

Earth Science 11
Unit 3 – Minerals and Rocks
Day 10 – Metamorphic Rocks

Name: _____

Date: _____

Block: _____

Metamorphism: _____ when rocks are changed by heat and pressure

Metamorphism means “to change form”

Usually look very different from the original rocks (parent rocks)

Formation of metamorphic rocks:

- Most metamorphic changes occur at elevated temperatures and pressures.
- There are two forms of metamorphism based on setting. 1) Contact metamorphism
2) Regional metamorphism

Contact Metamorphism: _____

During contact metamorphism, hot magma moves into rock.

This is also known as low-grade metamorphism.

One example is marble... magma intrudes into limestone to make marble.

Regional Metamorphism: _____

Regional metamorphism results in large-scale deformation and high-grade metamorphism.

Basically this is when large areas of rocks are put under extreme pressures and temperatures.

Causes of Metamorphism: heat, pressure, and hydrothermal solutions.

Rocks are usually subjected to all three of these things at the same time.

Heat:

- The most important agent of metamorphism.
- Provides the energy needed to drive the chemical reactions.
- These cause minerals to re-crystallize or new ones to form.
- Comes from two locations – magma & change in the depth

Pressure:

- Pressure increases with depth – the farther you go under the earth’s surface, the more pressure the rocks are under.
- This causes rocks to be more compact.
- These will also cause the minerals to flatten out instead of stay rounded and break.

This is why some mountains and rocks look like they are layered.

Hydrothermal Solutions:

- The hot water around the rock help minerals re-crystallize by dissolving original minerals and then depositing new ones.
- The overall composition of the rock may change



