

## EARTH MODEL

A **MODEL** is a visual representation of a concept, principle or idea.

A geological model of the Earth as a globe/ball gives us an idea of the Earth's interior composition.

The layers within this globe include:  
**Inner core** – very hot solid iron and nickel under extreme pressure  
**Outer core** – molten rock as the inner core is under less pressure  
**Lithosphere** made up of:

**Mantle** –solid rock near the crust and molten rock below it

**Crust** – solid rock covering all the other layers

A **geologist** studies the EARTH.

## EARTHQUAKES

**EARTHQUAKES** are vibrations within the Earth's crust caused by the release of energy when rock in the crust suddenly shifts position.

The origin of the earthquake occurs at the **focus**. The **epicentre** is on the surface at the point directly above the focus.

Vibrations travel in **seismic waves** (primary and secondary) through the crust from the epicentre.

The **intensity** or ground motion of an earthquake is measured by the **Richter scale** 0-10. **Magnitude** indicates increasing intensity on the scale by factors of 10.

## VOLCANOES

A **VOLCANO** is an opening in the Earth's crust allowing solid and molten rock (magma or lava), gas, and dust to escape.

The opening of the volcano is called the **vent**. When the vent is covered, volcanoes can be **dormant** for a long time.

An **eruption** occurs when enough pressure builds up to open the vent and allow material from below the crust to escape.

The band of volcanoes around the rim of the Pacific Ocean is called the **RING of FIRE**.

## WEATHERING

**MECHANICAL weathering** occurs when rock is broken or worn away by the physical action of water or the wind.

**CHEMICAL weathering:** occurs when water and oxygen react with minerals in the rock to produce new minerals.

**BIOLOGICAL weathering:** is the wearing away of rocks by living things, such as the roots of plants.

## EROSION and SEDIMENTATION

The wearing away of the land by the action of flowing water is called **EROSION**. As water flows it carries a load of silt, sand, mud and gravel (called sediment). Sediments are deposited (**DEPOSITION**) as the water slows. This **SEDIMENTATION** creates landforms (fluvial) on the flood plain.

Sudden action of flowing water can create **LANDSLIDES**.

**GLACIERS** (moving snow and ice) can also carve the landscape creating landforms as it advances or retreats. Landforms or actions can include; drumlins, eskers, moraines, lakes, erratic and bedrock abrasions.

## ROCKS & MINERALS

The naturally occurring solid materials that make up rocks are called **MINERALS**. All **ROCKS** are made of one or more minerals.

**PROPERTIES** are used to identify minerals that make up rocks. Properties include: color, lustre, streak, cleavage and fracture, and hardness (using Moh's hardness scale).

To identify a rock you first need to know what minerals it contains and how the rock was formed.

Once the rock has been identified, its properties can indicate how it can be used, or valued.

## ROCK CLASSIFICATION

**IGNEOUS:** rocks form from hot, molten rock called magma (lava). If it cools and hardens below the surface, it is called **intrusive**. If it cools and hardens on the surface it is called **extrusive**.

**SEDIMENTARY:** are rocks that are formed by layers of salts, minerals or organic material under pressure.

**METAMORPHIC:** are rocks that have been changed by intense heat or pressure deep below the Earth's surface.

## GEOLOGICAL TERMS

Each of these terms are used throughout the Unit on Geology. Do you know what each term means?

Geology  
Geologist  
Seismograph  
Seismogram  
Volcanologist  
Surveyor's level  
Rock Hound  
Remote sensing  
Geophysicist  
Geophysical prospecting  
Geochemical prospecting  
Exploration  
Paleontologist  
Ornithologist

## THE ROCK CYCLE

There is no specific order that determines how rocks are formed – it depends on the physical environment where rock is found.

Rocks can be heated, melt to form magma and then form igneous rock, which can then be broken down into sedimentary or changed into metamorphic rock.

The **ROCK CYCLE** is a model that helps us visualize how these changes can occur. As is the case with any cycle, there is no beginning and there is no end, as the process of rock building continues endlessly.