

# Oughterside Foundation School - Science

## Topic: Rocks

Year: 3

## Strand: Chemistry

### What should I already know?

- The role of Mary Anning in **palaeontology** and the discovery of **fossils**.
- **Soil** contains **nutrients** and these help plants to grow.
- The meaning of the word **absorb**.
- That **magma** is **molten** rock that is formed in very hot conditions inside the earth.
- Why some materials are used for certain purposes because of their **properties**

### Vocabulary

absorb	soak up or take in
bedrock	the solid rock in the ground which supports all the soil above it
decaying	gradually being destroyed by a natural <b>process</b>
grain	A <b>grain</b> of something such as sand or salt is a tiny hard piece of it
igneous	<b>rocks</b> that are formed by volcanic action or intense heat
imprint	a mark or outline made by the <b>pressure</b> of one object on another
leaf litter	<b>decaying</b> leaves
magma	<b>molten</b> rock that is formed in very hot conditions inside the earth
man-made	things are created by people
metamorphic	<b>rocks</b> that have had their original structure changed by <b>pressure</b> and heat
mineral	something that is formed naturally in <b>rocks</b> and in the earth.
molten	<b>Molten</b> rock, metal, or glass has been heated to a very high temperature and has become a hot, thick liquid
natural	things that exist in nature and are not made by people
nutrients	substances that help plants and animals to grow
palaeontology	the study of <b>fossils</b> as a guide to the history of life on Earth
permeable	if a substance is permeable, something such as water or gas can pass through it or soak into it.
porous	Something that is porous has many small holes in it, which water and air can pass through
prehistoric	the time in history before any information was written down
preserve	to protect from <b>decay</b>
pressure	force that you produce when you press hard on something
properties	the qualities or features that belong to something and make it recognisable
rock	a solid mass made up of <b>minerals</b> . Rock forms much of the earth's outer layer, including cliffs and mountains
sediment	solid material that settles at the bottom of a liquid, especially earth and pieces of <b>rock</b> that have been carried along and then left somewhere by water, ice, or wind
soil	the substance on the <b>surface</b> of the earth in which plants grow
surface	the flat top part of something or the outside of it
surrounding	to be present all around
volcano	a mountain from which hot melted rock, <b>gas</b> , steam, and ash from inside the Earth sometimes burst.
weathered	affected by the weather

### Investigate!

- Explore the types of **rocks** you can find in the local environment.
- Explain why **rocks** are used for different purposes based on their **properties**.
- Research the different living things whose **fossils** are found.
- Explore the different kinds of **soils**, including those you can find in the local environment.
- Compare different types of **soils** by saying what is similar and what is different using scientific vocabulary.
- Investigate what happens when **rocks** are rubbed together.
- Investigate what happens to **rocks** when they are in water.
- Sort different types of rocks based on how rough or smooth they are, whether they have **grains** or crystals, how **permeable** they are, how easily they can break down, how strong they are and what they look like.

### What will I know by the end of the unit?

What are the different types of **rocks**?



- There are three types of **rocks** that are formed **naturally**.

#### • Igneous:

- When **molten magma** cools, **igneous rocks** are formed.
- This either cools and forms **rocks** under the earth's **surface**, or flows out of erupting **volcanoes** as lava and may mix with other **minerals**.
- Examples include granite and basalt.
- This type of rock is strong, hard-wearing and **non-porous**.

#### • Sedimentary:

- Sometimes, little pieces of rocks that have been **weathered** can be found at the bottom of lakes, seas and rivers. This is called **sediment**.
- Over millions of years, layers of this **sediment** builds up forming **sedimentary rocks**.
- Examples include limestone and chalk.
- **Sedimentary rocks** are **porous** and can easily be worn down.

#### • Metamorphic:

- When some **igneous** and **sedimentary** rocks are heated and squeezed (**pressured**), they form **metamorphic rocks**.
- Examples include slate and marble.
- **Metamorphic rocks** are strong

Bricks and concrete are not **rocks** because they are **man-made**.

What are **fossils**?



- **Fossils** are the remains of **prehistoric** life.
- They are usually formed when a living thing (plant or animal) dies and the body is covered up or buried by **sediment** over tens of thousands of years.
- Some **fossils** are formed when the tough bones and teeth in animals, and the woody part of plants are **preserved**.
- Other **fossils** are made from **imprints** in **surrounding sedimentary rock** such as footprints or **imprints** from shells.
- **Fossils** tell us about the Earth and about life that existed hundreds of thousands and millions of years ago.

What is **soil**?



- **Soil** is made from pieces of rock, **minerals**, **decaying** plants and water.
- When **rock** is broken down into small **grains**, **soil** is formed.
- There are layers of **soil**:
  - above the soil is **leaf litter** and recently **decaying** plants.
  - as the **soil** becomes deeper, the **rock grains** become larger until **bedrock** is reached.

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Question 1: Match the rocks to how they are formed.

Start of unit:

End of unit:

igneous

rocks that are changed  
through heat and  
pressure

metamorphic

magma or lava cools

sedimentary

weathered rocks settle at  
the bottom of the sea

Question 2: Match the rocks to an example of them.

Start of unit:

End of unit:

igneous

granite

metamorphic

chalk

sedimentary

marble

Question 3: The word  
metamorphic means?

Start of  
unit:

End of  
unit:

Question 4: Which of these is  
not an example of a natural  
forming rock?

Start of  
unit:

End of  
unit:

igneous

concrete

sedimentary

metamorphic

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Question 6: Which of these words best describes a rock that absorbs water? (tick two)

Start of unit:

End of unit:

permeable

impermeable

porous

waterproof

Question 7: Fossils are usually formed in which rock?

Start of unit:

End of unit:

igneous

concrete

sedimentary

metamorphic

Question 8: Place these in order in which they happen to form a fossil.

Start of unit:

End of unit:

hard parts are turned into fossils over tens of thousands of years

an animal dies

hard parts were buried by sediment

the soft parts decayed

Question 9: Explain why bricks and concrete are not classed as natural forming rocks.

Start of unit:

End of unit:

Question 10: Describe what is happening in each layer of this soil and how soil is formed.

Start of unit:

End of unit:

