

Year 3 MTP
Rocks and Fossils

Year 3 Science - Rocks and Fossils


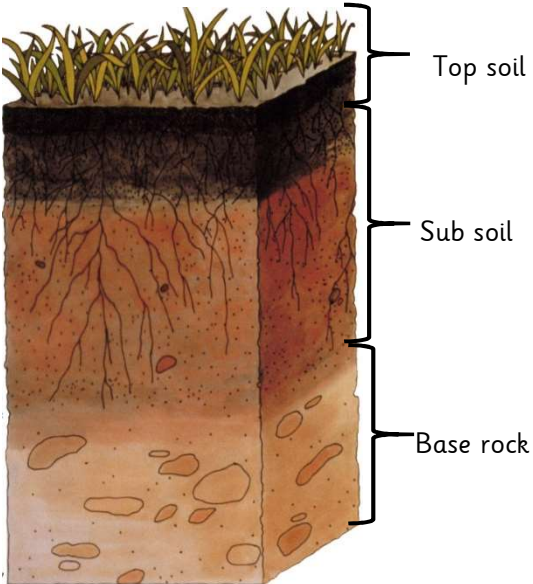


Key vocabulary	
Permeable	Allows water to pass through.
Impermeable	Does not allow water to pass through.
Sediment	Matter (e.g. dead animals, plants or pieces of rock) that settles to the bottom of a liquid.
Ore	A rock or mineral that contains metal.
Magma	Hot fluid or semi-fluid material below or within the Earth's crust.
Igneous rock	Lava or magma that has cooled, forming rock.
Metamorphic rock	An igneous or sedimentary rock that has been changed by extreme heat and pressure.
Sedimentary rock	Rock that has formed from the build-up of sediment at the bottom of rivers/oceans over many years, which has been squashed under the weight of the liquid and more sediment.
Crystals	Minerals that join together to make a type of igneous rock.
Fossil	The remains or impression of a prehistoric plant or animal embedded in rock and preserved by minerals replacing decomposed matter.
Aggregates	A collection of particles
Crust	Earth's outer layer
Mantle	A second layer of rock
Outer - core	A layer of Earth made of liquid
Inner - core	A layer of Earth which is solid and made of iron and nickle
Minerals	Natural occurring element
Tectonic plates	Earth's upper mantle is divided into sections
Organisms	Living things
Weathering	Breaking down or dissolving of rock

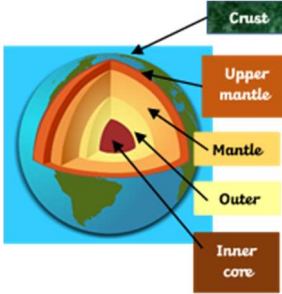






Stem sentences

"Rock a and rock b are similar because"

"Rock a and rock b are different because"

"I predict rock will be the most suitable to make a monument because it is type of rock meaning it is properties."

Cast fossil	Soil
	
Replacement fossil	
	
Whole body fossil	
	

Structure of the Earth	Igneous rock	Sedimentary rock	Metamorphic rock
	 Granite / Obsidian	 Limestone / Sandstone	 Marble / Slate
			

#	Lesson title	Objective / content	Knowledge	Previous curriculum links	Vocabulary
Sequence 1	How is the earth structured?	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	<ul style="list-style-type: none"> • Know that the Earth is made up of layers • Know that the Earth's structure is made up of the: crust, mantle, outer-core and inner-core. • Know that the crust is an outer layer of rock of the surface of the Earth. • Know that the mantle is another layer of rock which makes up about half of the inside of the Earth which is hard but a layer of magma (liquid rock) underneath • Know that the outer-core is a liquid and is made of iron and nickel • Know that the inner-core of the earth is a solid, it is extremely hot, reaching 5500 degrees Celsius and is also made of iron and nickel. 	N/A	Crust Mantle Outer- core Inner-core Magma
Sequence 2	What are rocks?	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	<ul style="list-style-type: none"> • Know that a rock is a natural material that is found in the Earth's crust. • Know that rocks can be glassy, some have crystals and some are aggregates. • Know that rocks can be made of one or more minerals • Know that rocks can be both permeable and impermeable • Know that an ore is a rock that contains metal <p>Know that the Earth is at least 4800 million years old and the oldest rock is about 4000 million years old.</p> <p>Explorify - https://explorify.uk/en/activities/zoom-in-zoom-out/the-mystery-grows</p>	N/A	Aggregates Minerals Permeable Impermeable Ore
Sequence 3	What are the types of rock?	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	<ul style="list-style-type: none"> • Know that there are three types of rocks: igneous, sedimentary and metamorphic. • Know the names of igneous rock e.g. granite and basalt, these form from the molten rocks below the Earth's crust. • Know that limestone and sandstone are types of sedimentary rocks, these form when small, weathered fragments of rock or shell settle and stick together, often in layers. • Know that marble and slate are types of metamorphic rock, these form when rocks in the Earth's crust get squashed and heated in processes such as when tectonic plates press against each other <p>Line of enquiry -Are all rocks made the same way?</p>	N/A	Igneous Sedimentary Metamorphic Tectonic plates

Sequence 4	What is soil?	Recognise that soils are made from rocks and organic matter	<ul style="list-style-type: none"> • Know that soil is made from small bits of rock and dead organisms. • Know that those small bits of rock are broken down by weathering • Know that sandy soils drain well but don't have a lot of minerals. • Know that clay soils will waterlog but hold onto minerals <p>Explorify - https://explorify.uk/en/activities/the-big-question/why-don-t-all-soils-look-the-same</p> <p>Line of enquiry -What are the similarities and differences between different soils?</p>	N/A	Organisms Weathering
Sequence 5	What is a fossil?	Describe in simple terms how fossils are formed when things that have lived are trapped within rock	<ul style="list-style-type: none"> • Know that fossils form when a plant or animal dies and is quickly covered in mud so that it cannot be eaten. • Know that layers of sediment build, squashing the mud and turning it into stone around the dead plant or animal • Know the materials in the body or plant are replaced by minerals that flow in water through the rock, leaving a rock in the shape of the animal or plant that was once there. 	N/A	Fossils Sediment
Sequence 6	Investigation	Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties	<ul style="list-style-type: none"> • Know that an investigation is a plan for asking questions and finding possible answers • Know that a method is how to carry out the investigation • Know that we record our results as we do the investigation <p>Explorify - https://explorify.uk/en/activities/odd-one-out/building-with-rocks</p> <p>Investigation Title - What rock would be most suitable to make a monument?</p> <p>Prediction Equipment list Method – Know we can show our method using numbered steps Results – Know we can record our data/results in a table Conclusion</p>		Method Results

Scientific enquiry

Year 3 – Aut 1 – Rocks and fossils

<p>Sequence 3 – What are the types of rock?</p>	<p>Line of enquiry -Are all rocks made the same way?</p> <p>Using criteria, children need to sort rock samples (or pictures if unavailable) into the three types.</p> <ul style="list-style-type: none"> - Igneous - sedimentary - metamorphic. 	<ul style="list-style-type: none"> • 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.
<p>Sequence 4 – What is soil?</p>	<p>Line of enquiry -What are the similarities and differences between different soils?</p> <p>Children should make observations to see the similarities and differences between rocks by:</p> <ul style="list-style-type: none"> -Appearance -Content -Water drainage <p>Resources Garden soil, clay soil, chalk soil, beakers, magnifying glasses, filter paper.</p> <p>Give each group a small sample of each type of soil.</p>	<ul style="list-style-type: none"> • 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

	<p>Children will comment and record on the similarities and differences in appearance of the soil, e.g. particle size, colour etc.</p> <p>Children will then use a magnifying glass to look at the contents of the soil in more depth, they should then comment and record the similarities and differences in content of the soil e.g. small/large rocks, organisms etc.</p> <p>Children will then place their soil on filter paper and add 5ml of water to it, they should comment and record on the amount of water that passes through the soil and filter paper into the beaker.</p> <p>Children to then write comparative sentences of their findings e.g. "Soil A and Soil B where similar because they both contained large rock particles."</p> <p>"Soil A and Soil C were different because Soil A was brownish in colour and Soil C was orange in colour."</p>	<ul style="list-style-type: none"> • 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.
<p>Sequence 6 - Investigation</p>	<p><u>Investigation</u> Title - What rock would be most suitable to make a monument?</p> <p>Prediction – Children to predict (using further reasoning) which rock they think would be most suitable. "I think granite will be the most suitable to make a monument because it is an igneous rock meaning it is strong and permeable."</p> <p>Equipment list – 5 rocks (tbc), sandpaper, syringe/pipets</p> <p>Method – Know we can show our method using numbered steps Children to test to see the hardness of rocks and if they are permeable or not. Give children 5 samples of different types of rock, they then use sand paper to try to weather the rock. Children to then rate the rocks 1-5 depending on whether it withstood or not.</p> <p>Children will then test the same 5 rocks to see how permeable they are, children to drop 5ml of water onto each rock and see if it is permeable or not. They again rate the rocks 1-5.</p>	<ul style="list-style-type: none"> • 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

Children should also comment here on how they will make it a fair test. E.g. same amount of water, same sandpaper etc.

Results – Know we can record our data/results in a table.

Most weathered	
Least Weathered	

Most permeable	
Least permeable	

Conclusion

Children to conclude that the rock that weathered the least and was most permeable is the most suitable rock for a monument.

- using straightforward scientific evidence to answer questions or to support their findings.