Rocks, Fossils and Soils

Science Knowledge Organiser

Learning Lens: Geology

Class: Year 3

Previous Knowledge

Work on describing the properties of everyday materials.

Project Hook or 'Wow' memory

Making sedimentary rock cakes, plus making fossil prints and excavating fossils.

Learning Steps	Key Knowledge (answers)
What are the different types of rocks? (Identifying and classifying)	There are natural and human-made rocks. Natural rocks occur in 3 ways: Igneous, sedimentary and metamorphic. Human—made rocks: brick, concrete and coade stone.
How does the appearance of different rocks compare? (Identifying and classifying)	Igneous rocks: crystals, light or dark in colour, sharp rough edges, no fossils, quite tough. Sedimentary rocks: Often has layers, soft looking, can contain particles or fossils or stones, easy to break or chip. Metamorphic rocks: can look wonky, squashed layers, no crystals or fossils.
Which rocks are the most hard, soft, durable, permeable, impermeable and have the density? (Comparative testing and pattern spotting)	Rocks to test are: marble, slate, sandstone, chalk, granite and basalt. Hard rocks : igneous and metamorphic Soft rocks: Sedimentary rocks. Pattern: More durable rocks - hard ones. Less durable - soft ones. Permeable rocks: sedimentary Impermeable: Igneous and metamorphic Pattern: High density—impermeable Low density— permeable.
How are fossils formed? (Research)	An animal dies. It get covered with sediments which eventually become rock. More layers of rock cover it. Only hard parts remain. Over time sediment might enter the mould to make a cast fossil. Bones may change to mineral but the shape stays the same. Changes in sea level take place. From erosion and weathering the fossil becomes exposed.
Who was Mary Anning and what did she discover? Research and how ideas have changed over time)	Mary Anning found the first fossils of prehistoric animals in the Jurassic marine coast at Lyme Regis. Her work influenced the scientific thinking about the history of the Earth and scientific thinking.
How does tumbling change a rock over time? (Observing over time)	Rocks are weathered over time by the wind, rain and other rocks hitting them. This results in the rocks becoming chipped, broken and smaller in size. The large rock pieces are changed into smaller pieces and eventually soil. Living organisms make the soil ready for plants to grow.
How does adding different amounts of sand to soil affect the permeability of the soil? (Fair testing)	Top soil will be the most permeable. Adding more sand to the soil will reduce the permeability. Permeability is when water passes through the soil. The soil is more permeable if the water passes through faster.

The key skills we want pupils to use during this topic:

Ask relevant **questions** and use different types of scientific enquiries to answer them. Set up simple practical investigations, **compare** things and make **fair tests**. Make careful **observations** and take **accurate measurements** using the right units using a range of equipment.

Gather, record, sort and **present data** in a variety of ways to help in **answering questions**. Record findings using simple **scientific language**, drawings, labelled diagrams, keys, bar charts and tables.

Report findings by talking and writing about them, displaying or **presenting results** and **conclusions**. Use results to draw simple conclusions, make **predictions**, suggest **improvements** and ask more questions. **Identify differences, similarities or changes** . Use clear **scientific evidence** to answer questions or to support my findings.

Key vocabulary

Igneous Rock	Rock that has been formed from magma or lava.
Sedimentary Rock	Rock formed by layers of sediment being pressed down hard and sticking together. You can see the layers of sediment in the rock.
Metamorphic Rock	Rocks that started out as igneous or sedimentary rock but changed due to extreme heat or pressure.
Sediment	Natural solid material that is moved and dropped off in a new place by water or wind e.g. sand.
Permeable	Allows liquid to pass through it.
Impermeable	Does not allow liquid to pass through it.
Palaeontology	The study of fossils.

Statutory Requirements

Compare and group together different kinds of rocks on the basis of their appearance and physical properties.

Describe how fossils are formed when things that have lived are trapped within the rock.

Recognise that soils are made from rocks and organic matter.

KING'S STANLEY C of E PRIMARY SCHOOL