



Unit Planning Guidance

Year 3 Unit 2: *Rocks and Fossils*

Unit Context

This unit is designed to expand pupils' knowledge of materials, the properties of materials, the uses of materials and how materials can change through the lens of rocks, fossils and soils. It is part of the chemistry sequence of learning and follows on from the Year 1 unit 'Everyday Materials' and the Year 2 unit 'Uses of Materials'.

Pupils begin the unit by finding out what rocks are and how the three different types of rock are formed: sedimentary, igneous and metamorphic. They then discover that some rocks are more durable than others and investigate the permeability of a range of different rocks. Once pupils have an understanding of rocks, they begin to think about how the different properties of rocks make them more suitable for certain uses and/or products. The unit then shifts onto fossils and the pupils use their understanding of rocks to understand what fossils are, who Mary Anning was and how fossils can help us to build a picture of the past. They also discover the process of fossilisation and that there are different types of fossils. To conclude the unit, pupils investigate different types of soils and consider why the properties of each might be different.

If the pupils are also studying the Stone, Bronze and Iron ages in history, links can be made between the uses of certain rocks such as flint, the building of certain monuments such as Stonehenge and how we need to use artefacts to build a picture of the past where there are no written records. The misconception that dinosaurs and stone age people lived at the same time can and should also be addressed.

Links to previous and future learning

Year 1	Year 2	Year 3	Year 4
<p>Everyday Materials:</p> <ul style="list-style-type: none">• What are materials?• Which materials are different objects made from?• What are the properties of different materials?• Can materials have other properties?• Which materials should we use to make objects?• Can we group, sort and compare objects and materials?	<p>Uses of Materials:</p> <ul style="list-style-type: none">• Can I identify the materials that different objects are made from?• Can I identify how materials are used in my local area?• Can I compare the suitability of different materials?• How can the shapes of objects made from some materials be changed?• How can we help to stop plastic pollution?• How are new materials discovered?	<p>Rocks and Fossils:</p> <ul style="list-style-type: none">• What are rocks and how can they be grouped?• What are the properties of different rocks?• How can different rocks be used?• What are fossils and who was Mary Anning?• What is the process of fossilisation?• What is soil and is all soil the same?	<p>States of Matter:</p> <ul style="list-style-type: none">• What do you know about the three states of matter?• How does freezing change a liquid?• What affects how quickly solids melt?• What is the melting point of a solid?• What is evaporation?• What is condensation and how is it part of the water cycle?



Unit Overview			
	Key Knowledge	Key Vocabulary	
Lesson 1 What are rocks and how can they be grouped?	<ul style="list-style-type: none"> The Earth's crust is made of rock The mantle underneath is mostly molten rock Rocks are all across the surface of the Earth Rocks can be natural or man-made There are three types of rock: sedimentary, igneous and metamorphic Each type of rock is formed in a different way 	<ul style="list-style-type: none"> Rocks Earth Molten Grains Minerals Crystals 	<ul style="list-style-type: none"> Anthropic Natural Igneous Sedimentary Sediment Metamorphic
Lesson 2 What are the some of the properties of different types of rock?	<ul style="list-style-type: none"> Some rocks are more durable than others Durable means hard-wearing Erosion wears rocks away Some rocks allow water or air to pass through them Permeable means to let water or air pass through 	<ul style="list-style-type: none"> Sedimentary Igneous Metamorphic Durable Erosion 	<ul style="list-style-type: none"> Permeable Impermeable Porous Friction Submerge
Lesson 3 How can different rocks be used?	<ul style="list-style-type: none"> Different rocks have different properties Those different properties mean that rocks have different uses Different rocks are used for different purposes We can research both the properties and uses of different types of rock 	<ul style="list-style-type: none"> Properties Uses Building Impermeable Permeable 	<ul style="list-style-type: none"> Sculpture Carve Durable Polished Burns
Lesson 4 What are fossils and who was Mary Anning?	<ul style="list-style-type: none"> Fossils are the shape of or remains of a plant or animal Fossils are found in rocks and other natural materials They can help is to find out about the organisms that lived in the past A palaeontologist searches for and investigates fossils Mary Anning is known as an early fossil hunter Her findings hugely supported our understanding that animals can become extinct 	<ul style="list-style-type: none"> Fossil Remains Organism Palaeontology Palaeontologist 	<ul style="list-style-type: none"> Extinct Tourists
Lesson 5 What is the process of fossilisation?	<ul style="list-style-type: none"> Most animals and plants do not become fossils when they die Most fossils only occur in sedimentary rock These fossils are a result of bones dissolving and the shape being replaced by minerals The depth a fossil is found within rock can help us to work out how old that fossil is There are also other types of fossils 	<ul style="list-style-type: none"> Mold Fossil Resin Fossil Trace Fossil Bone Fossil Fossilisation 	<ul style="list-style-type: none"> Decompose Sediment Sedimentary Dissolve Minerals
Lesson 6 What is soil and is all soil the same?	<ul style="list-style-type: none"> Soil is made up of small bits or grains of rock The small bits of rock combine with decaying living things This is mostly decaying plants There are different types of soil The type of soil depends on the type of rock from which it is formed Different types of soil absorb different amounts of water 	<ul style="list-style-type: none"> Soil Decay Rock segments Grains Absorption Origin 	





Lesson Question	New Knowledge	Outcomes / Assessment	Learning Resources	Key Vocab	
Lesson 1: What are rocks and how can they be grouped?	<ul style="list-style-type: none">• The Earth's crust is made of rock• The mantle underneath is mostly molten rock• Rocks are all across the surface of the Earth• Rocks can be natural or man-made• There are three types of rock: sedimentary, igneous and metamorphic• Each type of rock is formed in a different way	<ul style="list-style-type: none">• Pupil workbook pages 7-11• Learning Review• Knowledge Quiz 2.1	<ul style="list-style-type: none">• Pupil workbook• PowerPoint slides• Images of rocks• A range of different rocks	<ul style="list-style-type: none">• Rocks• Earth• Molten• Grains• Minerals• Crystals	<ul style="list-style-type: none">• Anthropic• Natural• Igneous• Sedimentary• Sediment• Metamorphic

Lesson Outline:

Prepare an engaging hook to introduce pupils to the new unit. You could: show photographs, show objects, read a story, show a video or do something more creative.

- Existing knowledge exercise: gauge pupils' current knowledge of rocks and fossils.
- Share learning journey and specific session question, knowledge and vocabulary.
- Talk task: where can you find rocks? Do you think all rocks are the same?
- Read: section detailing what rocks are and the difference between natural and anthropic rocks.
- Retrieval: pupils answer questions based on the text.
- Partner task: sort images of rocks to show if they are natural or anthropic.
- Talk task: pupils discuss the rocks and group them based on what they see/know. Ensure pupils have at least 2 of each type of rock.
- Independent task: pupils explain why they grouped the rocks the way they did.
- Read: section detailing the three different types of rock and how each is formed.
- Retrieval: pupils list the three types of rock (sedimentary, metamorphic, igneous). Pupils then describe how each are formed using the information in the text.
- Investigate: pupils use the branching diagram to discover whether the rocks from the original sorting task are sedimentary, igneous or metamorphic.
- Independent task: pupils explain the different types of rock and the difference between them.

Learning Review: In talk partners, pupils tell each other a response to the learning question. Add further review questions if you wish to. As an exit ticket, pupils should record a written response to the lesson question in the knowledge record at the front of their workbooks.