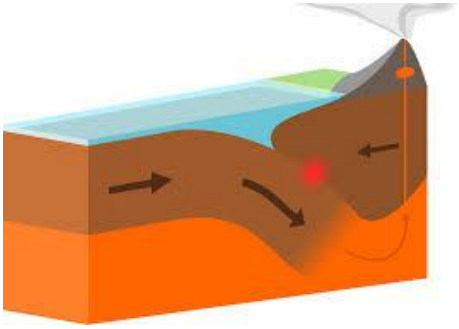
Plate Tectonics

What does the theory of plate tectonics say?
That the earth is **broken up into plates that are moved by the convection of mantle below them.**

Evidence:

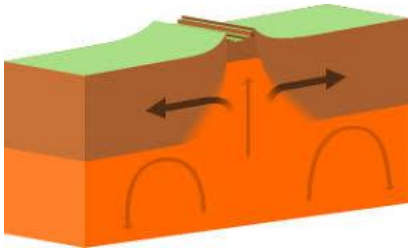
- Continental Shapes- Continents **looks like they were together and then drifted apart**
- Fossils- **a fossil of one animal can be found on one continent and the same fossil can be found on a continent hundreds of miles away**
- Rock Formations- **The appalacian trail runs across america and europe.**
- Glaciers- **warm continents were by the poles to help keep glaciers cool**
- Age of Seafloor- **Oldest crust found away from ridge new crust found at ridge**
- Magnetism of Seafloor- Ocean floor moves as magnatizm changes creates bands of changing magnatizm on sea floor
- Hot-spots- **creates chain of islands as sea floor moves over the top of them**

Boundaries and features:

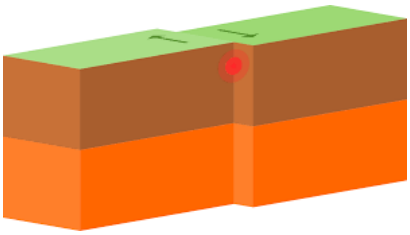


- Convergent - **where tectonic plates move toward each other creating trenches or mountains**

- Divergent - **where tectonic plates move away from each other creating mid ocean ridges or rift valleys**



- Transform - **where tectonic plates moving side to side, causing shift in the landscape**



Rocks and Minerals

Rocks:

- Definition- **one or more minerals**
- Be able to complete a rock cycle diagram with blanked out processes and rock types

Minerals:

- Essential properties of a mineral (what must it be in order to be a mineral)
    - **Natural- not man-made**
    - **Solid**
    - **Crystal- definate shape**
    - **Pure substance**

- Describing different minerals
    - **Luster- shiny vs dull**
    - **Hardness- scratch**
    - **Color**
    - **Cleavage- how it breaks along a flat surface**
    - **fracture - breaks unevenly**
    - **Density**
    - **Streak- color of its powder**

- How minerals are formed
    - Cooling from magma
    - Evaporating

Geologic Eras:

- Know major events and describe organisms alive during each era.
    - Precambrian- There's not many fossils, soft bodies.
    - Paleozoic- The age of invertebrates, age of fishes, and amphibians.
    - Mesozoic- dinos, small mammal, birds, plants.
    - Cenozoic- new grasses, flowering plants. Mammals evolve, humans appear.

Fossils:

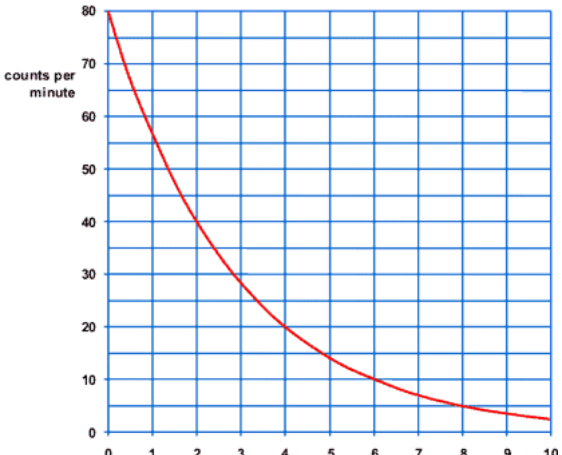
- Definition -petrefied remains of a dead animal or plant.
- Mold Fossil - fossil with empty space
- Cast Fossil - a solid replica of the animal or plant

Relative Dating:

- Older vs Younger.
- Law of superposition - lower you go the older it gets

Absolute Dating

- Numeric age (numbers). I am 18 years old
- Absolute dating uses radiometric dating(radioactive decay) to determine/find age.



Weather

Climate:

- Polar climate
    - **(North and South Poles)**
      Polar air mass-indirect sunlight heats poorly (cold)
      The relative temperature is cold
    - Indicated on map with “H”
- Tropical Climate
    - **Near the equator**
    - **Tropical air mass - direct sunlight heats well (warm)**
    - **The relative temperature is warm**
    - Symbol on map is L

Fronts:

- **Types of Front**
    - **Warm front- warm air pushes cold**
    - **Cold front- cold air pushes warm**
    - **Occluded- warm air cut off by cold air**
    - **Stationary- neither warm or cold wins stalemate**
- Cold air found on bottom of any front- because cold air sinks (heavier)
- Warm air found on top of any front- because hot air rises (lighter)

  Warm front
    - Mild, long lasting

- Stretched out layers (stratus)

1. Cirrus- whispy
2. Cirrostratus- layered cirrus clouds
3. Altostratus- gray overcast
4. Stratus- like a fog but does not touch ground
5. Nimbostratus- rain or snow cloud

Cold front

- Intense and short
- Clumping (cumulus)

1. Cirrus- whispy
2. Cirocumulus- looks like fish scales
3. Altocumulus- small and irregular shapes
4. Cumulus- cotton ball clouds
5. Nimbocumulus- storm clouds

Clouds:

- **Humidity - The amount of water as a gas in the air. (Humidity Increases with temperature)**
- **Condensation - Going from water(gas) to a (liquid). (Happens when warm, humid air drops in temperature)**

Ingredients of a cloud

- **Warm humid air**
- **Cold air**
- **Small Particles(dust, smoke, pollen)**

Hurricanes vs. Nor'Easters:

- **Hurricanes- form over equator where it's really hot and humid**
- **Nor'Easter- form over North America where it's not as hot and humid**
- **The Earth spinning causes storms to rotate (called the coriolis effect)**
- **Multiple types of fronts**

Mapping and Landforms

- Latitude vs Longitude...be able to find location on map given coordinates
    - Latitude -lines on a map, runs side to side
    - Longitude - lines on a map, runs up and down or north to south

Example- location of Gardiner, Maine (44º north, 70º west)

- Equator and. Prime Meridian
    - Equator- line of latitude, 0º
    - Prime Meridian- lines of longitude, 0º
- Hemisphere -
    - Half of the earth
- Scale -
    - Distance (length) on a map compared to distance in real life.
- Map projection
    - Model of the earth
    - Mercator- Lines of longitude are straightened
    - Equal area- Size and area of continents are exact everything else is compramised
    - Conic- ???

- Elevation vs. Relief -
    - Elevation- Height of landform compared to sea level
    - Relief- Height compared to the top of a mountain to the bottom of a mountain.
- Mountain vs. Plateau -
    - Plateau- High (elevation) flat top
    - Mountain- High area with sloped sides.
- Plain -
    - Flat area
- Topography -
    - Shape of the earth surface.

Interior of the Earth

Layers of Earth:

- Name 4 main layers of the interior of the earth
    - Inner core- super hot
    - Outer core- super hot
    - Mantle- can flow
    - Crust- cool

Evidence:

- Direct Evidence- see and handle the evidence physically
    - Testing pieces of the mantle
- Indirect Evidence- measuring something else that is related to what we are studing.
    - Measuring earthquakes

Moving Heat:

- Radiation - heat moving through a empty space
- Conduction - heat moving through a substance
- Convection - something moving because it is hot