Name: _____

MINERALS

Naturally occurring, usually inorganic solid that has a definite crystalline structure & chemical composition

Can be classified into two groups

Silicates

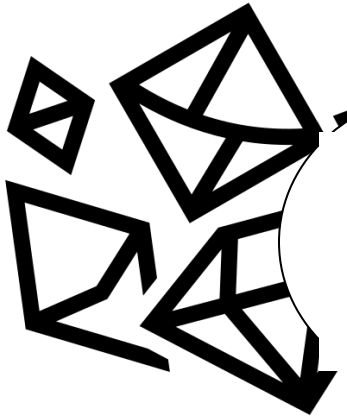
combination of silicon + oxygen (90%)

Non-Silicates

do not contain silicon (10%)

There are 6 major groups of these:

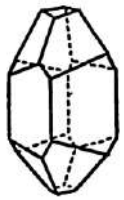
- *Native Elements
- Carbonates
- Halides
- Oxides
- Sulfates
- Sulfides



How are all Minerals formed:

- As Magma & Lava Cool
  Fast cooling = no/small crystals
  Slow cooling = large crystals
- by Metamorphism- temperature & pressure within the earth
- From Solutions Precipitate – when water evaporates & leaves behind a substance

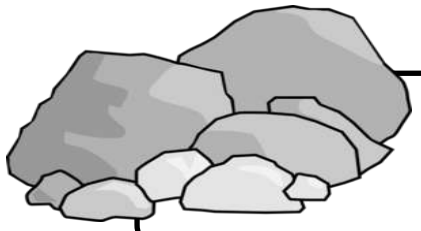
What are minerals? (Characteristics)

Definite Chemical Composition	Solid	Usually Inorganic	Crystalline Structure	Naturally Occurring
Element – pure substance that cannot be broken down in to simpler substances. Each element is made up of only one kind of atom. Atoms – building blocks of matter Molecules – strongly bonded atoms Compound – molecules of 2 or more elements	Has a definite volume & shape Matter – anything that has volume & mass Volume – amount of space an object takes up *Native element – minerals composed of only one element	One that is not made up of living things or the remains of living things	Crystal – solid, geometric form  	

How do I identify a mineral? (Physical Properties)

Color	Streak	Luster	Cleavage or Fracture	Density	Hardness	Special Properties
	The color of the powdered form, this can be different from the color of the mineral	The way the surface reflects light ex) metallic (shiny), non-metallic (dull)	Cleavage – split along specified planes forming smooth, flat surfaces Fracture – break unevenly into pieces of irregular surfaces		Resistance to being scratched (how easily it scratches) Mohs Hardness Scale (1-10) 1 = softest 10 = hardest	Specific gravity Magnetic Changes under light (glows) Reaction with hydrochloric acid Smell or taste

A Gem  **is a mineral or rock that has value! (rare)**



Rocks

Rock Composition:

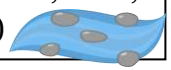
a naturally occurring solid mixture of one or more minerals, maybe organic matter, and possibly non-organic material. It is a natural resource.

How do we classify rocks?

1. By mineral composition (makeup)
2. By texture (size, shape, & position of the grains)

What makes rock change? Weathering, Erosion, and Deposition AND Temperature and Pressure

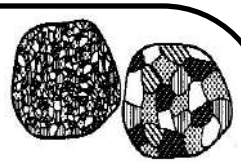
When water, wind, ice, & temperature changes break down rock 

When sediment is moved from one place to another (by water, wind, ice & gravity) 

When sediment comes to rest (when it is deposited) 

Three Classes (types) of Rocks:

Igneous Rock



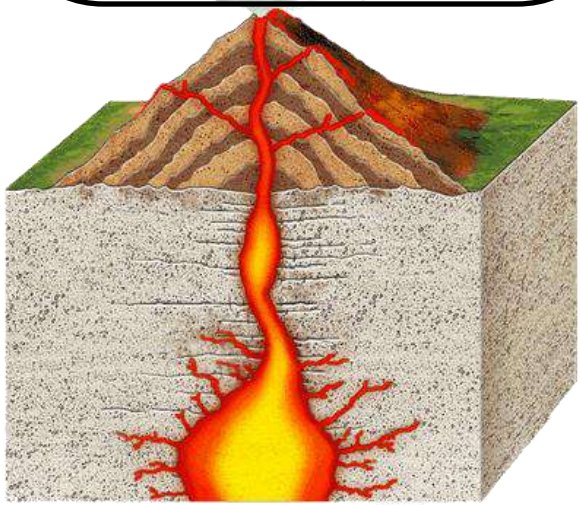
When magma or lava cools and hardens to become solid.

Intrusive - When magma does not reach Earth's surface. Beneath Earth.

coarse – grained with large crystals

Extrusive - When lava erupts onto Earth's surface. On Earth.

fine-grained with small or no crystals



Metamorphic Rock

When pressure, temperature, or chemical processes change existing rock.

Foliated - When mineral grains are arranged in planes or bands (layers)

Non-foliated - Do not have mineral grains that are aligned in planes or bands

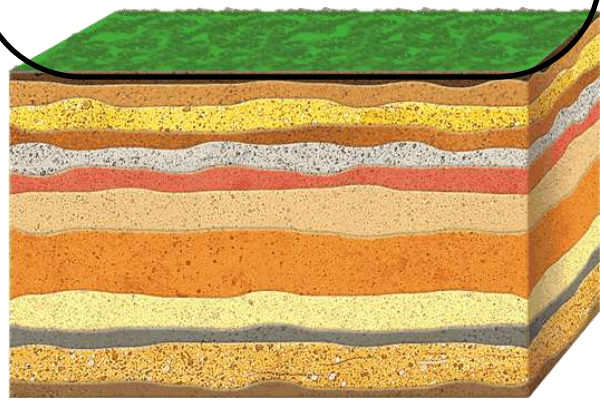
Sedimentary Rock

When minerals that form from solutions or sediment from older rocks gets pressed and cemented together.

Clastic - When sediments are buried, compacted, and cemented together by calcite or quartz.

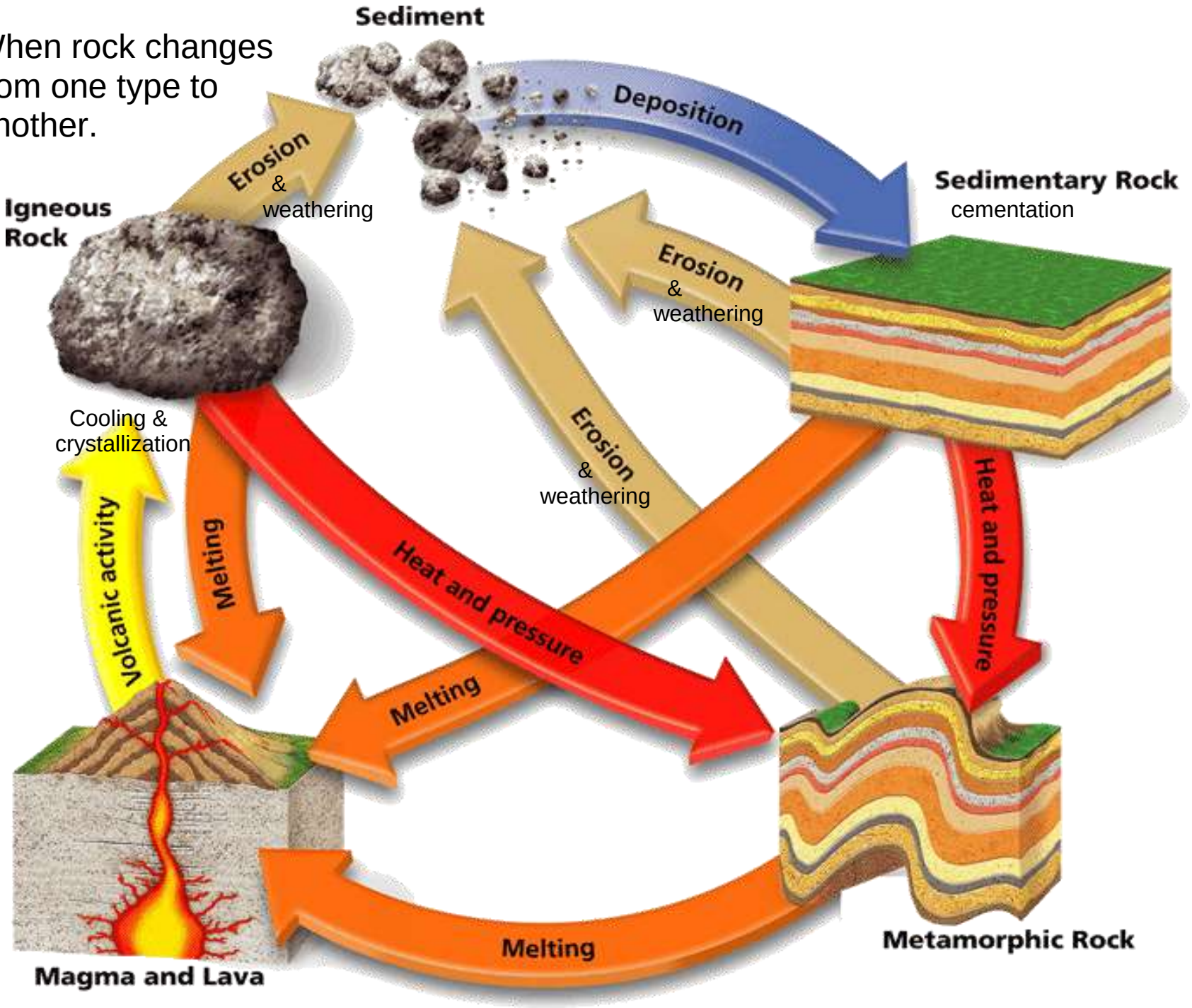
Chemical - When water evaporates

Organic - from the remains of once living plants & animals



Rock Cycle

When rock changes from one type to another.

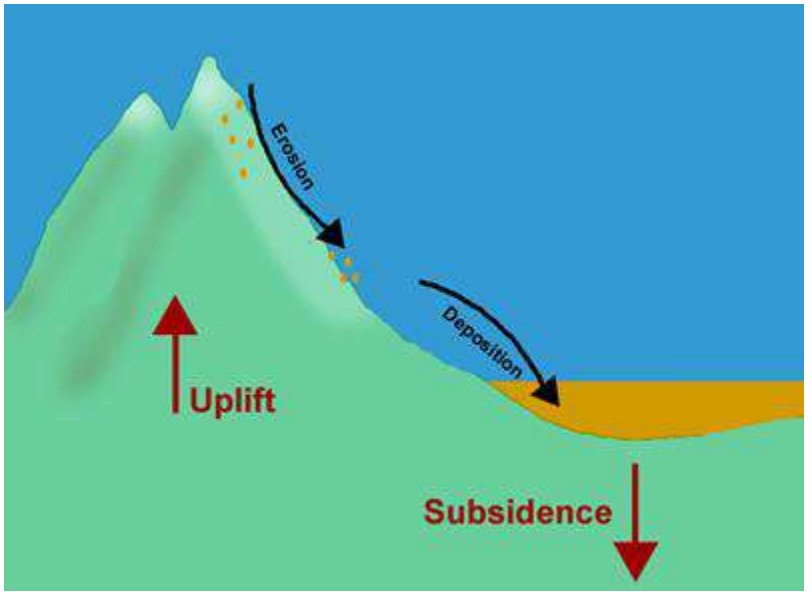


Tectonic Plate Motions – move rock around by

1. Moving rock up or down:

   Uplift – rising of earth's crust to higher elevations

   Subsidence - sinking of crust to lower elevations



2. Pulling apart Earth's surface:

   Rift zone – an area where a set of deep cracks form.