**Formation of Sedimentary Rocks**

**Sediment -** Small pieces of rock that are moved and deposited by agents of erosion

**-** Wind, water, glacier, gravity

**-** When sediment becomes glued together, it forms sedimentary rock

- Least common type of rock

**5 Steps to Create Sedimentary Rocks (WED-CC):**

**1. Weathering -** Process that breaks rock into smaller pieces

**-** Chemical weathering occurs when rock dissolves and changes into different rock types (Ex. Oxidation)

**-** Physical weathering breaks rocks down without changing chemical composition

**2. Erosion -** Removal and transport of weathered materials from one location by natural forces

**3. Deposition -** Process by which sediment is laid down or deposited in a new location

**-** Largest particles deposited first

- Smallest particles on top

- Wind and water deposit sediment in layers distinguished by the size of particles

- Glaciers and gravity produced unsorted piles of sediment

**\*Just because a rock goes through WED it does not make it a sedimentary rock\***

**Lithification -** The physical and chemical processes that change sediment into sedimentary rocks

**4. Compaction -** The weight of overlying layers forces sediment into a sedimentary rock to bond together

**5. Cementation -** The process in which dissolved minerals precipitate out of groundwater and new or the same minerals grow between sediment grains forming a bonding agent

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**Types of Sedimentary Rocks**

**Clastic (Clasts) -** Rock formed from rock and mineral fragments produced by weathering and erosion.

- Most common type of sedimentary rocks

- Classified by particle size

- Goes through WED-CC

- **(Ex.) Breccia, Conglomerate**

**Coarse-grained** **-** Gravel-sized rock and mineral fragments

**Conglomerate -** Rounded gravel-sized particles

- Due to sediment being transported to running water

**Breccia** **-** Angular gravel-sized particles

- Sediment being transported short distances

**Medium-grained** - Sand-sized rock and mineral fragments

**(Ex.) Sandstone -** Porous medium-grained rock

**Porosity -** The percentage of open space between grains

- Allows water to pass through (natural filter)

**Fine-grained -** Silt and clay-sized particles

**(Ex.) Shale** - low porosity rock formed in swamps, ponds, and deep oceans

**Chemical -** Involves the process of evaporation and precipitation of minerals

- As water evaporates from lakes and oceans, minerals are left behind

**Evaporites -** Form when concentrations of dissolved minerals in water reach saturation due to evaporation of water

- Crystal grains precipitate out of the solution and settle to the bottom

- Crystalline limestone, Rock salt

**Biochemical -** Formed from the remains of once-living organisms

- Organic

- Coal (Plants), Shell Limestone or “Coquina” (Shells)

- Goes through WED-CC

**\*Fossils are rare but are most common in sedimentary rocks\***

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**Metamorphic Rocks**

**Metamorphic Rocks -** Rocks that can be changed by extreme heat, extreme pressure, or chemical reactions

- Change without melting

- Metamorphic rocks usually are denser than parent rock

**Solid State Alterations -** Minerals within rock change to new minerals that are stable at new temperature and pressure

**Foliated -** Have layers or bands ( Regional Metamorphism )

- Due to pressure

- Slate, phyllite, schist, and gneiss

**Non-Foliated -** Minerals with blocky crystal shapes ( Contact Metamorphism )

- No bands

- Quartzite and marble

**Porphyroblasts -** Large crystals that grow during metamorphism

**Parent Rock -** Rock before metamorphism (source rock)

**Regional Metamorphism -** For foliated rocks

**(Ex.) Pressure**

**Hydrothermal Metamorphism -** For foliated rocks

**(Ex.) Chemical Reaction**

**Contact Metamorphism -** For non-foliated rocks

**(Ex.) Heat**

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**The Rock Cycle**

- Forces inside Earth and at the surface that produce a rock cycle

- Processes on and beneath Earth that change rock from kind to another

- All rocks can change into any rock. The rock cycle is continuously occurring

**The Rock Cycle Order:**

1. Igneous Rocks

2. W.E.

3. Sediment

4. D-CC

5. Sedimentary Rock

6. Extreme Heat Pressure

7. Metamorphic Rock

8. Melted By Magma

9. Cooling & Crystallization

10. Igneous Rocks