



Types of Rocks and The Rock Cycle

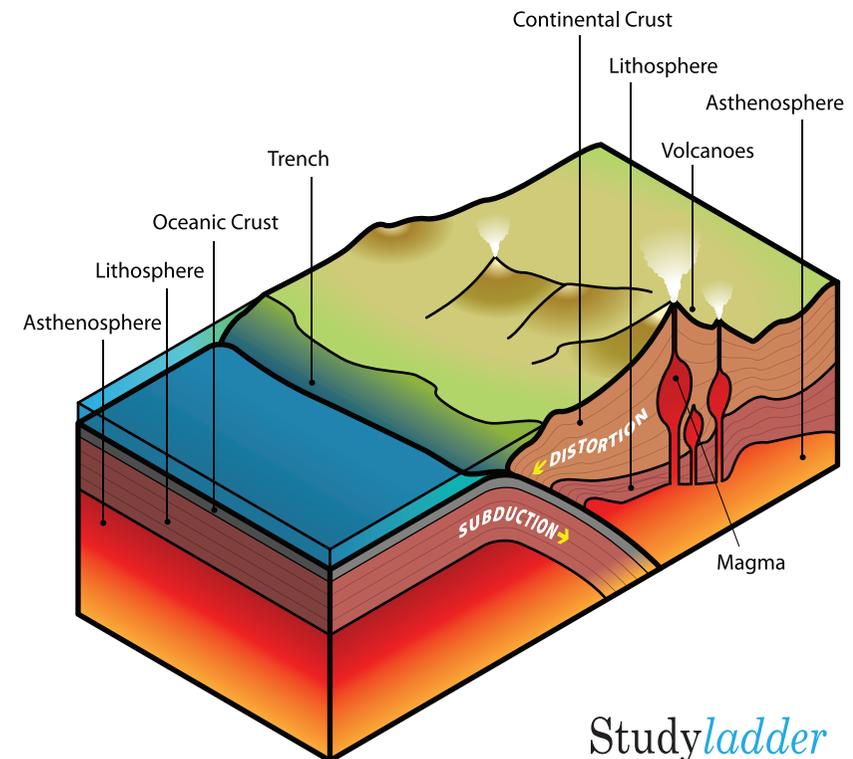
What are rocks and where do they come from?

Rocks are part of the structure that makes up the *lithosphere* of our planet. The lithosphere is the solid outer part of our planet which is made up of the crust and upper part of the Earth's mantle. The mantle is hot enough to make solid rock melt.

The lithosphere is broken into a number of tectonic plates that fit together like floating jigsaw puzzle pieces. Some plates are moving towards each other, some apart from each other and some slide alongside others. The edges of some plates are pulled down toward the hot mantle. At certain places magma rises through cracks in the lithosphere and flows out over the surface of the Earth's crust as lava. When lava cools it solidifies into *igneous rock*.

Rocks on the surface of our planet are weathered by wind and water. Tiny fragments of rock are washed or blown away. These sediments collect together in layers. Many layers of sediments press down over time forming *sedimentary rock*.

Sometimes sedimentary or igneous rock is forced deep into the lithosphere where it is squeezed and heated. These actions change the structure of the rock forming *metamorphic rock*.



Rock Structures

All rocks are made up of minerals. The different minerals give rocks their different features.

These two rock samples are made of similar minerals. They both contain quartz and feldspar as well as small amounts of mica and other minerals.

The rhyolite on the left has smaller crystals while the granite on the right has larger crystals. Larger crystals form when magma cools slowly underground.

New rocks can be made when volcanoes erupt. They can also form when sediments that have eroded from surface rocks collect together and become compacted over time. Old rocks can be changed when they are heated under pressure to form a metamorphic rock. They can also melt completely when they are pulled deep down under the ground, forming new magma.



rhyolite
(igneous)



granite
(igneous)



marble (metamorphic rock)

The Rock Cycle

Wind and Rain

All rocks are *weathered* (broken down) over time by *erosion*. Small particles of rock are transported by wind and water and deposited as *sediment*.

Heat and Pressure

Sediments are *compacted* (squeezed) and *cemented* (stuck together) to form *sedimentary* rock.

Layers of sedimentary or igneous rock that are forced deep down go through chemical and physical changes forming *metamorphic* rock.

Melting and Cooling

Rocks that are dragged deep down at tectonic plate boundaries melt due to the heat of magma.

Molten lava from volcanic activity solidifies into *igneous* rock as it cools.

