igneous or sedimentary rock but changed due to being exposed to extreme heat or pressure.

Magma-molten rock that remains underground

Lava- molten rock that comes out of the ground.

Sediment-natural solid material that is moved and dropped off in a new place.

Permeable- allows liquid to pass through it

Impermeable- does not allow liquids to pass through it.

Fossilisation-the process by which fossils are made

Palaeontology-the study of fossils

Erosion- when water,wind or ice wears away land

### Knowledge

There are three types of naturally occurring rock:igneous, sedimentary and metamorphic.

Soil is the uppermost layer of the Earth. It is a mixture of different things:

\*minerals (they come from finely broken-down rock)

\*air

\*water

\*organic material (including living and dead plants and animals)

Process of fossilisation:

\*An animal dies and gets covered with sediments which eventually become rock.

\*More layers of rock cover it. Only hard parts of the creature remain eg bones,shells and teeth.

\*Over thousands of years, sediment might enter the mould to make a cast fossil. Bones may change to mineral but will stay the same shape.

\*Changes in sea level take place over a long period.

\*An erosion and weathering take place,eventually the fossils become exposed.

	Smooth rocks	Rough rocks
Pale rocks		
Dark rocks		



### Skills and enquiry

Linked with work in geography, pupils should explore different kinds of rocks and soils, including those in the local environment. Pupils might work scientifically by: observing rocks, including those used in buildings and gravestones, and exploring how and why they might have changed over time; using a hand lens or microscope to help them to identify and classify rocks according to whether they have grains or crystals, and whether they have fossils in them. Pupils might research and discuss the different kinds of living things whose fossils are found in sedimentary rock and explore how fossils are formed. Pupils could explore different soils and identify similarities and differences between them and investigate what happens when rocks are rubbed together or what changes occur when they are in water. They can raise and answer questions about the way soils are formed.

## Year 3 Light- Autumn 2 Term Knowledge Organiser

### What should I already know?

Pupils should be aware of ways to protect and look after our bodies and have skills from Year 2 of finding links and patterns.

## Why Africa is a continent and what is significant about its history?

### Key vocabulary

Light- a form of energy that travels in a wave from a source.

Light source- an object that makes its own light

Reflection- the process where light hits the surface of an object and bounces back into our eyes

Reflect- to bounce off

Reflective- a word to describe something which reflects well

Pupil- the black part of the eye which lets light in

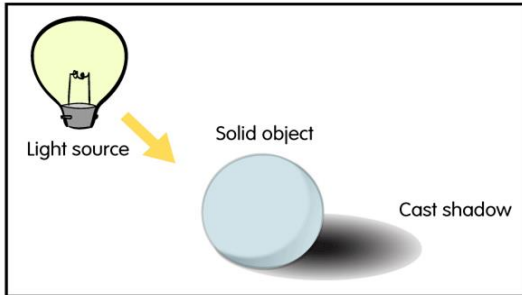
Retina- the retina takes the light the eye receives and changes it into nerve signals to send to the brain

Shadow- an area of darkness where light has been blocked

Opaque- describes objects that do not let any light pass through them.

Translucent- describes objects that let some light through, but scatter the light so we can't see through them properly.

Transparent- describes objects that let light travel through them easily, meaning that you can see through the object.



### National Curriculum objectives:

- recognise that they need light in order to see things and that dark is the absence of light
- notice that light is reflected from surfaces
- recognise that light from the sun can be dangerous and that there are ways to protect their eyes
- recognise that shadows are formed when the light from a light source is blocked by a solid object
- find patterns in the way that the size of shadows change.



### Knowledge

We need light to be able to see things. Light travels in a straight line. When light hits an object, it's reflected. If the reflected light hits our eyes, we can see the object. Some surfaces and materials reflect light well, others do not.

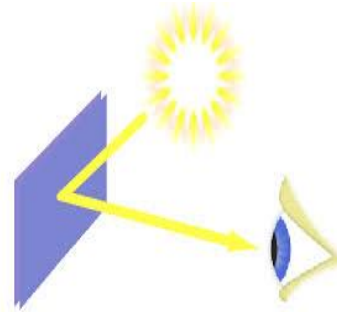
Reflective surfaces and materials are useful for things like hi-vis jackets and cat's eyes on roads.

Mirrors reflect light very well, so they create a clear image. An image in a mirror appears to be reversed.

The surfaces that reflect light best are smooth, shiny and flat.

Pupils control the amount of light entering the eyes. If too much light enters, then it can damage the retina. To help protect the eyes, you can wear a hat with a wide brim and sunglasses with a UV rating.

When the light source is directly above the object, the shadow will be directly underneath. When a light source is to one side of an object, the shadow will appear on the opposite side. The shadow will also be longer.



### Skills and enquiry

Pupils should explore what happens when light reflects off a mirror or other reflective surfaces, including playing mirror games to help them to answer questions about how light behaves. They should think about why it is important to protect their eyes from bright lights. They should look for, and measure, shadows, and find out how they are formed and what might cause the shadows to change. Pupils should be warned that it is not safe to look directly at the Sun, even when wearing dark glasses. Pupils might work scientifically by: looking for patterns in what happens to shadows when the light source moves or the distance between the light source and the object changes.

## Year 3 Animals including humans- Spring Term Knowledge Organiser

### What should I already know?

Animals can be split into different groups, all animals have basic needs that have to be met in order for them to survive. Humans and other animals need to stay healthy, by exercising, eating a balanced diet and being hygienic

### National Curriculum objectives:

- identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat
- identify that humans and some other animals have skeletons and muscles for support, protection and movement.

### Knowledge

Unlike plants, animals cannot create their own food. They get nutrition from what they eat. This is because animals do not have chlorophyll, like plants do. Plants are called producers and animals are called consumers.

Types of nutrition:

The skeleton is a system of bones to help support your body. It is also important for movement as muscles are attached to the bones. The skeleton also helps to protect parts of the body eg heart and lungs.

The muscular skeleton enables movement as muscles contract. They are important for maintaining posture. Some move by themselves eg the heart- these are involuntary



### Key vocabulary

Nutrients-substances that animals need to stay alive and healthy

Carbohydrates-starchy foods

Protein-helps the body repair itself

Saturated fats-types of fat considered to be less healthy that should only be eaten in small amounts

Unsaturated fats- fats that give you energy, vitamins and minerals

Fibre-helps our digestive system

Vitamins and minerals-found in fruits and vegetables

Vertebrates-animals with backbones

Invertebrates- animals without backbones

Muscles- soft tissues in the body that contract and relax to cause movement

Tendons- cords hat join muscles to bones

Joints- areas where two or more bones are fitted together



### Skills and enquiry

Pupils should continue to learn about the importance of nutrition and should be introduced to the main body parts associated with the skeleton and muscles, finding out how different parts of the body have special functions. Pupils might work scientifically by: identifying and grouping animals with and without skeletons and observing and comparing their movement; exploring ideas about what would happen if humans did not have skeletons. They might compare and contrast the diets of different animals (including their pets) and decide ways of grouping them according to what they eat. They might research different food groups and how they keep us healthy, and design meals based on what they find out.

## Year 3 Forces and magnets-Summer 1 Term Knowledge Organiser

### What should I already know?

Children learn in Year 2 learn how to group and compare materials based on their properties.

## Why did the Anglo-Saxons and Scots want to settle in Britain?

### Key vocabulary

Forces- a push or a pull

Friction- a force that acts between two surfaces or objects that are moving or trying to move across each other

Magnet- an object which produces a magnetic force that pulls certain objects towards it

Magnetic field-Objects which are attracted to a magnet are magnetic. Objects containing iron, nickel or cobalt metals are magnetic

Poles- north and south poles are found at different ends of a magnet

Repel-repulsion is a force that pushes objects away

Attract- attraction is a force that pulls objects together

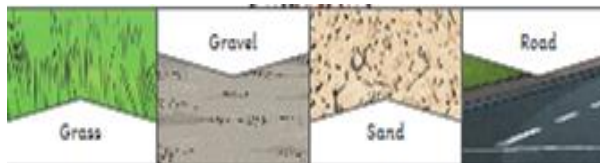
### National Curriculum objectives:

- > compare how things move on different surfaces
- > notice that some forces need contact between two objects, but magnetic forces can act at a distance
- > observe how magnets attract or repel each other and attract some materials and not others
- > compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials
- > describe magnets as having two poles
- > predict whether two magnets will attract or repel each other, depending on which poles are facing.

### Knowledge

Different surfaces create different amounts of friction. The amount of friction created by an object moving over a surface depends on the roughness of the surface and the object, and the force between them. For example, when riding a bike, the driving force pushes the bicycle making it moves whereas friction pushes the bicycle, slowing it down. Forces change the motion of an object. They will either make it start to move, speed up, slow down or stop.

A magnetic field is invisible. Magnets are useful and can be used in compasses- a compass always points north-south on Earth. Not all metals are magnetic. Objects that do not contain iron,nickel or cobalt are not magnetic.



### Types of Force



Friction Force



Gravity Force



Applied Force



Drag Force



Spring Force



Magnetic Force



Tension Force



Buoyant Force

### Skills and enquiry

Pupils should observe that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary (for example, opening a door, pushing a swing). They should explore the behaviour and everyday uses of different magnets (for example, bar, ring, button and horseshoe). Pupils might work scientifically by: comparing how different things move and grouping them; raising questions and carrying out tests to find out how far things move on different surfaces and gathering and recording data to find answers their questions; exploring the strengths of different magnets and finding a fair way to compare them; sorting materials into those that are magnetic and those that are not; looking for patterns in the way that magnets behave in relation to each other and what might affect this, for example, the strength of the magnet or which pole faces another; identifying how these properties make magnets useful in everyday items and suggesting creative uses for different magnets.

## Year 3 Plants- Summer 2 Knowledge Organiser

### What should I already know?

In Year 2, children learnt about what plants require to live and grow.

## Why should rainforests be important to us all?

### Key vocabulary

**Roots**-these anchor the plant to the ground and absorb water and nutrients from the soil

**Stems**- this holds the plant up and carries water and nutrients from the soil to the leaves. A trunk is the stem of a tree

**Leaves**- these make food for the plant using sunlight and carbon dioxide from the air

**Flowers**- makes seeds to grow into new plants. Their petals attract pollinators to the plant.

**Nutrients**- substances needed by living things to grow and survive. Plants get nutrients from the soil and also make their own food in their leaves

**Evaporation**- when a liquid turns into a gas

**Fertilisation**- when the male and female parts of the flower have mixed in order to make seeds for new plants

**Petal**- the brightly coloured part of the flower that attracts insects to pollinate the plant

**Stamen**- the male parts of the flower. The stamen is made up of the anther and filament. The filament's job is to hold up the anther. The job of the anther is to make the pollen.

**carpel**(pistil)-the female parts of the flower. Made up of the stigma, style and ovary.

The job of the style is to hold up the stigma. The stigma collects the pollen when a pollinator brushes by it. The ovary contains the ovules, which are the part of the flower that gets fertilised and eventually becomes the new seed.

**sepal**-Leaf-like structures that protect the flower and petals before they open out.

**pollination**-When pollen (a fine powdery substance produced by a flowering plant) is moved from the male anther of a flower to the female stigma.

**pollinator**-Animals or insects which carry pollen between plants. Examples include birds, bees and bats.

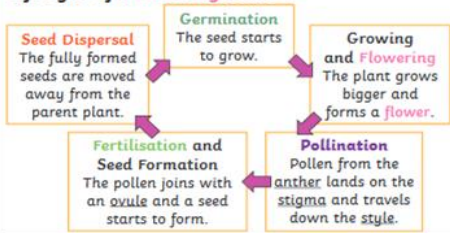
**Germination**- when a seed starts to grow

**Seed dispersal**- a method of moving the seeds away from the parent plant so that the seeds have the best chance of survival.

### National Curriculum objectives:

- identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
- explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant
- investigate the way in which water is transported within plants
- explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

### Life Cycle of a Flowering Plant



### Knowledge

How water moves through a plant:

The roots absorb water from the soil.

The stem transports water to the leaves.

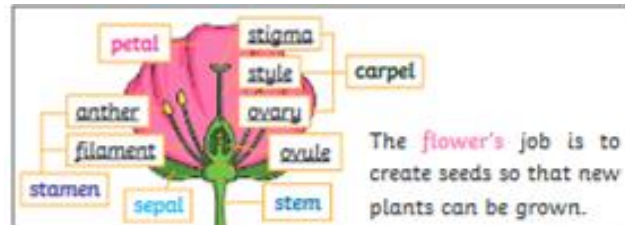
Water evaporates from the leaves.

This evaporation causes more water to be sucked up the stem.

The water is sucked up the stem like water being sucked up through a straw.

To grow, plants need water, light, nutrients, air and room to grow.

Seeds can be dispersed by water, shaking, dropping, carrying, eating or bursting.



The flower's job is to create seeds so that new plants can be grown.

### Skills and enquiry

Pupils should be introduced to the relationship between structure and function: the idea that every part has a job to do. They should explore questions that focus on the role of the roots and stem in nutrition and support, leaves for nutrition and flowers for reproduction. Note: Pupils can be introduced to the idea that plants can make their own food, but at this stage they do not need to understand how this happens. Pupils might work scientifically by: comparing the effect of different factors on plant growth, for example, the amount of light, the amount of fertiliser; discovering how seeds are formed by observing the different stages of plant life cycles over a period of time; looking for patterns in the structure of fruits that relate to how the seeds are dispersed. They might observe how water is transported in plants, for example, by putting cut, white carnations into coloured water and observing how water travels up the stem to the flowers.