**The Rock Cycle Notes:**

**Unit 1: Materials and Processes that Shape a Planet**

**Mini-Unit:** Rocks

**Goal 2**: The student will demonstrate the ability to describe and classify materials that make up Earth

**Goal 3**:The student will demonstrate the ability to explain how rock formation, weathering, sedimentation, and rock reformation constitute a continuing “rock cycle” in which the total amount of material stays the same even as its form changes

**Objectives – The student will be able to:**

* Describe the physical characteristics of igneous, metamorphic, and sedimentary rocks, including crystal size and shape, mineral and chemical composition, density and origin
* Describe how convection, density, and the law of conservation explain the movement of materials within the rock cycle
* Describe the constructive and destructive processes that drive the rock cycle, including sedimentation, lithification, crystallization, deformation, deposition, erosion, melting, cooling, metamorphism, subsidence, and weather

**Textbook:** Chapter 6, Page 125

Three Major Types of Rocks:

Igneous – formed when magma, or molten rock, cools and hardens

Metamorphic – formed as a result of tremendous pressure, extreme heat, and chemical processes

Sedimentary – erosion breaks down all types rocks into small fragments which form deposits which are compressed and cemented together

Rock Cycle:

Rock Cycle – the series of processes in which rock forms, changes from one type to another, is destroyed, and forms again by geological processes

**Igneous**

Weathering & Erosion Heat & Pressure

Melting

Weathering & Erosion

Heat & Pressure

**Sedimentary** **Metamorphic**

Igneous Rocks:

Igneous Rock can be identified by the size of crystals that are present as a result of the cooling process of melted minerals.

1. Coarse Grained – large minerals grains suggest a slower cooling process
2. Fine Grained – small mineral grains that cannot be seen by the eye suggest a quicker cooling process that does not allow for large grain formation
3. Glassy – when magma with very little dissolved gases in it cools very quickly
4. Vesicular – when magma with a lot of dissolved gases in it cools very quickly

Crystallization – the formation of crystals

Sedimentary Rocks:

Sediment – loose fragments of rock, minerals, and organic material that result from natural processes, including the physical breakdown of rock

Weathering & Erosion **–** the physical processes of breakdown of rock into sediment by natural conditions such as rain, wind, etc.

Deposition – the settling of sediment into layers as weathering and erosion ends

Compaction – process in which the volume and porosity of a sediment is decreased by the weight of overlying layers of sediment

Cementation – process in which minerals precipitate spaces between sediments and bind them together to form rock

Stratification – the resultant banding that can be seen in rock faces of various types of sedimentary rocks

Metamorphic Rocks:

Metamorphism – the process in which one type of rock changes into metamorphic rock because of chemical processes or changes into metamorphic rock because of chemical processes or change in temperature and pressure

* Can be due to just contact with magma or due to large scale changes in temperature and pressure over a large area

Foliation – the metamorphic rock texture in which grains are arranged in planes or bands