

**Pioneer Federation**  
**Medium term plan**  
**Cycle 1, Term 3**  
**Science**



**Subject:** science

**Key Concept/ Theme:** Rocks and soil

**Prior Learning links: Materials in ks1:** Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Distinguish between an object and the material from which it is made. Identify and name a variety of everyday materials, including wood, plastic, glass, water and rock. Describe the simple physical properties of a variety of everyday materials. Compare and group together a variety of everyday materials on the basis of their physical properties.

**Vocabulary:**

**Names of rocks** – Chalk, limestone, granite, basalt, sandstone, flint, slate, shale, marble

**Size of rocks** – Grain, pebbles

**Types of rock** – Sedimentary, metamorphic, igneous

**Properties of rocks** – Hard/soft, permeable/impermeable

**Processes** – Heat, pressure, erosion, transportation, melt, solidify

**Rock describing words** – Crystals, layers

Fossils

Soil types: clay silt sand

**School specific areas to cover (where applicable)**

**All to identify the chalk and Seven Sisters as a nearby location when looking at sedimentary rocks.**

- Deeper learning question:** What is a rock?

**Prior learning reconnection (year group, cycle & term):**

**LO:** Let's compare and sort rocks based on their appearance and properties.

**Enquiry skill:** sort/classify observe

**Activity:** Pre assessment question to start with for them to share their understanding of rocks.

What do rocks look like? Ask the children to handle a selection of rocks.

Can they use microscopes to look at them closely and observe what they see/feel. EG texture, sharpness, edges, whether it feels powdery.

Can they sort using their own criteria (SEND children to be given their own tables with words and pictures for labels- use communicate in print). Show the pictures of the different types of rock they will be looking at this term and then start to learn the names by matching the picture of the rock to the name. This will then be their reference for pictures and names of the rocks for the term.

<https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer/>

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	<p><b>Future learning links: in cycle 1 they will be looking at rocks again but uk/local rocks and fossils. They will be looking at the different uses of rocks and the different properties of rocks for these purposes.</b></p>
2.	<p><b>Deeper learning question:</b> How are rocks different?  <b>Reconnection:</b> How did we sort the rocks last week- what were their names?  <b>LO:</b> Let's compare rocks based on their properties.  <b>Enquiry skill: writing conclusions observe</b></p> <p><b>Activity.</b> Introduce the words hard, soft, permeable and impermeable. Make sure you have slate, chalk and you could have granite. Certain areas of the UK and some rivers rely on permeable rocks for some of their water supply. Areas of land that hold water are known as aquifers. The children can use pipettes to place just a few drops on each of the rocks. They can use hand lenses/microscopes to look carefully at which rocks allows the water in- as them to record their findings. Write a conclusions from what they see.</p>
3	<p><b>Deeper learning question:</b> How are rocks formed?  <b>Reconnection:</b> Name the rocks again and describe what permeable and impermeable means.  <b>LO:</b> Let's learn how sedimentary and metamorphic rocks are formed.  <b>Activity:</b></p> <p>Teacher modelling sedimentary rocks: fill a small shallow tray with sand. (You could try using layers of different colours of sand.) This tray can be placed on a gradient inside a larger one. By adding water gradually to a point at the top of the shallow tray, the children can observe how small parts of rock are eroded by the water, transported down the tray and finally deposited in the larger tray. Link to chalk and the local area- show pictures of the cliffs being sedimentary. Show children photos of how chalk has been formed through sediments of plankton remains. Children to draw diagrams to show their understanding. Properties of a sedimentary rock: usually contains layers, permeable, can contain fossils.</p> <p>Model metamorphic rocks through a drama activity. Children to invent a piece of drama that will show rocks being put under great pressure and experiencing very hot conditions. They could use labels, arrows and pictures of rocks to enhance their drama. Photograph and children to reflect for understanding. Features of a metamorphic rock: hard wearing and durable, usually impermeable. <a href="https://www.bbc.co.uk/bitesize/topics/z9bbkqt/year/zmyxxyc">https://www.bbc.co.uk/bitesize/topics/z9bbkqt/year/zmyxxyc</a></p>
4	<p><b>Deeper learning question:</b> How can rocks be sorted and classified?  <b>Reconnection:</b> what is sedimentary and metamorphic rock and how are they made?  <b>LO:</b> Let's learn about igneous rocks.  <b>Enquiry skill: Sorting and classifying</b>  <b>Activity:</b></p> <p>These rocks are formed when rocks melt and then solidify. This process can occur both under the ground and above it. Teacher/TA to model in small groups. A nightlight will need to be on a few centimetres of sand in a metal bowl like a dog bowl (for safety- see risk assessment in folder). The children can be asked to imagine that the wax represents a rock that is experiencing a lot of heat. They can predict what will happen when the heat source is extinguished. Look at the rocks from a volcano- what features</p>

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	can they see on the rock that makes them igneous- look for holes where gas was trapped when cooling quickly. Properties of igneous rock: hard wearing and durable. Children to draw their understanding and record using photo from group session. Can they then sort and classify igneous, metamorphic and sedimentary rocks after the activity.
5	<p><b>Deeper learning question:</b> How is soil different?</p> <p><b>Reconnection:</b> Sorting the rocks into sedimentary, metamorphic and igneous.</p> <p><b>Enquiry skill:</b> measuring and recording</p> <p><b>LO:</b> Let's learn about the different types of soil.</p> <p><b>Activity:</b></p> <p><a href="https://www.bbc.co.uk/iplayer/episode/m0011mzf/bitesize-daily-79-year-olds-science-78-yearolds-3-rocks-and-soil">https://www.bbc.co.uk/iplayer/episode/m0011mzf/bitesize-daily-79-year-olds-science-78-yearolds-3-rocks-and-soil</a></p> <p>Look at the experiment at 14:40- you don't need to show the class the clip but this will be the talk they will be completing today. First encourage them to roll the sandy and clay soil to see what happens. Then ask them to record how much water goes through the funnel when you fill it with the different types of soil. You could include other types of soil, not just the two in the video.</p> <p>Loamy = It is not sticky but it can roll into a ball Sandy = It is not sticky and cannot roll into a ball Silty = It is sticky, it can roll into a ball and it can break easily Clayey = It is sticky, it can roll into a ball and it won't break easily</p> <p><i>Sandy soils form lightweight, free-draining soils; cannot hold on to nutrients</i> <i>Clayey soils hold water well; can become heavy and waterlogged when wet; can hold on to nutrients.</i> <i>Silty soil holds water, can be hard to drain, can hold limited nutrients.</i></p> <p>Children to then work out how they will measure it and then present their findings.</p>
6	<p><b>Deeper learning question:</b> Why are fossils important in science?</p> <p><b>Reconnection:</b> Reconnect back to different types of rocks ready to explain fossils</p> <p><b>LO:</b> Let's learn how fossils are made. (This will be in more detail in a topic in cycle 1)</p> <p><b>Activity:</b></p> <p>Learn about how fossils are made- watch the clip from 10 mins into it <a href="https://www.bbc.co.uk/iplayer/episode/m0011mzf/bitesize-daily-79-year-olds-science-78-yearolds-3-rocks-and-soil">https://www.bbc.co.uk/iplayer/episode/m0011mzf/bitesize-daily-79-year-olds-science-78-yearolds-3-rocks-and-soil</a> Reflect on who Mary Anning was and her impact in the world because of her findings.</p> <p>Make their own fossils out of playdough and plaster of paris. Use a shell, plastic dinosaur or create own patterns to make the imprint. Print photo and draw diagram to show how they are made.</p> <p>Quiz questions to finish.</p>

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**End points:**

To know the difference between igneous, sedimentary and metamorphic rocks and describe how they are formed.

To be able to name and identify a range of rocks and their properties.

To understand how fossils are formed and their importance to understanding living things in the world now and in the past.

To understand how soil is made up of different rocks and organic matter and that it is used in different ways and for different purposes.

To draw conclusions, identify, sort and classify, measure and present results.