**Lesson 1**

**Explaining the Earth**

Geologists classify rocks into three main groups according to their texture.

1. Sedimentary rocks.
2. Igneous rocks.
3. Metamorphic rocks.

**Grain :**

Tiny piece of a rock or a mineral.

**Texture of rock :**

The combination of sizes and shapes of grains.

**Erosion :-**

Movement of bits of weathered rock away from the place where they were formed .

**Sediment :-**

The bits of rock or sand dropped on the bottom of streams or rivers .

**Deposit :-**

When moving water drops rock grains which build up in layers beside the rivers .

**Types of weathering:**

1. Chemical weathering:-

Caused by chemical reactions mainly with water and substances dissolved in it.

Example:- rainwater when falls on rocks it can react with the minerals in that rock.

1. Physical weathering:-

Breaking apart of rocks by mechanical forces without changing their chemical composition.

Example:- changes in temperature causing the minerals in rocks to expand and contract making cracks in rocks, forcing the rock apart.

1. Biological weathering:-

Weathering caused by organisms ( plants – animals –bacteria )

Example:- plant roots growing into cracks in the rocks, and when roots grow bigger , they make the crack wider and the rock break apart.

**Questions :**

1. How can rocks be weathered?
2. State the difference between sediments and deposits ?

**Lesson 2**

**How are sedimentary rocks formed**

Sedimentary rocks are formed from the broken remains of other rocks that become joined together.

1. A river carries, or **transports**, pieces of broken rock as it flows along.
2. When the river reaches a lake or the sea, its load of transported rocks settles to the bottom. ( **deposited**.)
3. The deposited rocks build up in layers, called sediments.
4. The weight of the sediments on top, squashes the sediments at the bottom. ( **compaction**.)
5. The water is squeezed out from between the pieces of rock and crystals of different salts form.
6. The crystals stick the pieces of rock together. This process is called **cementation**.

These processes , may take millions of years for sedimentary rocks to form.

**What are sedimentary rocks like?**

Sedimentary rocks contain rounded grains in layers. The oldest layers are at the bottom and the youngest layers are at the top. Sedimentary rocks may contain fossils of animals and plants trapped in the sediments as the rock was formed

. Examples of sedimentary rock are:

* chalk
* limestone
* shale
* sandstone

**Questions :**

**2 , 3 , 4 , 5 pg 106 & 107**

**Lesson 3**

**How are igneous rocks formed**

Igneous rocks are formed from molten rock that has cooled and solidified.

1)The inside of the Earth is very hot - hot enough to melt rocks.

2) Molten (liquid) rock is called magma. When the magma cools enough, it solidifies and igneous rock forms.

**What are igneous rocks like?**

Igneous rocks contain randomly arranged interlocking crystals. The size of the crystals depends on how quickly the molten magma solidified:

* a)magma that cools slowly will form an igneous rock with large crystals
* b)lava that cools quickly will form an igneous rock with small crystals.

Magma:- molten rock beneath the surface of the Earth.

Lava :- molten rock that runs out of volcanoes

Examples : Basalt – Granite – Obsidian

**Questions :**

**1 , 2 , 3 , 4 , 5 pg 108 & 109**

**Lesson 4**

**How are metamorphic rocks formed**

Metamorphic rocks are formed from other rocks that are changed because of heat or pressure.

Earth movements can cause rocks to be deeply buried or squeezed. As a result, the rocks are heated and put under great pressure. They do not melt, but the minerals they contain are changed chemically, forming metamorphic rocks.

## What are metamorphic rocks like?

Marble is formed from limestone and contains tiny interlocking grains.

Slate, formed from mudstone, split and arranged in layers. This makes slate useful for making roof tiles because it can be split into separate flat sheets.

Quartzite is formed from sandstone and contains interlocking crystals

* Metamorphic rocks rarely contain fossils. Any that were present in the original sedimentary rock will not normally survive the heat and pressure.

Examples :- Marble – Schist – Gneiss – Slate

**Questions :**

**1 , 2 , 3 , 4 , 6 pg 110 & 111**