Year 3 Science Curriculum

Autumn Term

Rocks

National Curriculum Objectives

Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. (1)
Describe in simple terms how fossils are formed when things that have lived are trapped within rock. (2)
Recognise that soils are made from rocks and organic matter. (3)
Providing further depth and breadth of understanding (4)

Direct Knowledge

All knowledge linked to prior learning
that beneath all surfaces there is rock. **(1)**
that there are three types of naturally occurring rock: **(1)** - igneous; sedimentary; metamorphic.
that rocks can also be man-made and the scientific name for these is anthropic rocks.
that anthropic rocks include: concrete, brick, coade stone.
that different types of rock have different simple characteristics. **(1)** - Consider: appearance (colour, shape, size, luster [how shiny it is], etc.), hardness, texture.
that rocks can be grouped according to observable characteristics. **(1)**
that differences between rocks can be identified by testing. **(1)**
that igneous rock is rock that has been formed from magma or lava. **(1)**
that obsidian, pumice, granite and basalt are all types of igneous rock. **(1)**
that sedimentary rock is rock that has been formed by layers of sediment being pressed down hard and sticking together. **(1)**
that chalk, shale, sandstone and limestone are all types of sedimentary rock. **(1)**
that metamorphic rock is rock that started out as igneous or sedimentary rock but changed due to being exposed to extreme heat or pressure. **(1)**
that marble, quartzite and slate are all types of metamorphic rock. **(1)**
that some rocks are permeable and others are impermeable. **(1)**
that rocks are chosen for particular uses because of their characteristics. **(4)**

Common misconceptions

Some children may think:

• rocks are all hard in nature

• rock-like, man-made substances such as concrete or brick are rocks

• materials which have been polished or shaped for use, such as a granite worktop, are not rocks as they are no longer 'natural'

• certain found artefacts, like old bits of pottery or coins, are fossils

• a fossil is an actual piece of the extinct animal or plant • soil and compost are the same thing. Apply

Light

National Curriculum Objectives

Recognise that they need light in order to see things and that dark is the absence of light. (1)
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. (2)
Recognise that shadows are formed when the light from a light source is blocked by a solid object.(3)
Find patterns in the way that the size of shadows change. (4)
Providing further depth and breadth of understanding (5)

Direct Knowledge

All knowledge linked to prior learning
that light is essential for seeing things. (1)
that light is reflected from surfaces and this allows us to see them. (2)
that surfaces that reflect light the best are smooth, shiny and flat. (2)
that shiny objects need a light source if they are to shine. (2)
that shiny objects are not light sources. (2)
that when it is dark other senses can be used to help us find things and identify things. (6)
that there are many sources of light. (6)
that some sources of light are natural and others are man-made. (6)
that the Sun is the main source of light for the Earth. (3)
that light sources vary in brightness. (2)
that sources of light show up best at night-time. (1)
that objects cannot be seen in darkness. (1)
that it is dangerous to look at the sun because it is so bright. (3)
that the pupils control the amount of light entering the eyes. (6)
that if too much light enters the eye, it can damage the retina. (6)
that humans can protect their eyes from the sun by wearing a wide brimmed hat or sunglasses with a high UV rating. (3)
that you should never look directly at the Sun, regardless of the protection that you wear. (3)
that shadows are formed when light travelling from a source is blocked. (4)

that shadows are similar in shape to the objects forming them. (5)
that the size of a shadow changes as the distance between the object blocking the light and light source changes. (5)
that opaque objects / materials do not let light through and transparent objects / materials let a lot of light through. (4)
that different materials cast different shades of shadow. **(5)**
that shadows of objects in sunlight change over the course of the day. **(5)**
that shadows change in length and position throughout the day if the sun is the light source. **(5)**
that when the Sun / light source is behind us, our shadow is in front. **(5)**
that the higher the Sun appears in the sky, the shorter the shadow. **(5)**
that the lower the Sun appears in the sky, the longer the shadow. **(5)**

Common misconceptions

Some children may think:

• we can still see even where there is an absence of any light

• our eyes 'get used to' the dark

• the moon and reflective surfaces are light sources

• a transparent object is a light source

• shadows contain details of the object, such as facial features on their own shadow • shadows result from objects giving off darkness.

Spring

Animals inc Humans

National Curriculum Objectives

	Identify the

Direct Knowledge

All knowledge linked to prior learning

Common misconceptions

Some children may think:

• certain whole food groups like fats are 'bad' for you

• certain specific foods, like cheese are also 'bad' for you

• diet and fruit drinks are 'good' for you

• snakes are similar to worms, so they must also be invertebrate

• invertebrates have no form of skeleton.

Forces

National Curriculum Objectives

Compare how things move on different surfaces. (1)
Notice that some forces need contact between two objects, but magnetic forces can act at a distance. (2)
Observe how magnets attract or repel each other and attract some materials and not others. (3)
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.(4)
Describe magnets as having two poles. (5)
Predict whether two magnets will attract or repel each other, depending on which poles are facing.(6)
Providing further depth and breadth of understanding (7)

Direct Knowledge

All knowledge linked to prior learning
that forces change the motion (movement) of an object. **(2)**
that an object's motion may change by going faster, slowing down, or changing direction. **(2)**
that when things speed up, slow down or change direction, there is a cause [for example, a push or a pull]. **(1)**
that both pushes and pulls are examples of forces. **(1)**
that forces act in different directions. **(7)**
that when objects [for example, a spring, a table] are pushed or pulled, an opposing pull or push can be felt. **(1)**
that forces can be measured in different ways **(show a Newton meter but do not go into detail or investigate – covered in Y5)**. **(7)**
that some objects move more easily (smoother, faster) on some surfaces than others. **(1)**
that different surfaces create different amounts of friction. **(1)**
that friction is a force that acts between two surfaces that are moving, or trying to move, across each other. **(1)**
that the amount of friction created by an object moving over a surface depends on the roughness of the surface and the object, and the forces moving between them. **(1)**
that different materials [for example, glass, wood, wool] create different amounts of friction and this influences what these materials are used for. **(7)**

that there are contact and non-contact forces. **(2)**
that friction is a contact force but magnetism is a non-contact force. **(2)**
that a magnet is an object which produces magnetic force, in turn pulling magnetic objects towards it. **(3)**
that a magnetic field is the area around a magnet in which magnetic objects are pulled towards the magnet. **(3)**
that magnetic objects are attracted to a magnet whilst non-magnetic materials are not. **(4)**
that materials containing iron, nickel or cobalt metals are easiest to magnetise. **(4)**
that some metals may contain different amounts of iron, nickel or cobalt metals mixed with other metals (and are therefore alloys) and this affects how easy they are to magnetise. **(7)**
that magnets have two poles. **(5)**
that the north pole of one magnet is attracted to the south pole of another and vice versa (opposite poles attract). **(6)**
that the north/south pole of one magnet is repelled by the north/south pole of another magnet (like poles repel). **(6)**
that a needle in a compass is a magnet. **(7)**
that a compass always points north-south on earth. **(7)**
that forces change the motion (movement) of an object. **(2)**

Common misconceptions

Some children may think:

• the bigger the magnet the stronger it is

• all metals are magnetic.

Summer

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.
Providing further depth and breadth of understanding

All knowledge linked to prior learning (see page 3 for linked objectives).
that plants need healthy roots, leaves and stems to grow well. **(1)**
that the roots, stems and leaves of a plant may vary in shape, size and general appearance. **(5)**
that plants need water, but not unlimited water, for healthy growth, but this varies from plant to plant. **(2)**

that water is taken in by a plant when the roots absorb it from the soil (N.B. plants may grow in other matter, aside from soil). **(1/3)**
that too much water can be harmful to a plant. **(5)**
that plants need light for healthy growth, but this varies from plant to plant. **(2)**
that plant growth is affected by temperature, but this varies from plant to plant. **(2)**
that plants need nutrients from the soil for healthy growth, but this varies from plant to plant. **(2)**
that plants need sufficient supply of air in order to grow well, but this varies from plant to plant. **(2)**
that plants need adequate room in order for them to grow well, but this varies from plant to plant. **(2)**
that the appearance of plants may change if the conditions in which they are growing change. **(5)**
that water is transported through the stem to other parts of the plant. **(3)**
that water evaporates from the leaves of a plant. **(3)**
that evaporation of water through the leaves of a plant causes more water to be absorbed by the roots. **(3)**
that flowering plants have a life cycle, inc. many different stages. **(4)**
that the first stage of a flowering plant's life cycle is germination. **(4)**
that germination is when a seed or bulb starts to grow. **(4)**
that although plants grow from seeds or bulbs, some of these may not grow whatever conditions they are in. **(2)**
that the next stage of a flowering plant's life cycle is growing and flowering. **(4)**
that a flower is made up of many different parts and these include: petal, stamen, anther, filament, carpel (pistil), stigma, style, ovary, ovules and sepal. **(1)**
that the next stage of a flowering plant's life cycle is pollination. **(4)**
that pollination is when pollen from the anther lands on the stigma and travels down the style. **(4)**
that pollination may be caused by animals or insects, or may take place artificially. **(4)**
that the next stage of a flowering plant's life cycle is fertilisation and seed formation. **(4)**
that fertilisation and seed formation is when pollen joins with an ovule and a seed starts to form. **(4)**
that the final stage of a flowering plant's life cycle is seed dispersal. **(4)**
that seed dispersal is when a full formed seed is moved away from a parent plant. **(4)**
that a seed may be dispersed by: wind, water, animals, fire, or explosion. **(4)**

Common misconceptions

Some children may think:

• plants eat food

• food comes from the soil via the roots

• flowers are merely decorative rather than a vital part of the life cycle in reproduction

• plants only need sunlight to keep them warm

• roots suck in water which is then sucked up the stem.