

Geological Processes - The Rock Cycle Catalyst 2 Unit H



Dr. E. Kruiswijk

Geological Processes - The Rock Cycle

This picture shows a crystalline rock. Scientists can tell a lot about a rock sample by looking at it down a special type of microscope.



There are three main types of rocks:

Sedimentary - formed by the "cementing together" of small grains of sediment.

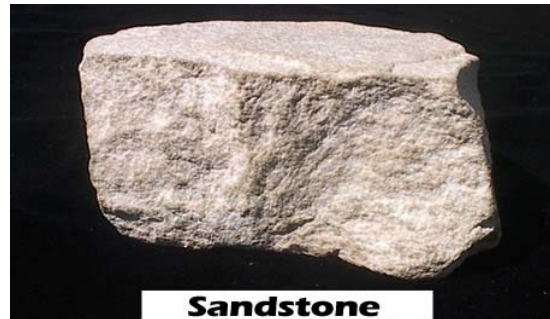
Igneous - formed when molten rock cools.

Metamorphic - rocks changed by the effect of heat and pressure.

Sedimentary rocks

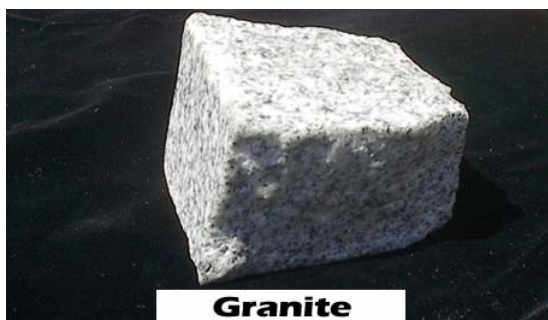
Grains from weathered and eroded rocks build up in sedimentary layers. These rocks have formed from layers of sediment which have settled at the bottom of lakes and oceans. As the layers build up, the bottom is under immense pressure and air and water are squeezed out. We call these processes **compaction** and **cementation**. The sediments are compacted together and over millions of years they change into rocks. As sediments are laid down, fragments of plants and animals may be trapped and preserved as fossils. If you look closely at the samples you will see that they are composed of cemented grains or fragments. Limestone is a sedimentary rock and it is used in road building and to make lime. Cement

is made by heating limestone with clay. Concrete is made by mixing cement, sand, chippings and water.



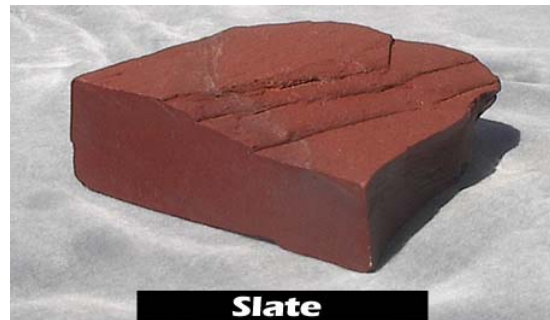
Igneous rocks

Igneous rocks are formed when molten (liquid) magma cools. If the magma erupts from volcanoes it will cool quickly in the surrounding cold air and form small crystals (**extrusive igneous rock**) e.g. basalt. The magma cools slowly when it is forced into the upper layers of the Earth's crust because the heat is lost to the surrounding rock. This forms large crystals (**intrusive igneous rock**) e.g. granite.



Metamorphic Rocks

These are rocks which have been made from existing ones. They may have been crushed or baked but not melted. This happens in the Earth's crust and usually takes millions of years to happen. Slate is used for roofs. Look carefully at the samples, metamorphic rocks are often made of bands of interlocking crystals.



Homework summary of Rock Types.

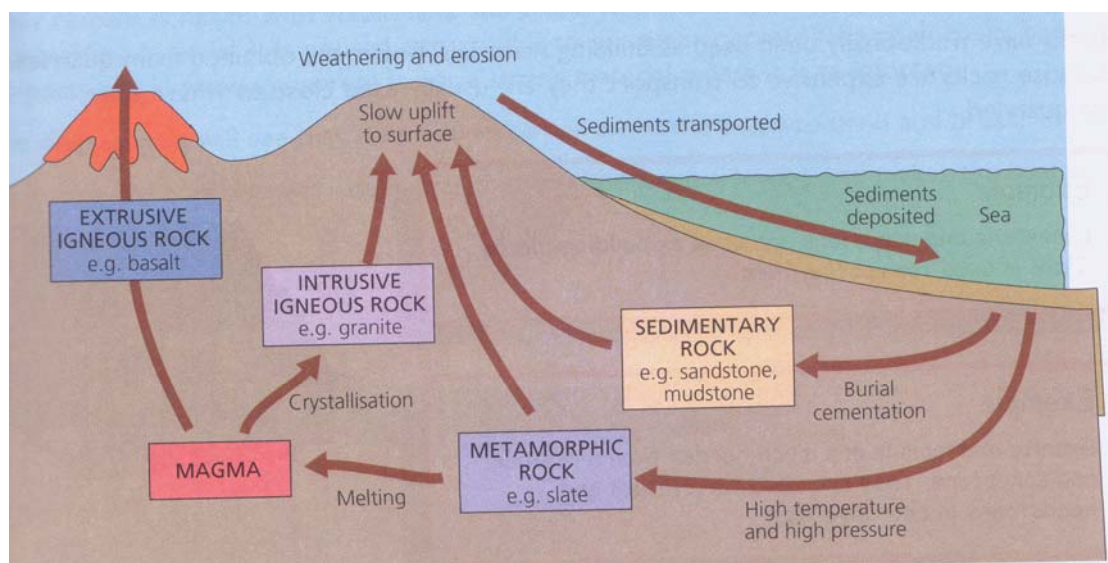
Use the information to produce the summary table.

Made from existing rocks by pressure and/or heat, igneous, slate, schist, made by cooling molten magma, basalt, formed by pressure on layers of sediment, randomly arranged interlocking crystals, sandstone, metamorphic, bands of interlocking, shale, layers of grains or fragment, limestone, sedimentary, marble, granite

Rock type	How it is made	Appearance	Examples

The Rock Cycle

Rocks of one of the three main groups may change into another group over millions of years. This is called the **Rock Cycle**. Molten rock comes up from underground as lava, it cools to make igneous rocks. These are worn away by weathering & erosion then they are washed down to the sea where they become sedimentary rock. When these rocks get buried the heat and pressure may change the sedimentary rock into metamorphic rocks. When these rocks get buried the heat and pressure may change the sedimentary rock into metamorphic rocks.



Homework summary of The Rock Cycle.

There are t_____ different types of rock. Igneous rocks are made from m_____ magma which has c_____ and solidified. Where the rock reaches the surface we sometimes get a v_____. The rocks contain c_____ which are made from various m_____. The crystals are arranged r_____.

Sedimentary rocks are formed from l_____ of sediment laid down in lakes or s_____ over m_____ of years. The particles are then cemented together by crystals of s_____. Sometimes the remains of long dead plants and animals are found in the rock. These are called f_____. Scientists study the fossil type to work out the a_____ of the rock. In general, the deeper the rock, the o_____ it is.

Metamorphic rocks are formed by c_____ to other types of rock. They can be caused by h_____ or p_____ effects, or both together. The changes take a l_____ time. Metamorphic rocks contain tiny c_____ and may also have l_____.

Layers, Fossils, Changes, Seas, Crystals (twice), Randomly, Millions, Age, Cooled, Pressure, Three, Molten, Long, Layers, Minerals, Heat, Volcano, Older, Salt