Science Medium Term Plan

Year A	Year 3/4 Cherry Blossom	Term:	Spring 1	Unit:	Rock and Roll
IW, SDB, KH, TM, XF, CT, EN, all					
Big Question:	**What is beneath our feet?**				
Prior Substantive Knowledge	• Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock. • Compare and group together a variety of everyday materials on the basis of their simple physical properties			**Cross-curricular**	Geography- Volcanos History- Stone Age
				Key Vocab	**Magma**: Molten rock beneath the earth's surface. **Fossil:** The preserved remains or traces of a plant or animal. **Sediment:** Small pieces of rock, soil, or organic matter that build up over time. **Compression:** The process of pressing down, causing the layers above to harden. **Palaeontologist:** A scientist who studies fossils to learn about ancient life.
				Essential vocab	**Igneous**: A type of rock that forms from cooled molten material (magma/lava). **Sedimentary**: Rocks formed from layers of sediments that accumulate over time. **Metamorphic**: Rocks that have transformed from one type to another due to heat and pressure.
Substantive Knowledge (Know what)				**Disciplinary Knowledge (Think like)**	
Materials (Year 1) • Describe the simple physical properties of a variety of everyday materials. **Materials (Year 3)** • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. • Decribe 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 • Rocks and soils can feel and look different. • Rocks and soils can be different in different place/environment.				**Working Scientifically (Year 1)** • Begin to use simple scientific language to talk about or record what they have noticed. • Name basic features of objects, materials and living things. • Say how things are similar or different. • Ask simple questions about what they notice about the world around them. • Demonstrate curiosity by the questions they ask. • Use simple primary and secondary sources • Begin to use simple scientific language to talk about what they have found out or why something happened.	
Teacher knowledge	The Earth's crust is made up of lots of different types of rocks which form naturally over a long period of time. Rocks are solid and can be large or small. Small rocks are called 'pebbles'. Rocks are made when mineral grains grow or are fused together. Every rock is made up of one or more minerals. There are three types of rock: igneous, sedimentary and metamorphic. Igneous rocks get their name from the igneous meaning “of fire”, or “fiery” (in turn, from the Latin word 'ignis', which means fire). Igneous rocks are volcanic and are formed when magma (molten rock) cools and hardens. This type of rock makes up around 90% of the rock in the			**Fruits**	**Faith**- Recognising creation. To understand that God created, rocks, minerals, and the earth’s formation can be viewed as evidence of divine craftsmanship. Understanding the processes that shape the earth can lead to awe and reverence of God enhancing one’s faith. **Relationships** - Appreciating Nature Together: Rocks are part of the natural world, and studying them can help individuals appreciate the beauty, wonder, and complexity of nature. Sharing a love for nature can help people build deeper emotional connections, whether it's marveling at a rock formation together or discussing the geological history of a place. This

	Earth's crust. Granite, basalt, pumice and obsidian are all examples of igneous rock, but scientists have found over 700 varieties of igneous rocks so far. Sedimentary rocks form as sediments build up in low-lying areas such as at the bottom of lakes and oceans, and in deserts. Sediments can be things like the remains of plants and animals, minerals or even eroded fragments of other rocks. Over time, wind, rain and flows of ice move sediments into rivers, lakes and oceans where they begin to form layers (also called strata). These layers are buried and squashed down to form sedimentary rocks. Some examples of sedimentary rocks include sandstone, mudstone, flint and chalk. Metamorphic rocks start out life as igneous or sedimentary rocks which are transformed over time by extreme heat or pressure, or both. These types of rock form when the Earth moves, causing rocks to be buried, squeezed, folded and heated. An example of this is when mountain ranges are pushed up from the Earth's crust. Metamorphic rocks can also be formed from rocks heated by nearby magma, for example, if magma rises through layers of sedimentary rock. This can also happen when super-hot igneous rocks bake the surrounding rocks with their high temperatures. Marble (metamorphosed limestone), quartzite (metamorphosed sandstone) and slate (metamorphosed mudstone) are all types of metamorphic rock. Rocks are constantly changing in what is called the rock cycle. The rock cycle, in its simplest form, is the series of processes that rocks in the Earth's crust undergo. It describes the transformation and creation of rocks, which take millions of years. Rock Cycle. 1. Melted rock or magma is ejected to the earth's surface by a volcano. When it cools, igneous rock is formed. 2. Next the rock is gradually broken up into small pieces of sediment by water, wind, or ice. This process is called erosion. 3. As sediment builds up and hardens over years, sedimentary rock is formed. 4. Over time, this sediment rock gets covered with other rocks and ends up deep in the Earth's crust. 5. When the pressure and heat get high enough, the sedimentary rock metamorphoses into metamorphic rock, and the cycle begins all over again. It's important to note that the rock cycle can begin at any point in this cycle, and any rock can become another.		mutual appreciation can encourage emotional bonding and create a sense of unity **Uniqueness** - Every rock formation, mineral, and fossil has its own unique characteristics. By recognizing and celebrating the individuality of different rock types. Each rock tells a story of the earth's history. **Intellect -** The study of rocks presents an endless opportunity for exploration, from understanding the Earth's formation to decoding the intricate processes that shape the planet. By nurturing curiosity and a thirst for knowledge, individuals can continue to grow intellectually as they encounter new findings, questions and challenges.

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Key concept	Learning objective	Key components	Main input	Activity	Adaptive strategies
Rocks	Are there different types of rocks?	Understand that there are rocks on earth Understand that rocks have different properties Understand that these properties mean there are different types of rocks Understand types of rock	Start off by having a rock in your hand and ask the children and ask these questions: Has anyone ever found a rock outside? What did it look like? How did it feel? Have a range of rocks in a box on the carpet and ask children to put their hands in and feel - ask children if they think they all feel the same? How do they feel? Rough, smooth, heavy, light. Explain to the children that there are 3 different types of rocks and these are: Igneous: Rocks formed from cooled magma or lave e.g. granite. Sedimentary: Rocks formed from the accumulation of sediments e.g. Limestone Metamorpic: Rocks changed by heat and pressure e.g Marble Show the children a rock from each group and explain which rock group it has come from. Show children the video - Types of rock - BBC Bitesize (How rocks are formed only) Work through the powerpoint explaining the properties of each rock type. Allow for rocks on the table sorting into rock types with magnifying glasses etc so that children can explore the rocks further.	Children to create a table about each rock type.	Key words Sound mat Pictures of rocks Actual rocks
Rocks	How are fossils formed?	Understand that a fossil is a type of rock Understand that fossils are created through a certain process Explain the process of how they are formed	Ask children what we were focusing on last week in Science – rocks. Can they remember if all rocks are the same? Explain to children that we are going to look at a certain type of rock today – a fossil. Have children heard of this before. Have they ever seen a fossil? Can they name any animals or plants that lived a long time ago? Show children pictures of fossils and their matching organism. What do we think happened to these organisms? Introduce the term fossilisation and explain this is the process of how fossils are formed – death, burial, mineralisation and discovery. Watch video of how they are formed.	Children to create their own fossils using the salt dough and coffee grounds. Also, their plastic animal or dinosaur. Whilst making allow children to comment on the process of how fossils are actually created and any facts they can recall.	To show visuals of the process.

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Rocks	How is soil created?	Understand that soil exists Understand that soil is made up of different things Understand how soil is created Understand weathering, organic matter and time	Remind children of what we have been looking at so far in Science – rocks. Show children pots of sand, soil and compost – do they know what this is made of? Can they have a look at it and see what they can spot? Introduce children to soil formation and work through the powerpoint, explain that soil is created through weathering, organic matter and time. Watch video about soil creation.	Have soil investigating stations set up on tables allowing children to explore further. Weathering – activity with rocks, water and tools to mimic weathering Organic matter – examine compost samples and identify plant materials Soil components – Use sieves to separate soil samples into sand, slit and clay	
Rocks	Are rocks use for different purposes?	Understand what a rock is Understand that there are different rock types Identify different rock types Understand that rocks have a purpose Identify rock types and their purpose.	Remind children about what we have been learning about so far in Science – rocks. Ask children if they have ever seen rocks, where have they seen them? Do they know what rocks are used for? Remind children about the different types of rocks and whether we would use certain rocks for certain jobs. Discuss with children what we might use rocks for i.e construction – work through the powerpoint.	Children are to create a list of things that rocks are used for. Allow them to research on ipads finding their own pictures and ask about the type of rock used.	Sound mat Key words Pictures and actual rocks
Rocks	What is beneath our feet?	Understand that we have more than grass under our feet Know that we have soil. Know the different layers of soil Know that there are things further down Know that the earth has a crust, mantle and outer and inner core.	Pose the question to children what is under your feet? Ask children to describe what they think is under the grass. Begin to describe the layers under the grass as: **Top soil**: rich in nutrients, containing rotting vegetation/leaf litter and live organisms. **Subsoil**: tightly packed soil, lighter in colour to the top soil as it contains fewer nutrients. **Rocky soil**: rocks breaking down in to soil. **Bedrock**: which is just rock. **Earth's crust**: a thin layer of cold, hard rock about five to fifty miles thick. **Mantle**: hot, molten rock a bit like treacle. **Outer and inner core**: made of metal and much hotter than the mantle. Show children pictures of these layers and ask questions about each	In a clear plastic drinking cup add the following ingredients, layering each on top of the other to represent the different layers: Under the earth's crust: A squirt of red ice cream sauce or golden syrup to represent the **mantle, inner and outer core**. The earth's crust: Add a biscuit on top (which fits the bottom of the cup) to represent the **earth's crust**.	

			layer. Explain to children that today we are going to make our own representation of what is under our feet.	Bedrock: Add some layers of wafer thin chocolates or slices of fruit such as apple to represent the **bedrock**. Subsoil: Add some instant chocolate dessert to represent the **subsoil** *(it is lighter in colour as it contains fewer nutrients than the top soil and is densely packed and clay like).* Topsoil: Crush some biscuits such as Oreos to make the nutrient rich **top soil**. This can be sprinkled on top. Organic Matter/Leaf Litter: Add some jelly worms to represent the organisms living in the decaying **organic matter/leaf litter**. Take a photo of the child's work and stick in book, allowing children to then label each section.	