How is the science curriculum organised?

The science curriculum is organised around Biology, Physics and Chemistry with working scientifically embedded across all of the unit of work. Working scientifically is ever present within the curriculum design ensuring the children have the disciplinary knowledge required to think and work as a scientist.

How are key strands of learning used?

The key strands within the science curriculum add a further layer of knowledge and understanding to the children's learning. Carefully selected strands provide the children with cumulative knowledge over time around key aspects. This cumulative knowledge will allow the children to understand wider themes to a greater level, being able to reason with thoughts and language. This allows the children to engage in topics of conversation and feel confident with their own knowledge and understanding of these areas. It is through these key strands of learning that the children will be able to recognise and link to other subjects.

Science						
	Autumn Term 1	**Autumn Term 2**	**Spring Term 1**	**Spring Term 2**	**Summer Term 1**	**Summer Term 2**
KS1 Cycle A	Living Things and their Habitats		Materials (y1)	Material (y2)	Plants (y1)	Plants (y2)
KS1 Cycle B	Animals, including **Humans** (y1)	Animals, including **Humans** (y2)	**Animals**, including Humans (y1)	**Animals**, including Humans (y2)	Seasonal Change	
LKS2 Cycle A	Living Things and their Habitats	States of Matter	Animals, including Humans (y3)	Animals, including Humans (y4)	Electricity	
LKS2 Cycle B	Rocks	Light	Forces and Magnets	Sound	Plants	

<table>
<tr><td>KS1.CA.T1</td><td colspan="3">Area of study: Rocks

Unit aims / outcome:
• 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 a rock.
• Recognise that soils are made from rocks and organic matter.</td></tr>
<tr><td colspan="4">Geographical concepts to organise knowledge:
Chemistry
Working Scientifically</td></tr>
<tr><td colspan="4">Key strands of learning:</td></tr>
<tr><td colspan="2">Hierarchical Strands: (see progression)
Soil
Fossil
Rocks</td><td colspan="2">Cumulative Strands:
e.g. environment
(key features throughout NC)</td></tr>
<tr><td>Learning in Reception:</td><td>Tier 2</td><td colspan="2">Tier 3</td></tr>
<tr><td></td><td><u>New</u>
Fossils
Rocks

<u>Review –</u>
Soil
properties</td><td colspan="2"><u>New</u>
Organic matter
Igneous
Sedimentary
metamorphic

<u>Review</u></td></tr>
<tr><td>NC objective:</td><td colspan="3">Vocabulary and crucial knowledge:</td></tr>
<tr><td>Pupils should be taught to:
-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</td><td colspan="3"><u>Context of study:</u>
This unit is the third units where pupils study materials as part of the discipline of chemistry. Pupils have a secure knowledge of the properties of materials and can identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for different uses (KS1.CA.T1.1). Pupils know that squashing, bending, twisting and stretching can change the shapes of some solid objects (KS1.CA.T1.2). This unit also builds on pupils' knowledge of properties of materials as pupils learn about rocks and soils. New learning includes comparing and grouping together different kinds of rocks on the basis of their appearance and simple physical properties. Pupils describe how fossils are formed when things that have lived are trapped within rock and recognise that soils are made from rocks and organic matter. The knowledge acquired of rocks and soils during this unit will help pupils understand the significance of the life and works of palaeontologist Mary Anning. In Key stage 2, (KS2.CA.T1.2) during the forces unit, pupils further develop their knowledge as they 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. Also in Key stage 2 (KS2.CA.T1.2) where pupils study 'states of matter', in terms of solids, liquids and gases.</td></tr>
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from rocks and organic matter	Crucial Knowledge: Rocks To know that the Earth has a solid crust made up of tectonic plates with molten rock beneath. To know that there are three main types of rock: igneous, sedimentary and metamorphic. To know igneous rocks are formed from the heat of lava or magma. They have large crystals. e.g. granite and basalt To know sedimentary rocks are formed from sediment (small pieces of rock and earth that settle at the bottom of a liquid i.e. water being compressed by the weight of the liquid above and cementing over time. They are made of small grains. e.g. Limestone (chalk), coal and sandstone. To know that metamorphic rocks are formerly igneous or sedimentary rocks that have been changed at a chemical level due to intense heat from magma. e.g. marble and slate. To know how to use a magnifying glass to identify features of the rock types. To identify if the rocks have grains or crystals. Fossils Know that a fossil is the hard remains of a prehistoric animal or plant that are found inside a rock Know that fossils are comprised of body fossils (animal bones) and chemical fossils (that contain carbon and prove life once existed such as imprints in the ground and leave trace fossils behind) and understand how fossils are formed. Know that fossils are only found in sedimentary rock and go through the same process of compression and cementation in the ground over long periods of time. Know that it is very rare for living things to become fossilised. Usually after most animals die their bodies just rot away and nothing is left behind. However, under certain special conditions, a fossil can form. Know the sequence of fossil formation as - 1. Animal dies and is buried by sediment 2. Soft parts of the animal decay or decompose 3. More sediment builds up around the animal and is compressed to form rock 4. Bones start to be dissolved by water underground 5. Minerals in the water then turn to rock Know that Mary Anning is famous for finding many important fossils. Know that she was born in 1799 in Lyme Regis, Dorset which is near the coast. Know that 200 million years ago Dorset was beneath the sea. Know that her fossils helped us to understand more about prehistoric animals. Know the term palaeontology means ‘a person who studies fossils’

	Soil Know that soil is a mixture of air, water, broken down rock matter and other organic material (dead or living animal tissue) Know the names of common soil types: sand, clay and silt. Know that sandy soil is dry and gritty, and does not hold onto water. Silty soil is richer in nutrients and smoother to the touch. It has smaller particles (a tiny piece of matter) and it can retain water for longer but will eventually start to lose this. Clay soil has the smallest particles and so absorbs more water. It is silky when wet but smooth and solid when dry. It contains the most nutrients as they cannot escape in water. Know that topsoil is dark in colour and high in organic matter Know that subsoil usually appears to be lighter in colour and has a sticky texture Know that bedrock is the solid rock in the ground which supports all the soil above it. Working Scientifically: Identifying, grouping and classifying To sort and classify rocks based on their simple physical properties and appearance and justify why. How will I be a scientist? • Ask questions: about the rocks being sorted and which type of rock they are. • Observe: sort rocks into groups based on what they look like after taking observations through a magnifying glass. Fair test To test a range of rocks for density (use comparative weight of similar sized rocks), permeability/impermeability (waterproof - pour a small amount of water and observe it is absorbed or runs off) and strength (hard or soft - use a coin or similar object to scratch the rock and observe whether particles are easily dislodged). • Setting up: I will set up a fair test using the same variables e.g same coin for a strength experiment or same amount of water for a permeability test • Record: data in a column or table to help me answer the question of which type of rock it is. • Interpret: my results to draw simple conclusions after observations over similarities and differences and see if this raises any further questions. Key scientists of study: Know that Mary Anning is famous for finding many important fossils- palaentologist