Science – Rocks

Year Four

By the end of this unit, you will be able to compare and group together different kinds of rocks by their simple physical properties, describe in simple terms how fossils are formed and recognise that soils are made from rocks and organic matter.

Rocks - Chalk, sandstone, limestone, granite, slate, marble, obsidian, quartzite, basalt,

Soil – mixture of organic material/clay/rock

Fossil – remains of living thing preserved in rock

Fossilisation – the process of forming fossils

Organic matter – decomposing biological material

Classify – to sort into categories/by criteria

Sedimentary – rock formed by hard pressed layers of sediment

Metamorphic – igneous/sedimentary rock changed by extreme heat or pressure

Igneous- rock formed from magma or lava

Weathering – wearing by exposure to atmosphere

Erosion – water/wind/ice wears away land

Sediment – natural solid material moved to a new place by wind or water e.g. sand

Permeable – allows liquid to pass through it

Impermeable – liquid cannot pass through

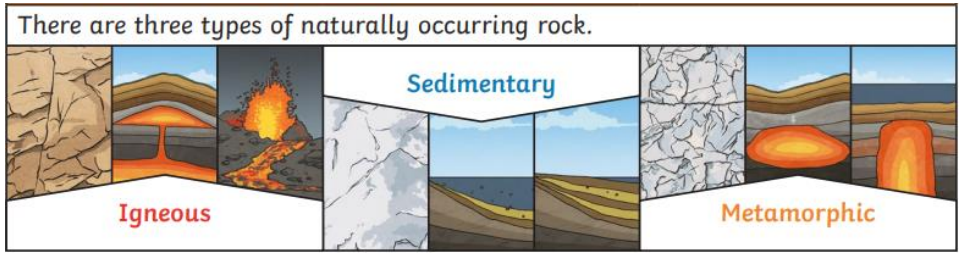
Durable – resistant to weathering

Density – how tightly packed molecules are

Important information

Rocks are solid objects made up of one or more minerals. **Minerals** are solid, naturally occurring chemical compounds; inorganic matter (neither animal nor vegetable).

Scientists classify rocks by their physical properties and by how they are formed.

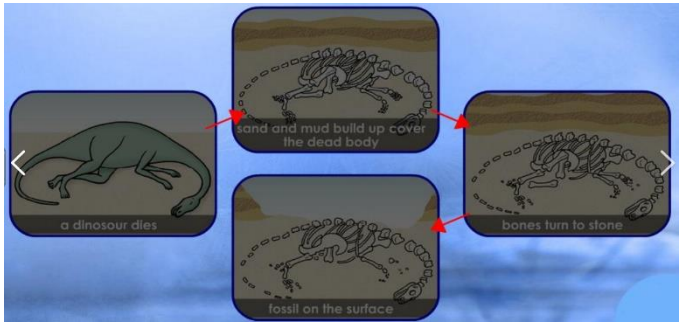


Sedimentary rocks are formed by sediment that is deposited, usually as layers at the bottom of lakes and oceans. This is then compressed over a long period of time before consolidating into solid layers of rock. **Igneous** rocks are formed from magma (liquid rock underground) that cools; or lava (liquid rock above the ground) that cools. **Metamorphic** rocks started out as igneous or sedimentary rocks but were then changed over time by extreme heat or pressure.

Soil is the uppermost layer of the earth. It is made up of a mixture of things: minerals (from finely broken-down rock), air, water, and **organic matter**. Humus is decayed matter in soil. It adds nutrients to the soil.

Fossils are the preserved remains of something that was once living. They are formed by a process called **fossilisation** explained below:

1. An animal dies.
2. The soft parts break down (decompose) leaving the hard parts behind.
3. The hard parts are buried by small bits of rock called sediment.
4. As layers build up, the sediment becomes rock.
5. The bones dissolve, minerals replace the bone, leaving a rock replica of the original bone called a fossil.



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	Lesson Question	What you will learn	Learning Review
1	[Initial pupil baseline evidence collection: 'What is a scientist?' LH project] How can we classify rocks? What are their similarities and differences?	Using a range of rock samples, you will explore, describe, compare, contrast, and classify them. You will be able to identify similarities and differences between the appearance of rocks.	
2	How would a geologist classify rocks? How are rocks formed?	Using the Primary Careers - NUSTEM website, explore careers relating to rocks. What is the job of a geologist? Learn about the rock formation process for igneous, sedimentary and metamorphic rocks. Look closely at rock samples and classify again.	
3	What is a fossil and how are they formed?	You will research how fossils are formed. You will be able to explain and model the process of fossilisation.	
4	Which rock would be most suitable for the purpose of providing a waterproof roof for the structure in the prayer garden?	Real-life context: Mr Hodgkiss has written a letter asking you to find a suitable rock to repair the roof of the prayer garden shelter with. You will understand the properties required for this purpose. Carry out a comparative test to find the most suitable rock.	
5	Can you explain how rocks become eroded/weathered?	Identify the causes of rock erosion/weathering. What happens to rocks over time? Carry out a comparative test of erosion on different rocks. Which is the most durable?	
6	What is soil and how is it formed? Are all soils the same?	Understand how soils are formed and that they are all different. Observe what happens over time when different soils are mixed with water. What are the different layers?	