Mountain Introduction:
- A <u>mountain</u> is a large mass of rock that rises more than 600 m above its base.
- Most mountains occur in long belts that follow convergent plate boundaries.
    - Example: Himalayas found between India and Tibet
- Others are found along plate boundaries that existed million of years ago.

Mountain Formation:
- Mountains are formed due to <u>stress</u> which is a measure of the amount of force applied over an area.
- There are 3 types of stress that can be applied to rocks:
    - Compression stress
    - Tension stress
    - Shear stress

*Note: Make sure to look at the chart completed in class to see the explanation of each stress and an explanation of what each type of stress makes.

- Rocks will respond differently to stress depending on where they are:
    - Rocks found at earth's surface are rigid so usually will fracture.
    - Rocks found deeper in earth's crust are less rigid due to the high pressure and temperatures found there so many will end up folding or stretching without fracturing.

Folding:
- <u>Folding</u> occurs to rocks deep beneath earth's surface where two continental plates are colliding.
- A folded rock has 3 major parts to it:
    - <u>anticline</u> is the upfold in rock layers
    - <u>syncline</u> is a downfold in rock layers
    - <u>limb</u> are the two sides of the fold in the layers
- The steepness, or dip of the limbs reflects the intensity of folding. The limbs could be identified as gently dipping, steeply dipping, straight up and down, or overturned).

Faulting (fracturing):
- <u>Faulting</u> occurs close to earth's surface where two continental plates are colliding.
- A <u>fault</u> is a break in the lithosphere where movement has occurred, and often causes earthquakes.
- A fault line has 3 parts:
    - <u>fault plane</u> – break in the lithosphere
    - <u>hanging wall</u> – part of the fault that is above the fault plane
    - <u>footwall</u> – part of the fault that is below the fault plane
- There are four (4) types of fault lines:
    - Normal fault
    - Reverse fault
   - Thrust fault
    - Skip-slip fault
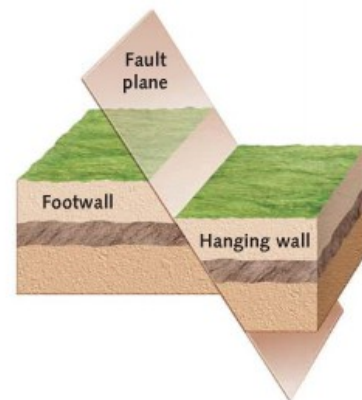
*Note: Make sure to look at the chart to find out when each fault occurs, and what type of stress causes it.

Types of Mountains

- Folded Mountains:
    - most common type of mountain
    - when an oceanic and continental plate create a subduction zone they eventually get to a point where the oceanic plate runs out and two continental plates end up colliding causing subduction to stop and crust to crumple into mountains.
    - Example: Appalachians, Alps, northern Rocky Mountains, Himalayas
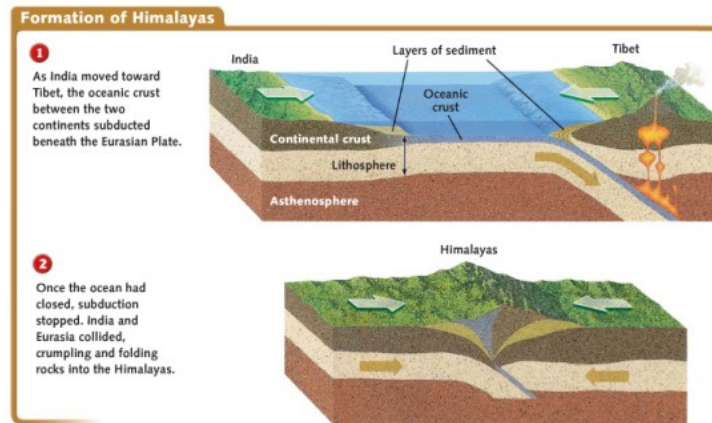
- Dome Mountains:
    - Are circular, folded mountains that are not formed from stress, but rather occur in sedimentary rocks which are bent upwards due to an uplifting force.
    - The uplifting force can be caused by:
        - Plutonic dome = occurs when overlaying crustal rocks are pushed upwards by an igneous intrusion.   Example: Colorado Plateau & Rocky Mountains
        - Tectonic dome = results from rocks that have their layers arched upwards due to uplifting pressure.   Example: Adirondack Mountains in New York
- Volcanic Mountains:
    - Are created when magma pushes its way to the earth's surface.
    - Tend to be found near a subduction zone or hotspot.
    - Are shaped by further eruptions
    - Examples: Mauna Kea on Hawaii, Mt. St. Helens
- Fault-Block Mountains:
    - Are created by tension stress which causes the crust to stretch and crack making normal faults forcing blocks of materials upwards.
    - Example: Sierra Nevada in California
- Horsts & Grabens:
    - Are due to rising magma that forces the crust upwards.
    - The tension stress that is created causes the crust to stretch and results in normal faulting.
    - There are 2 types:
        - Grabens are formed when large blocks of crust drop between the fault. The block that drops is the garben.
        - Horsts are formed when a large block of crust is thrust up between two faults. The block of crust moving upwards is the horst.
        - Example: East African Rift Valley