



# Year 3: Science



## Block 1 – Chemistry Rocks and Fossils

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
<p>In Year 3, pupils are taught to compare, and group together different kinds of rocks based on their appearance and simple physical properties. Pupils also learn to describe how fossils form and that soils are made from rocks and organic matter.</p>	<p>Pupils will learn:</p> <ul style="list-style-type: none"> <li>• <b>Rocks can be grouped by their appearance and simple physical properties.</b> <ul style="list-style-type: none"> <li>- Rocks are solid materials made up of minerals.</li> <li>- There are three types of rock: sedimentary, igneous, and metamorphic.</li> <li>- Permeable rocks allow water and air to pass through them.</li> <li>- The properties of different rocks make them suitable for different uses.</li> </ul> </li> <li>• <b>Fossils are formed when things that have lived are trapped within rock.</b> <ul style="list-style-type: none"> <li>- Fossils are the remains or trace of a plant or an animal from a long time ago.</li> </ul> </li> <li>• <b>Soils are made from rocks and organic matter.</b> <ul style="list-style-type: none"> <li>- Soil is a mixture of tiny particles of rock, dead plants and animals, air, and water.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• DC1: Ask relevant questions and use different types of scientific enquiries to answer them.</li> <li>• DC3: Use a range of equipment.</li> <li>• DC4: Make careful observations.</li> <li>• DC5: Record findings using simple scientific language, drawings, and labelled diagrams.</li> <li>• DC7: Use results to draw simple conclusions and make predictions.</li> </ul>

Sequence:

This unit follows on from the Year 1 and Year 2 ‘Materials’ units. Pupils know how to identify, sort and classify materials based on their properties. They also know that the properties of materials are why certain materials are chosen for a specific purpose and that some properties cannot be identified without investigating the material in question. Pupils apply this knowledge to support them in understanding rocks, fossils and soils. This unit is deliberately placed alongside the ‘Stone Age’ history unit so links can be made between subjects.

## Block 2 – Biology

### Animals including humans – Skeletons and Muscles

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
<p>In Year 3, pupils are taught to identify that animals, including humans, need the right types and amounts of nutrition and that they cannot make their own food. Pupils are also taught to identify that humans and some animals have skeletons and muscles for support, protection and movement.</p>	<p>Pupils will learn:</p> <ul style="list-style-type: none"> <li>● <b>Animals, including humans, need the right types and amount of nutrition.</b> <ul style="list-style-type: none"> <li>- Nutrition is the process of giving your body the food it needs to grow and work properly.</li> </ul> </li> <li>● <b>Animals cannot make their own food; they get nutrition from what they eat.</b> <ul style="list-style-type: none"> <li>- Animals can be herbivores, carnivores, or omnivores.</li> </ul> </li> <li>● <b>Humans and some other animals have skeletons and muscles for support, protection, and movement.</b> <ul style="list-style-type: none"> <li>- The human skeleton is a structure of bones that supports the human body.</li> <li>- The human skeleton has three main functions: to support the body, protect vital organs, and allow movement.</li> <li>- Muscles pull on your bones to allow you to move.</li> <li>- A vertebrate is an animal with a backbone.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● DC1: Ask relevant questions and use different types of scientific enquiries to answer them.</li> <li>● DC3: Use a range of equipment.</li> <li>● DC4: Make careful observations.</li> <li>● DC5 Record findings using simple scientific language, drawings, and labelled diagrams.</li> <li>● DC6: Present data as a bar chart.</li> <li>● DC7: Use results to draw simple conclusions and make predictions.</li> </ul>

Sequence:

In Year 1, pupils learnt how to identify a range of different common animals – they should be able to describe the structure of a range of different vertebrate and identify and label basic parts of the human body. Pupils know that animals can be classified as carnivores, herbivores and omnivores. In Year 2 pupils found out that animals obtain their food from plants and other animals – they also looked at and learnt to read simple food chains.

## Block 3 – Physics

### Light and Shadows

**Scientist Focus: Thomas Edison**

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
<p>In Year 3, pupils are taught to recognise that they need light to see things and that dark is the absence of light. They are also taught to notice that light is reflected from surfaces, to recognise that light from the sun can be dangerous and that</p>	<p>Pupils will learn:</p> <ul style="list-style-type: none"> <li>● <b>Light is needed to see things.</b> <ul style="list-style-type: none"> <li>- Objects that give off light are called light sources.</li> </ul> </li> <li>● <b>Darkness is the absence of light.</b></li> <li>● <b>Light is reflected from surfaces.</b> <ul style="list-style-type: none"> <li>- Light travels in straight lines.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● DC1: Ask relevant questions and use different types of scientific enquiries to answer them.</li> <li>● DC3: Use a range of equipment.</li> <li>● DC4: Make careful observations.</li> </ul>

<p>there are ways we can protect our eyes from the sun. In addition, pupils are taught to recognise that shadows are formed when the light from a light source is blocked by an opaque object and to find patterns in the way that shadows change.</p>	<ul style="list-style-type: none"> <li>- Reflective materials are smooth and shiny.</li> <li>- A mirror produces a reflected image, called a reflection.</li> <li>• <b>Light from the sun can be dangerous, and eyes should be protected from sunlight.</b> <ul style="list-style-type: none"> <li>- Ultraviolet (UV) light can result in sunburn, skin ageing, and illness.</li> </ul> </li> <li>• <b>Shadows are formed when the light from a light source is blocked by an opaque object.</b> <ul style="list-style-type: none"> <li>- Transparent materials allow all light to pass through them whereas opaque materials allow no light to pass through them.</li> <li>- Shadows are formed when light is blocked by an object.</li> </ul> </li> <li>• <b>There are patterns in the way that the size of shadows change.</b> <ul style="list-style-type: none"> <li>- The closer an object is to a light source, the bigger the shadow becomes.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• DC5: Record findings using simple scientific language, drawings, and labelled diagrams.</li> <li>• DC7: Use results to draw simple conclusions and make predictions.</li> <li>• DC8: Use models to represent a scientific concept or process.</li> </ul>
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Sequence:

This is first time pupils have looked at light since Year 1 and they know that the hours of daylight change throughout the year, depending on the season. Pupils also studied materials in Year 1 and Year 2: the properties and uses of them. Earlier in Year 3, pupils looked at whether certain materials were magnetic and within this unit they will investigate a new property – whether certain materials are transparent, translucent or opaque. This means the knowledge within this unit is also building pupils’ knowledge of materials (chemistry).

### Block 4 and 5 – Biology Plants

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
<p>In Year 3, pupils should be taught to identify and describe the functions of the different parts of flowering plants and that pupils should be taught to explore the requirements of plants for life and growth and investigate the way in which water is transported in plants. The National Curriculum also states that pupils should explore the part that flowers play in the life cycle of flowering plants.</p>	<p>Pupils will learn:</p> <ul style="list-style-type: none"> <li>• <b>Flowering plants have roots, a stem/trunk, leaves, and flowers.</b></li> <li>• <b>Plants require air, light, water, nutrients from the soil, and room to grow.</b> <ul style="list-style-type: none"> <li>- All plants need five things for life: light, water, air, nutrients, and space to grow.</li> <li>- Plants produce their own food using their leaves (by photosynthesis).</li> <li>- Roots anchor a plant into the ground and take in water and nutrients from the soil.</li> </ul> </li> <li>• <b>Water is transported within plants in vessels.</b></li> </ul>	<ul style="list-style-type: none"> <li>• DC1: Ask relevant questions and use different types of scientific enquiries to answer them.</li> <li>• DC4: Make careful observations.</li> <li>• DC5: Record findings using simple scientific language, drawings, and labelled diagrams.</li> <li>• DC7: Report on findings from enquiries, including oral and written explanations.</li> </ul>

	<ul style="list-style-type: none"> <li>- A stem supports the plant, holds the leaves towards the light, and transports water and nutrients from the roots to the rest of the plant in vessels.</li> <li>• <b>Flowers play an important role in the life cycle of flowering plants, including pollination, seed formation, and seed dispersal.</b> <ul style="list-style-type: none"> <li>- Pollination is the process by which pollen is transferred from an anther to a stigma.</li> <li>- There are five stages in the life cycle of a plant: germination, growing and</li> </ul> </li> </ul>	
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Sequence:

This unit builds on the previous plant units in Year 1 and Year 2. In Year 1 pupils were taught to identify and name a variety of common wild and garden plants and to identify and describe the basic structure of a variety of common flowering plants. Pupils examined familiar plants, identified them, grouped them and were able to draw diagrams showing the parts of different plants and trees. They know how plants change over time – that leaves fall off trees and buds appear and open.

In Year 2, pupils identified a variety of plants in their habitats and described their basic needs. They also found out that plants play an important part in a food chain. Pupils observed and described how seeds and bulbs grow into mature plants and found out that plants need water, light and a suitable temperature to grow healthily. This unit has been deliberately placed alongside the geography ‘Contrasting Climates’ unit so that links can be made between the subjects.

## Block 6 – Physics Forces

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
<p>In Year 3, pupils should be taught to compare how things move on different surfaces and notice that some forces need contact between two objects whilst magnetic forces can act at a distance. Pupils also need to observe how magnets attract or repel each other and attract some materials but not others, and describe magnets as having two poles predicting whether two magnets will attract or repel each other depending on which way the poles are facing. In addition, pupils should be taught to compare and group together a variety of everyday materials based on whether they are attracted to a magnet and to identify some magnetic materials.</p>	<p>Pupils will learn:</p> <ul style="list-style-type: none"> <li>• <b>Objects experience different amounts of friction on different surfaces.</b> <ul style="list-style-type: none"> <li>- When a force is applied to an object, it will cause the object to change its speed, direction, or shape.</li> <li>- Friction is a force that slows down moving objects.</li> </ul> </li> <li>• <b>Some forces need contact between two objects, but magnetic forces can act at a distance.</b></li> <li>• <b>Some materials are magnetic, meaning they are attracted to a magnet.</b> <ul style="list-style-type: none"> <li>- Magnetic materials are usually metals. Iron, nickel, and cobalt are the only naturally occurring magnetic metals.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• DC3: Use a range of equipment.</li> <li>• DC4: Make careful observations.</li> <li>• DC5: Record findings using simple scientific language, drawings, and labelled diagrams.</li> <li>• DC7: Use results to draw simple conclusions and make predictions.</li> <li>• DC8: Use models to represent a scientific concept or process.</li> </ul>

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|  | <ul style="list-style-type: none"><li>- You can investigate the strength of different magnets using <b>magnetic materials</b>.</li><li>• <b>Magnets have two poles.</b><ul style="list-style-type: none"><li>- All magnets have two poles (a north and a south pole) where the magnetic forces are the strongest.</li><li>- Magnets have a number of uses, including inside a compass to help people to know the direction in which they are travelling.</li></ul></li><li>• <b>Magnets can attract or repel each other, depending on which poles are facing each other.</b></li></ul> |  |
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Sequence:

This is the second physics unit in Year 3 however it is the first time pupils have studied forces and magnets. This unit does not directly build on a previous unit but is expanding pupils' understanding of how objects can be classified in different ways – expanding their vocabulary with the terms magnetic and non-magnetic. Pupils will not study magnets again in depth during Key Stage 2 but will revisit forces and study them in much more depth in Year 5.