



Year 3: Science

Autumn Term – Biology

Animals including humans – Skeletons and Muscles

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
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.	<ul style="list-style-type: none"> • what a human skeleton looks like • what the function of the human skeleton is in terms of movement, support and protection • how bones and muscles work together • the different types of muscle found within our bodies • how skeletons vary between different animals – endoskeletons, exoskeletons and hydrostatic skeletons • what nutrition is and how it is obtained through eating different food groups • how different animals get the nutrition they need 	<ul style="list-style-type: none"> • grouping and classifying • identifying similarities and differences related to simple • setting up simple, practical enquiries and fair tests • making careful observations, taking accurate measurements • recording findings using simple scientific language, drawings, labelled diagrams and tables • using results to draw simple conclusions

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.

Autumn Term – Chemistry

Rocks and Fossils

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
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.	<ul style="list-style-type: none"> • what rocks are and how they can be classified as either sedimentary, igneous or metamorphic • the properties of different types of rocks – in particular, durability and permeability • how different rocks can be used and how those uses are based upon their properties • what fossils are and what they can tell us about the past • who Mary Anning was • the process of fossilisation and the different types of fossils • what soil is, what soil is made from and whether all soils are the same 	<ul style="list-style-type: none"> • classifying and presenting data in a variety of ways to help in answering questions • asking relevant questions and using different types of scientific enquiries to answer them • setting up simple practical enquiries • recording findings using simple scientific language, drawings, labelled diagrams and tables • using results to draw simple conclusions • reporting on findings from enquiries – written or oral

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.

Spring Term – Physics Light and Shadows

Scientist Focus: Thomas Edison

Overview of unit:	Substantive Knowledge:	Disciplinary Knowledge:
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 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.	<ul style="list-style-type: none">• there are different sources of light and those sources can be natural or man-made• who Thomas Edison was and why he is considered significant• darkness is the absence of light and light allows us to see things• light is reflected from surfaces• some objects are opaque, some are transparent, and some are translucent• shadows are formed when light is blocked by an opaque object• position, shape and size of a shadow can be varied• light is dangerous and we can take steps to protecting our ourselves from the Sun• the different uses of mirrors	<ul style="list-style-type: none">• asking relevant questions and using different types of scientific enquiries to answer them• setting up simple practical enquiries, comparative and fair tests• recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables• reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions• using results to draw simple conclusions• using straightforward scientific evidence to answer questions or to support their findings.

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).

Summer Term – 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>	<ul style="list-style-type: none"> • what a plant needs to grow • the impact of fertiliser on a growing plant • plants have roots to absorb water and nutrients but also to anchor the plant in the ground • plants have a stem as it is needed to support the plant and transport water from the roots • plants have leaves because they play an important part in how a plant produces its own food • that flowering plants produce flowers as an important part of their lifecycle • the stages in the lifecycle of a flowering plant 	<ul style="list-style-type: none"> • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations • gathering, recording and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions • using straightforward scientific evidence to answer questions or to support their findings.

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 'Biomes and Climate Zones' unit so that links can be made between the subjects.

Summer Term – 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</p>	<ul style="list-style-type: none"> • what forces are in terms of pushes and pulls • that gravity and friction are forces • how objects move on different surfaces • what a magnet is and what different magnets look like • that a magnet has two poles 	<ul style="list-style-type: none"> • setting up simple practical enquiries, comparative and fair tests • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions • recording findings using simple scientific language, drawings,

<p>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>	<ul style="list-style-type: none"> • how magnets react to each other • materials can be magnetic or non-magnetic • how to investigate whether a material is magnetic • how magnets are used in real-life scenarios to make some tasks much easier 	<p>labelled diagrams, keys, bar charts, and tables</p> <ul style="list-style-type: none"> • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions • using results to draw simple conclusions and make predictions • using straightforward scientific evidence to answer questions or to support their findings.
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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.