Ocean Academy Poole
an Aspirations Academy
Self-Worth | Engagement | Purpose

Learning Journey Map

Year: **3** Term: **Autumn 1**

Subject: **Science** Topic: **Rocks**

Driving Question: See Geography Autumn 1
Power Skill: See Geography Autumn 1

National Curriculum Learning Objectives

- *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*

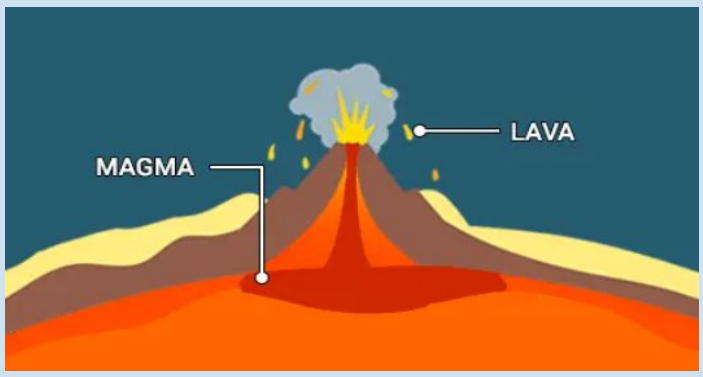
Key Vocabulary

rock	classify	igneous	metamorphic	sedimentary
sediment	permeable	impermeable	property	geologist
paleontologist	minerals	fossils	magma	lava

Key Learning

Rocks

- The Earth's crust is made of rock. We can find rocks over every part of the Earth's surface, although many are covered by water or soil. Rocks are solid and made from different combinations of minerals.
- Rocks provide important clues about what conditions were like when they formed millions of years ago. This doesn't just apply to the rocks on Earth, but those found on other planets and moons in the Solar System.
- Scientists study rocks because rocks contain clues about the Earth's past.
- When molten rock is below the Earth's surface it is called magma. Once it comes to the surface it is called lava.



- Igneous rock is formed when magma or lava cools. It has tightly interlocking crystals, making them very hard. E.g granite and pumice.
- When rocks erode or break down through weathering, they are carried by rivers to the sea, and form sediments on the seabed. Over time, these are compressed to form sedimentary rock. They may contain fossils. E.g limestone.
- Underground rock may experience pressure and heat that change its properties and cause it to turn into metamorphic rock.E.g marble and slate.

- Soils are made up of pieces of rock, minerals, decaying plant material, microbes and water.
- Sandy soil has large particles which means there are lots of small air gaps. Water drains through them easily so it often feels dry.
- Clay soil has small particles which means there are very few air gaps and water does not drain through it easily.
- Loam soil contains a good mixture of sand and clay particles and is thought to be the best type of soil for gardening with plenty of air and water.
- Some rocks are made from interlocking mineral crystals that fit tightly together.

Thinking Point

Was Chalk Once Alive?

Thinking Point

Why Don't All Rocks Look The Same?

Explore and Investigate
Are all rocks made the same way? Classify rocks into 3 types.

Resources:
Rock samples and pictures

Key Learning

Common misconceptions:

Some children might think that bricks and concrete are examples of rocks, or that rocks can be man-made. Explain that rock is a natural material; man-made building materials such as brick and concrete are therefore not rocks. Children often think that all rocks are very hard, when in fact some are soft enough to break apart with their hands. Some children believe that all fossils are pieces of dead animals and plants, rather than imprints or mineralised remains. Children might not realise that the Earth's crust moves, which means that areas that are now dry land may once have been at the bottom of an ocean. It is quite possible to find fossilised sea creatures at the top of a mountain! Rocks and minerals are the same thing. Rocks are made of one or more types of minerals. Minerals are naturally existing chemical compounds; they are the 'ingredients' of rocks and different types of rock have different combinations of them. Minerals can form crystals or grains/granules in the rock. The most common minerals in rocks are feldspar and quartz.

Fossils

- A fossil is the preserved remains or traces of a dead organism from a past geological age. Fossils are typically older than 10,000 years.
- How fossils were made:

  After the living thing died, the soft parts decomposed, leaving the hard parts behind.

  The conditions to form a fossil are rare: the shells or skeletons needed to be buried quickly by small particles of rock called sediment. This was more likely to happen in the oceans or swamps. As more layers of sediment build up on top, the sediment around the 'hard parts' compacted and turned to rock.

  Over time, the bones then gradually dissolved as water seeped through the rock. Minerals in the water replaced the bones, leaving a replica (fossil) in the rock of the original bones.

Thinking Point

Were Fossils Once Alive?

Thinking Point

Who Was Mary Anning?

Thinking Point

Which Rock Would Be Best For A Skate Ramp?