# 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 **process** |
| grain | A **grain** of something such as sand or salt is a tiny hard piece of it |
| igneous | **rocks** that are formed by volcanic action or intense heat |
| imprint | a mark or outline made by the **pressure** of one object on another |
| leaf litter | **decaying** leaves |
| magma | **molten** rock that is formed in very hot conditions inside the earth |
| man-made | things are created by people |
| metamorphic | **rocks** that have had their original structure changed by **pressure** and heat |
| mineral | something that is formed naturally in **rocks** and in the earth. |
| molten | **Molten** 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 **fossils** 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 **decay** |
| 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 **minerals**. 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 **rock** that have been carried along and then left somewhere by water, ice, or wind |
| soil | the substance on the **surface** 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, **gas**, 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.

| Topic: Rocks | Year: 3 | Strand: Chemistry |
|---|---|---|

| Question 1: Match the rocks to how they are formed. | Start of unit: | End of unit: |
|---|---|---|
| igneous — magma or lava cools<br>metamorphic — rocks that are changed through heat and pressure<br>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<br>metamorphic — marble<br>sedimentary — chalk | | |

| 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 | | |

| Topic: Rocks | Year: 3 | Strand: Chemistry |
|---|---|---|

| 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: |
|---|---|---|
|  | | |