**What are earthquakes?**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occur at plate boundaries.
* As plate move their rock edge experience \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and this causes waves.
* Pressure is so great it breaks the rock.
* Rock breaks = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is released (seismic waves)

**Requirements for Earthquakes**

* Fault – boundary of two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ plates
* Active Stress along the fault
* Failure
* Rocks “snapping” back \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Reach Elastic Limit
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Rebound Theory
  + Phenomenon whereby stressed rocks snapback elastically after an earthquake to their pre-stress condition
  + Stress exceeds rupture \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of rock

**General Definitions**

* **Focus**- The point beneath the Earth’s surface where the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and move.
* **Epicenter**- The point on the Earth’s surface directly above the focus.
* **Seismic Waves-** Waves produced by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Focus vs. Epicenter**

* Focus
  + Point in Earth energy is released from
    - \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - S-waves
  + Move \_\_\_\_\_\_\_\_\_\_\_\_\_\_ in all directions, not just toward surface
* Epicenter
  + Point directly above focus on the surface
  + Energy that reaches surface generate surface waves
    - Move along surface
    - Elliptical motion & back and forth
    - Most destruction

**Seismic Waves (ENERGY)**

* Primary (P-waves)
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
  + Longitudinal wave
  + Through solids, liquids, and gasses
  + Faster through denser material
  + Originate at Focus
* Secondary (S-waves)
  + Slower that P-waves
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves
    - Perpendicular to flow
  + Cannot pass through liquid or gasses
  + Faster through denser material
  + Originate at Focus

**Surface Waves**

* Moves only along Earth \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of up and down motion and back and forth motion
* Cause more destruction than P or S waves.

**Locating an Epicenter**

* Based on different \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of seismic waves

1. Need at least 3 seismograph stations
2. Determine arrival times of p and s waves
3. Calculate difference between p and s waves
4. Use the graph from Earthquake information work sheet
5. Compare \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with 2 other stationsaa
   1. Draw radius from all three stations
   2. Intersection point is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Using Seismic Waves to Map Earth’s Interior**

* At certain \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, speed and path of waves change
* Through \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – speed up
* Asthenosphere – slow down
* Lower Mantle – \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* Outer core – s waves stop
* Inner core – speed up (\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_)