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EARTH SCIENCE – UNIT 2 – CHAPTER 4 NOTES

ROCKS

4.1 Three Types of Rocks

Igneous Rock = a rock formed from the cooling and hardening of molten rock from a volcano or from deep inside the Earth (most abundant type of rock)

Sedimentary Rock = a rock formed when fragments of rocks, minerals, and/or organic matter are compacted or cemented together

Metamorphic Rock = a rock formed when an igneous, sedimentary, or other metamorphic rock is changed by heat and pressure

4.1 The Rock Cycle

SHOW DIAGRAM OF THE ROCK CYCLE

5 TYPES OF ROCKS (CLOCKWISE)

1. Igneous Rock
2. Sediments
3. Sedimentary Rock
4. Metamorphic Rock
5. Magma

5 WAYS ROCKS ARE AFFECTED

1. weathering and erosion (W+E)
2. compaction and cementation (C+C)
3. heat and pressure (H+P)
4. melting (M)
5. cooling (C)

4.2 Igneous Rocks

Igneous Rock = a rock formed from the cooling and hardening of molten rock from a volcano or from deep inside the Earth (most abundant type of rock)

1st way of classifying:

- intrusive = cooled below the Earth's surface; cools slowly; large mineral grains
- extrusive = cooled on or above the Earth's surface; cools quickly; small mineral grains

2nd way of classifying:

- basaltic = dense, heavy, dark-colored, usually contain iron and magnesium
- granitic = less dense, light, light-colored, usually contain silicon and oxygen
- andesitic = in between basaltic and granitic

4.3 Metamorphic Rocks

Metamorphic Rock = a rock formed when an igneous, sedimentary, or other metamorphic rock is changed by heat and pressure

Heat and pressure causes mineral grains to melt and become flattened

SHOW PICTURE OF PARTICLES BEING FLATTENED BY HEAT AND PRESSURE

Main way of classifying:

- foliated = when mineral grains flatten and line up in parallel bands
- non-foliated = when mineral grains flatten and rearrange, but do not form parallel bands

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4.4 Sedimentary Rocks

Sedimentary Rock = a rock formed when fragments of rocks, minerals, and/or organic matter are compacted or cemented together

Sediment = loose materials, such as rock fragments, mineral grains, or plant/animal remains, moved by wind, water, ice, or gravity

Sediments are made by...

- weathering = breaking of rock into smaller pieces
- erosion = the movement of weathered material by wind, water, ice, or gravity

1st way of classifying:

- compaction = layers of small sediments become compressed by the weight of the layers above them (small grain size; produces a banding pattern)
- cementation = large sediments are glued together by mineral deposits in between the sediments (large grain size; usually no banding pattern)
- evaporation = formed when solutions (liquids) evaporate, leaving behind mineral deposits (usually contains calcite or halite)

2nd way of classifying:

- clastic or detrital = broken down fragments of other rocks
EX: conglomerate (rounded pieces), breccia (sharp angles)
- chemical = formed when a solution evaporates
EX: limestone (calcite), rock salt (halite)
- organic = formed from the remains of dead plants and animals
EX: chalk (finely crushed shells), coal