

## Science Medium term plan Rocks and Soils Y3

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 from rocks and organic matter.

The principal focus of science teaching in lower key stage 2 is to enable pupils to broaden their scientific view of the world around them. They should do this through exploring, talking about, testing and developing ideas about everyday phenomena and the relationships between living things and familiar environments, and by beginning to develop their ideas about functions, relationships and interactions. They should ask their own questions about what they observe and make some decisions about which types of scientific enquiry are likely to be the best ways of answering them, including observing changes over time, noticing patterns, grouping and classifying things, carrying out simple comparative and fair tests and finding things out using secondary sources of information. They should draw simple conclusions and use some scientific language, first, to talk about and, later, to write about what they have found out. ‘Working scientifically’ is described separately at the beginning of the programme of study but must always be taught through and clearly related to substantive science content in the programme of study. Throughout the notes and guidance, examples show how scientific methods and skills might be linked to specific elements of the content. Pupils should read and spell scientific vocabulary correctly and with confidence, using their growing word reading and spelling knowledge.

‘Working scientifically’ is related to the teaching of substantive science content, examples show how scientific methods and skills might be linked to specific elements of the content:



During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:




- asking relevant questions and using different types of scientific enquiries to answer them
- setting up simple practical enquiries, comparative and fair tests
- making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers
- gathering, recording, classifying 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, make predictions for new values, suggest improvements and raise further questions
- identifying differences, similarities or changes related to simple scientific ideas and processes
- using straightforward scientific evidence to answer questions or to support their findings




**Prior Learning:**









- Distinguish between an object and the material from which it is made. (Y1)
- Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock. (Y1)
- Describe the simple physical properties of a variety of everyday materials. (Y1)
- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2)




**Future Learning:**




- Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago. (Y6)
- The composition of the Earth. (KS3)
- The structure of the Earth (KS3)
- The rock cycle and the formation of igneous, sedimentary and metamorphic rocks. (KS3)





<p>Key questions (Show how content and concepts link) Differentiated Learning Objectives</p>	<p>Teaching and learning activities (Linked directly to objectives)</p>	<p>Resources (To help pupils reach the learning objectives)</p>	<p>Written and non-written Outcomes (Assessment including homework's)</p>
<p>1)How can we classify rocks?</p> <p><b>Science capital:</b> <i>What are rocks used for? Look around you where can you see rocks?</i></p> <p><b>Science Working scientifically Skills:</b> Asking questions /</p>   <p><b>observing</b></p> <p><b>Science Enquiry Type: Classify</b></p>  <p><i>Pupils use their surroundings to identify rocks and observe them closely. They will classify rocks in a range of ways, based on their appearance. They will understand rock is a naturally occurring material. There are different types of rocks e.g., sandstone, limestone, slate etc.</i></p> <p><b>Misconception:</b> rocks are all hard in nature, rock-like, man-made substances such as concrete or brick are rocks, materials which have been polished or shaped for use , such as a granite worktop, are not rocks as they are no longer 'natural', certain</p>	<p><b>Science reasoning task: explorify :zoom in zoom out <a href="#">Brown and crumbly</a> - Explorify</b></p> <p><b>Activity 1:Read story pebble in my pocket as stimulus-</b> use magnifying glasses to observe and draw scientific drawings of what they observe.</p> <p><b>Activity 2:</b> Show a range of rocks and ask children, what categories could we use to describe them? (Texture, appearance and colour)</p> <p><b>Activity 3:</b> classify rocks using own criteria / some pupils to be given criteria.</p>	<p><b>Activity 1:</b> magnifying glasses and post it notes Drawing frame given to support</p> <p><b>Activity 2:</b> range of rocks and post it notes.</p> <p><b>Activity 3:</b> range of rocks and Venn diagram</p>	<p>Reasoning - pupils to use prior knowledge to explain the appearance of rocks.</p> <p>Classifying objects under chosen criteria.</p>



<p>found artefacts, like old bits of pottery or coins, are fossils, a fossil is an actual piece of the extinct animal or plant and soil and compost are the same thing.</p>			
<p><b>2) Why don't all rocks look the same?</b></p> <p><b>Science capital:</b> what rocks do you spot in town centres? In woodlands, In school playground etc? What words would you use to describe them?</p> <p><b>Science Working scientifically Skills:</b> Asking questions /</p>   <p><b>observing</b></p> <p><b>Science Enquiry Type: Classify</b></p>  <p><i>Pupils will understand the how different types of rocks are formed and not all rocks are the same.</i></p> <p><b>Misconception:</b> rocks are all hard in nature, rock-like, man-made substances such as concrete or brick are rocks, materials which have been polished or shaped for use , such as a granite worktop, are not rocks as they are no longer 'natural'. , certain found artefacts, like old bits of pottery or coins, are fossils, a fossil is an actual piece of the extinct animal or plant and</p>	<p><b>Science reasoning task: Odd One Out- explorify</b>  <a href="#">Building with rocks - Explorify</a></p> <p><b>Activity 1:</b> Watch rock cycle  <a href="https://www.youtube.com/watch?v=jPlqbwSCmNs">https://www.youtube.com/watch?v=jPlqbwSCmNs</a>  <a href="#">Rock cycle factsheet FINAL.pdf (geolsoc.org.uk)</a></p> <p><b>Activity 2:</b> Make a list of vocabulary linked to rock cycle</p> <p><b>Activity 3:</b> Role play and enact the rock cycle</p>	<p><b>Activity 1:</b> you tube link</p> <p><b>Activity 2:</b> Whiteboard</p> <p><b>Activity 3:</b> outside space.</p>	<p>Reasoning – explaining why a particular picture is the odd one out.</p> <p>reacting the rock cycle and identifying the different forms/types of rocks.</p> <p><b>Homework-</b> collecting different types of rocks from different environments. What do you notice?</p>

<p>compost are the same thing.</p>			
<p><b>3) How can we classify the rocks?</b></p> <p><b>Science capital:</b> What objects are made out of rocks around you? How do you know?</p> <p><b>Science Working scientifically Skills:</b></p>        <p><b>Science Enquiry Type: Comparative</b></p> <p> <i>Pupils will understand the features/appearance of different rock types and classify them. Know some rock names and their appearance.</i></p> <p><b>Misconception:</b> rocks are all hard in nature, rock-like, man-made substances such as concrete or brick are rocks, materials which have been polished or shaped for use, such as a granite worktop, are not rocks as they are no longer 'natural'. certain found artefacts, like old bits of pottery or coins, are fossils, a fossil is an actual piece of the extinct animal or plant and soil and compost are the same thing. .</p>	<p><b>Science reasoning task: explorify</b> <a href="#">Picked up a rock you found and put it in your pocket to take home? - Explorify</a></p> <p><b>Activity 1</b> Using the fact sheet about rock cycle to understand the features of the different types of rocks.</p> <p><b>Activity 2:</b> Use fact sheet and knowledge known about to classify the different rocks under different rock types.</p>	<p><b>Activity 1:</b> <a href="#">Rock cycle factsheet FINAL.pdf (geolsoc.org.uk)</a></p> <p><b>Activity 2:</b> Venn diagrams – table and big hoops to use.</p>	<p>Reasoning – explaining the rock type through its appearance.</p>
<p><b>4) Which rock would be the best for a skate park?</b></p> <p><b>Science capital</b> Look at buildings around you – which rock type are they made of? What does property do the rock need to be?</p>	<p><b>Science reasoning task: explorify</b> <a href="#">Which rock would be best for a skate ramp? - Explorify</a></p> <p><b>Activity 1</b> – Explain they will be setting up an investigation to test the hardness of the rock. Ask how could we investigate this? Work in groups to plan enquiry question, equipment, method, prediction and conclusion.</p>	<p><b>Activity 1-</b> Post it note experiment plan.</p> <p><b>Activity 3-</b> Results table template</p> <p><b>Activity 2-</b> Post it notes / talk partner.</p> <p><b>Activity 4 :</b> Photograph evidence and recording sheet.</p>	<p>Writing a conclusion based on results gathered.</p>

<p><b>Science Working scientifically Skills:</b></p>  <p><b>Science Enquiry Type: Comparative</b></p>  <p><i>Pupils will understand the property of different rocks in terms of its hardness. They will understand rocks can be hard and soft. They have different sizes of grain or crystal. They may absorb water. Rocks can be different shapes and sizes (stones, pebbles, boulders).</i></p> <p><b>Misconception:</b> rocks are all hard in nature, rock-like, man-made substances such as concrete or brick are rocks, materials which have been polished or shaped for use , such as a granite worktop, are not rocks as they are no longer 'natural'. , certain found artefacts, like old bits of pottery or coins, are fossils, a fossil is an actual piece of the extinct animal or plant and soil and compost are the same thing. !</p>	<p><b>Activity 2:</b> Discuss the concept cartoon, and discuss who do they agree with the most and why? (Prediction)</p> <p><b>Activity 3-</b> Results table to be provided for pupils to collect results.</p> <p><b>Activity 4:</b> Carry out the experiment and record the results in table.</p>		
<p>5) Which rock would be the most permeable for a skate park?</p> <p><b>Science capital: What are the properties of rocks used for a house?</b></p> <p><b>Science Working scientifically Skills:</b></p> 	<p><b>Science reasoning task: explorify</b> <a href="#">The mystery grows - Explorify</a></p> <p><b>Activity 1</b> – What is permeability? Explain they will be setting up an investigation to test the permeability of the rock. Ask how could we investigate this? Work in groups to plan enquiry question, equipment, method, prediction and conclusion.</p>	<p><b>Activity 1-</b> PowerPoint of information post it note experiment plan.</p> <p><b>Activity 3-</b> Results table template</p> <p><b>Activity 2-</b> Post it notes / talk partner.</p> <p><b>Activity 4 :</b> Photograph evidence and recording sheet.</p>	

<p><b>Science Enquiry Type: Research</b></p>  <p><i>Pupils will understand rocks can be hard and soft. They have different sizes of grain or crystal. They may absorb water. Rocks can be different shapes and sizes (stones, pebbles, boulders).</i></p> <p><b>Misconception:</b> rocks are all hard in nature, rock-like, man-made substances such as concrete or brick are rocks, materials which have been polished or shaped for use, such as a granite worktop, are not rocks as they are no longer 'natural'., certain found artefacts, like old bits of pottery or coins, are fossils, a fossil is an actual piece of the extinct animal or plant and soil and compost are the same thing. .</p>	<p><b>Activity 2:</b> Discuss the concept cartoon, and discuss who do they agree with the most and why? (Prediction)</p> <p><b>Activity 3-</b> Results table to be provided for pupils to collect results.</p> <p><b>Activity 4:</b> Carry out the experiment and record the results in table.</p>		
<p><b>6) What was the importance about Mary Anning and her discoveries?</b></p> <p><b>Science Working scientifically Skills:</b></p>  <p><b>Science Enquiry Type: Research</b></p>  <p><i>Pupils will understand this Palaeontologist as another form of scientist. They will explore the life using secondary resources.</i></p>	<p><b>Activity 1</b> – introduce scientist: PowerPoint and video facts.</p> <p><b>Activity 2</b> Read some facts about Mary Anning.</p> <p><b>Activity 3:</b> Complete a fact file about scientist.</p>	<p><b>Activity 1-</b> <a href="http://geolsoc.org.uk">The Geological Society (geolsoc.org.uk)</a>  <a href="https://www.bbc.co.uk/teach/class-clips-video/ks1-ks2-mary-anning/zn7gd6f">https://www.bbc.co.uk/teach/class-clips-video/ks1-ks2-mary-anning/zn7gd6f</a>  <a href="https://www.youtube.com/watch?v=koota_lwU_4">https://www.youtube.com/watch?v=koota_lwU_4</a></p> <p><b>Activity 2-</b> online fact sheet / books</p> <p><b>Activity 3:</b> fact sheet template.</p>	

<p><b>7) How have fossils changed over time?</b></p> <p><b>Science capital</b> Have you ever found a fossil? Where have you found it? What did you notice about it? How do you think it got there?</p> <p><b>Science Working scientifically Skills:</b></p>  <p><b>Science Enquiry Type: Research</b></p>  <p><i>Pupils will understand the fossilisation process and that some rocks contain fossils. Fossils were formed million of years ago. When plants and animals died, they fell to the seabed. They became covered and squashed by other material. Over time the dissolving animal and plant matter is replaced by minerals from the water.</i></p>	<p><b>Science reasoning task: explorify</b> <a href="#">Mary Anning? - Explorify</a></p> <p><b>Activity 1</b> – explain what fossilisation process is and how fossils are made.</p> <p><b>Activity 2-</b> create salt dough fossils.</p> <p><b>Activity 3-</b> sequence steps of the fossilisation</p>	<p><b>Activity 1</b> – <a href="https://www.youtube.com/watch?v=tyOjxjFHW-c">https://www.youtube.com/watch?v=tyOjxjFHW-c</a> <a href="https://www.youtube.com/watch?v=xQBkawjFVIA">https://www.youtube.com/watch?v=xQBkawjFVIA</a></p> <p><b>Activity 2-</b> Salt dough and fossils</p> <p><b>Activity 3-</b> sequence steps of fossilisation.</p>	<p>Reasoning – purpose of impact of scientist’s discoveries?</p>
<p><b>8) What types of rocks are in our area?</b></p> <p><b>Science capital</b> What rocks do you find in town centre compared to your back garden?</p> <p><b>Science Working scientifically Skills:</b></p>  <p><b>Science Enquiry Type: Research</b></p>  <p><i>Pupils will understand the fossilisation</i></p>	<p><b>Activity 1</b> – Go on a walk inside school ground and outside school grounds to see what different types of rocks are used for different objects. .</p>	<p><b>Activity 1</b> – Risk assessment of the area. Sheet to collate what they observe.</p>	

<p><i>process and that some rocks contain fossils. Fossils were formed million of years ago. When plants and animals died, they fell to the seabed. They became covered and squashed by other material. Over time the dissolving animal and plant matter is replaced by minerals from the water.</i></p>			
<p><b>8) Why doesn't all the soils look the same??</b></p> <p><b>Science Working scientifically Skills:</b></p>  <p><b>Science Enquiry Type: Comparative</b></p>  <p><i>Pupils will understand through observation the different types of soil Soils are made up of pieces of ground rock which may be mixed with plant and animal material (organic matter). The type of rock, size of rock pieces and the amount of organic matter affect the property of the soil.</i></p>	<p><b>Activity 1-</b> share soil information PowerPoint- discuss the different types of soil and where can be found.</p> <p><b>Activity 2-</b> observe soil samples and can pupils identify the different soil types.</p> <p><b>Activity 3-</b> Label the soil diagram</p>	<p><b>Activity 1-</b>Soil PowerPoint</p> <p><b>Activity 2-</b> different types of soil and soil fact sheet</p> <p><b>Activity 3-</b> worksheet to label</p>	