

# Rocks

## Discussion Questions

- 1) What are the three main types of rocks?
- 2) How do rocks form?
- 3) What are some examples of the three types of rocks?
- 4) How long do rocks take to form?



# There are three main classes of rocks:

## **Igneous**

Rocks that are formed when molten magma or lava from a volcano cools and solidifies.

## **Sedimentary**

Rocks that are formed when layers of sediment (sand, pebbles) are compacted.

## **Metamorphic**

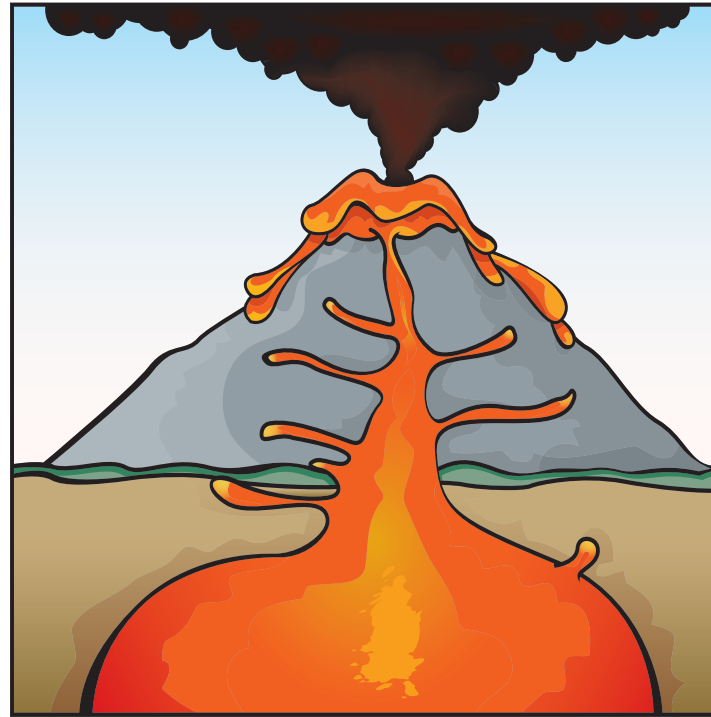
Rocks that are formed when rock layers are subjected to heat and pressure that causes a change in the structure of the rock (formation of crystals).



# Igneous rocks form:

a) When lava flows or blasts out of a volcano, cools and solidifies.

b) When magma collects under the ground and cools slowly.





# Examples of Igneous Rocks



scoria

Fast cooling lava can produce light rocks with air pockets. Examples include pumice, and scoria.



pumice



obsidian

Fast cooling lava can also produce densely packed rock with little evidence of crystals. Examples include basalt and obsidian.



basalt



granite

Slower cooling lava can produce rocks with greater crystal content. Examples include granite, gabbro and diorite. The color and texture of the rock depends on the mineral content and the speed of cooling.



granite samples, different colors



# Sedimentary rocks form:

When loose sediments (including sand, pieces of shell, pebbles) are deposited by moving wind, water and ice and compacted over thousands of years, cementing into rock. Layers of deposits can sometimes be seen in sedimentary rock faces.





# Examples of Sedimentary Rocks



sandstone



limestone



conglomerate



shale

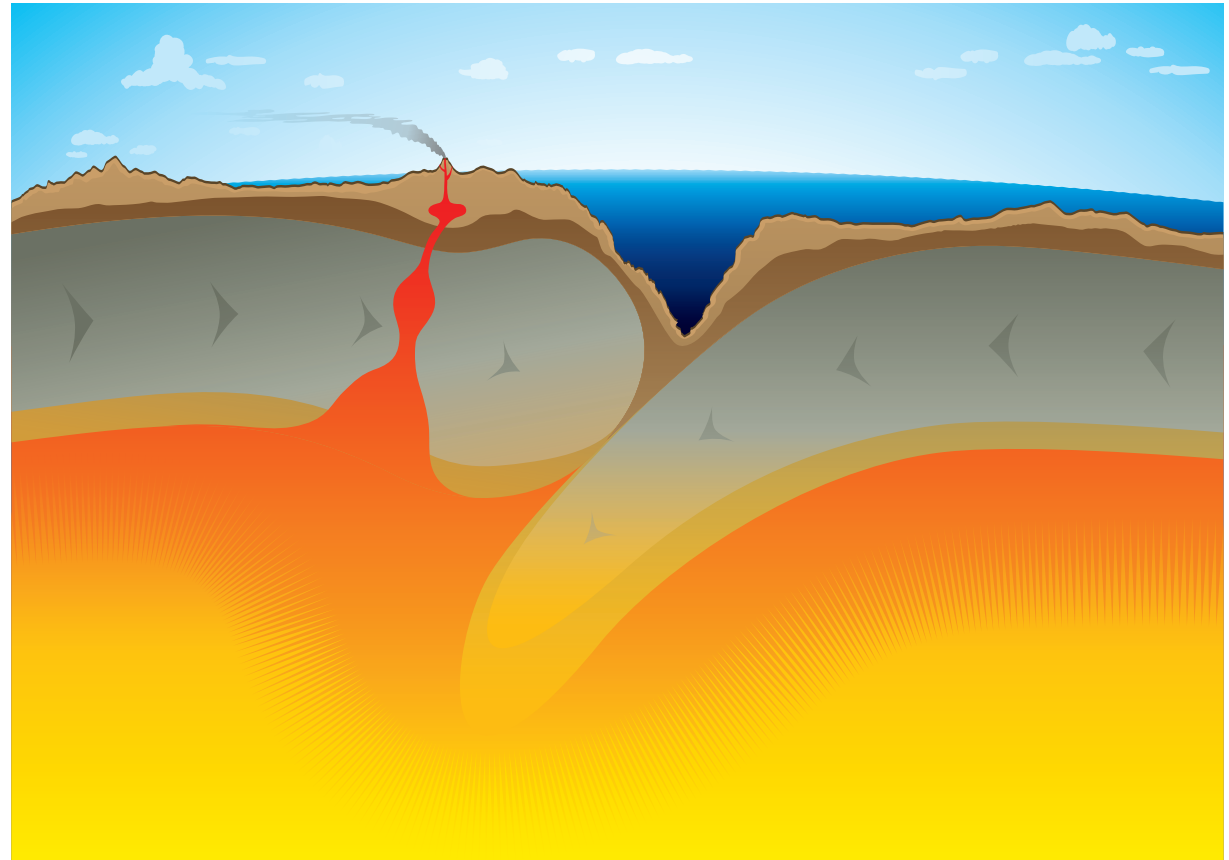


# Metamorphic rocks form:

When igneous or sedimentary rocks are changed in texture or mineral composition by heat, pressure and/or the chemical action of fluids and gases.

This can occur when rock layers are compacted deep under the surface of the Earth. There is intense pressure from the layers above. It often occurs in subduction zones, where continental plates are pushing against each other and one layer is forced down under the other.

Metamorphic rocks are eventually exposed on the surface by changes in the Earth's crust due to earthquake action and erosion.



**Metamorphosis** means to have a change in form, structure or appearance. Sedimentary rocks and igneous rocks can go through a metamorphosis when they are under intense pressure and heat.





marble

Examples include quartz and marble. These rocks are the result of the metamorphic changes to the sedimentary rock limestone. Some minerals in the limestone crystallize when under pressure.



quartz



gneiss

Sometimes the intense pressure forces similar particles to line up, producing layers of texture. The result is the streaky layers of color that can be seen in examples such as gneiss and slate.



slate



chert

The chemical changes that occur in metamorphic rocks can produce a glassy texture that is very beautiful when cut and polished.



jasper