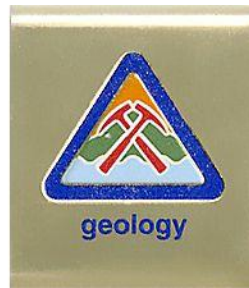


Geology Belt Loop

for Cub Scouts and Webelos



Overview

- 1) Define Geology.
- 2) Collect a sample of Igneous, Sedimentary and Metamorphic rocks. Explain how each is formed.
- 3) Explain what a mineral is. Collect three samples of minerals.

What is Geology?

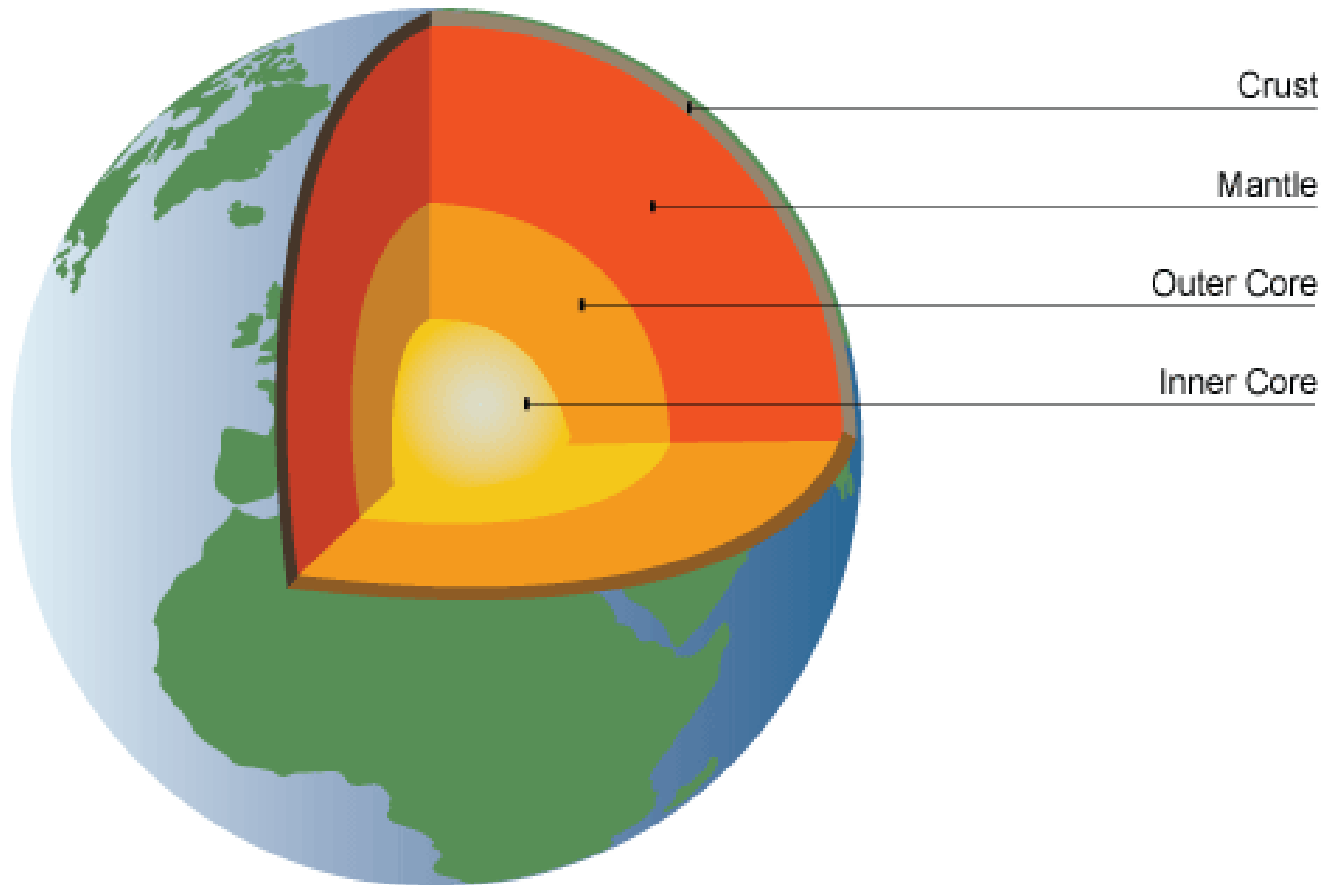
- Geology is the science that deals with
 - what the Earth is made of,
 - its physical structure,
 - its history,
 - and the processes that act on it.
- Geology is also the science of how these things have changed over time.

In other words ...

- Geology is the science that studies the
 - Rocks
 - Dirt
 - Water
 - and other **non-living** stuff

... **on** the surface of the Earth, and **under** the Earth's surface.

What does the Earth look like inside?



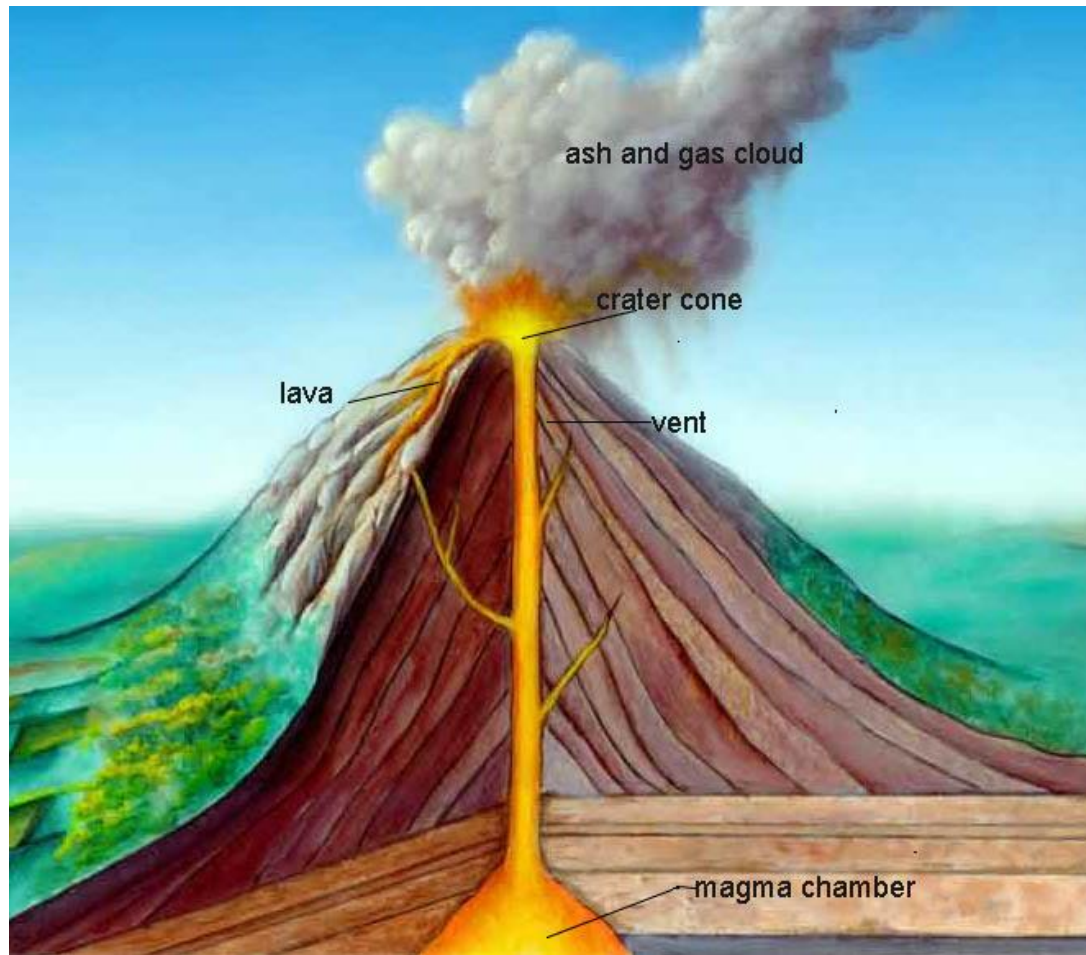
Rocks and More Rocks

- There are a lot of different rocks.
- Scientists like to put things in categories so they've come up with three main categories of rocks:
 - Igneous
 - Sedimentary
 - Metamorphic.

Igneous Rocks

- An **igneous** rock is formed when molten rock cools.
- If it cools and becomes solid *under ground* it's called **intrusive** rock.
- If it cools and becomes solid *above ground*, it's called **extrusive** rock.

Where can we find molten rock?



Examples of Igneous Rocks

- Here are some examples of Igneous rocks:

Intrusive

Granite

Diorite

Gabbro

Small, but visible crystals

Extrusive

Obsidian

Pumice

Basalt

Tiny, or no crystals

Sedimentary Rocks

- Sediment is small particles that settle to the bottom of a liquid.
- The particles can be bits of sand, dirt, broken seashells, plants, dead bugs, or whatever.
- If layers of sediment are pressed together you get **Sedimentary** rock.
- Sometimes the particles form different colored layers, like a cake.

Examples of Sedimentary Rocks

- Here are some examples of Sedimentary rocks:
 - Sandstone (layers of sandy bits)
 - Shale (layers of mud and clay)
 - Limestone (layers of ground up shells)
 - Coal (lumps of decomposed plants).

Metamorphic Rocks

- What if a rock is buried deep below the Earth's surface.
- It gets very hot, but not so hot that it melts.
- It may also have a lot of pressure on it.
- The rock changes (morphs) its chemical composition and texture.
- Now it's a **Metamorphic Rock**.

Examples of Metamorphic Rocks

- Here are some examples of Metamorphic rocks (and what they can start as) :

Marble (Limestone)

Chert (Mudstone)

Soapstone (Talc)

No layers

Schist (Granite and Clay)

Slate (Shale)

Gneiss (Granite)

Has layers

Minerals

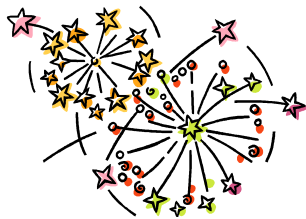
- Mineral can look like rocks.
 - Both are solid (not liquid or gas).
 - Both occur naturally (not manmade).
 - Neither is made by an organism (a living thing).
- Minerals have a definite chemical composition, such as NaCl.
- Minerals have atoms arranged in a repeating pattern, such as Na – Cl – Na – Cl – Na – Cl.

Can a Rock be a Mineral?

- YES.
- A rock is made up of one or more minerals.
- Examples of minerals:
 - Halite (NaCl)
 - Quartz (SiO₂)
 - Pyrite (FeS₂)
 - Feldspar (KAlSi₃O₈)

Belt Loop Requirements

- Explain what Geology is.
- Collect samples of Igneous, Sedimentary and Metamorphic rocks.
 - Tell how each was formed
- Collect samples of 3 minerals.
 - Explain what a mineral is.



Geology Belt Loop Completed

