Name: _____

Date: _____ Period: _____



# Class Notes: Plate Tectonics

## I. Continental Drift

- Continental Drift - _____

  _____

- Pangaea - _____

  _____


Alfred Wegener (1915)

- German _____ and _____
- Proposed the theory of _____
- Hypothesized a _____

- Evidence of Continental Drift:
  1. _____

     _____
  2. _____

     _____
  3. _____

     _____

# Class Notes: Plate Tectonics

## II. Crustal Activity

- Plate Tectonics - _____

  _____

- Plate - _____

  _____

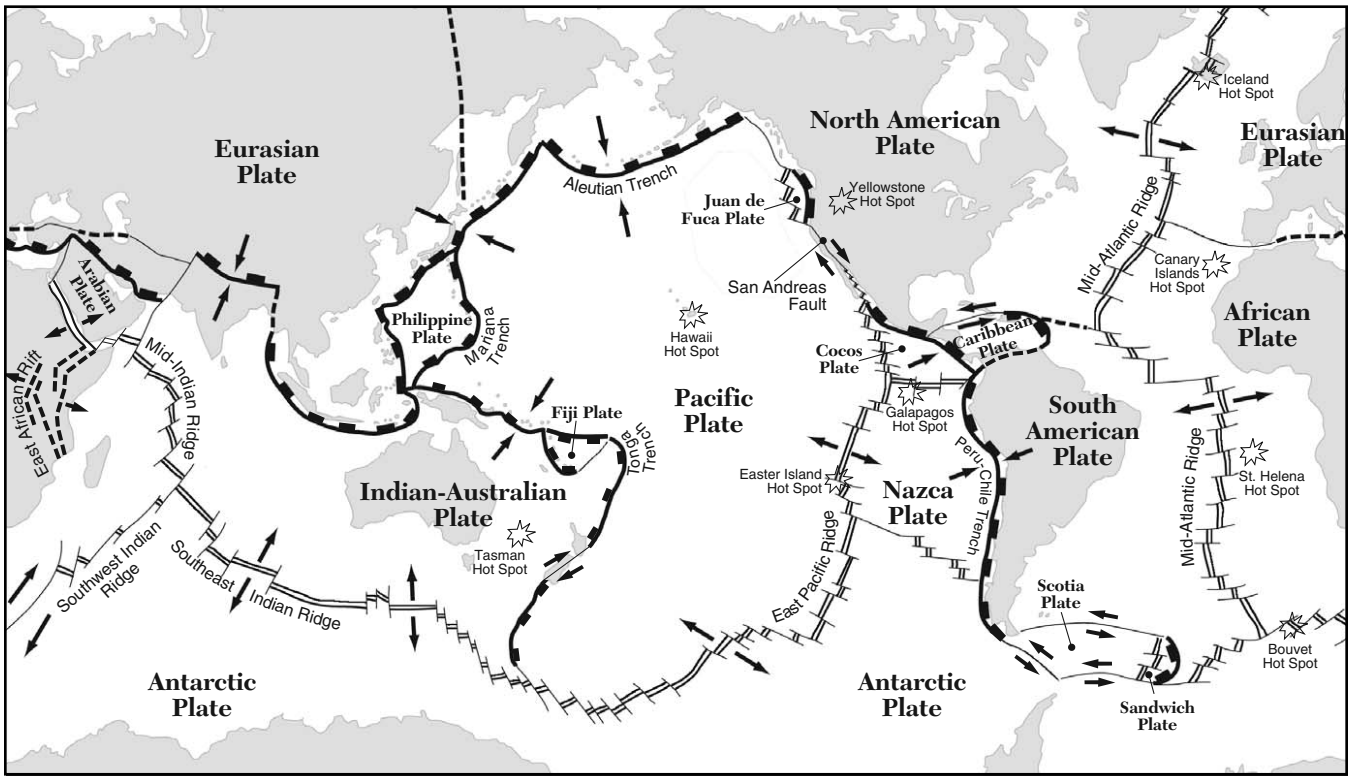
- Lithosphere - _____

  _____

- Asthenosphere - _____

  _____

- Earth's surface consists of a dozen major plates and some minor ones
- The plates are moving at rates close to _____ cm/year



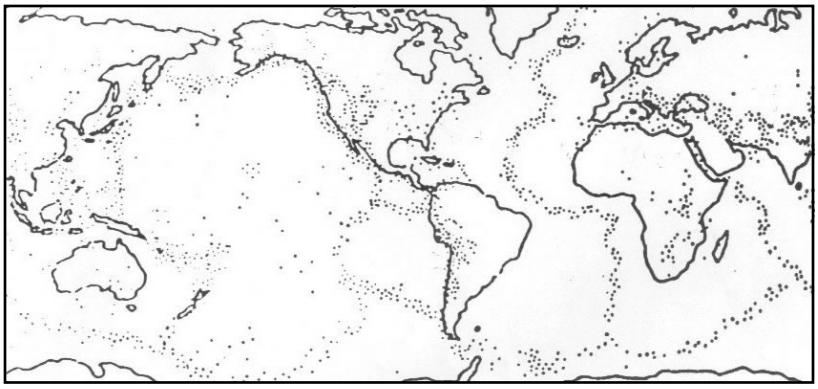
# Class Notes: Plate Tectonics

- Convection Currents - _____

  _____

  - Magma heats up causing it to _____ and _____
  - Magma cools down causing it to _____ and _____
- The plates are moving on top of the asthenosphere due to density differences
- The idea of continental drift had been around since the 1900's, but lacked enough scientific evidence to support the theory
- New advancements after World War II help provide the evidences needed to validate the Theory of Plate Tectonics

- Earthquake Evidence
  - Scientists noticed that earthquakes do not occur at random locations, but throughout the world along _____
  - When plotted on a map they outline the _____



(dots represent earthquake epicenter locations)

- Volcanic Evidence
  - Occurs at plate boundaries where plates are interacting
  - Ring of Fire - _____

    _____

# Class Notes: Plate Tectonics

- Rock Evidence
    - Sedimentary deposits and igneous lava flows are usually placed down in horizontal layers
    - Sometimes movement along boundaries causes these layers to _____ or _____
- Mountain Evidence
    - As plates collide they sometimes are pushed _____
    - _____

      _____

# Class Notes: Plate Tectonics

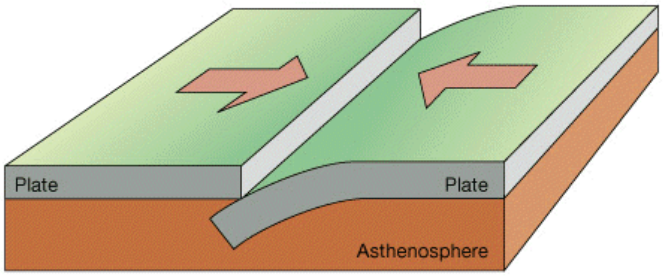
## III. Crustal Boundaries

- Tectonic plates are constantly moving and interacting
- As they move across the _____ and form plate boundaries they interact in various ways
- Types of plate boundaries:
  - _____
  - _____
  - _____

- Convergent Boundary - _____

  _____
  - Example: the India Plate pushing upward into Eurasian Plate and creating the Himalayan Mountains
- Subduction - _____

  _____
  - Example: the Nazca Plate being consumed under the South American Plate



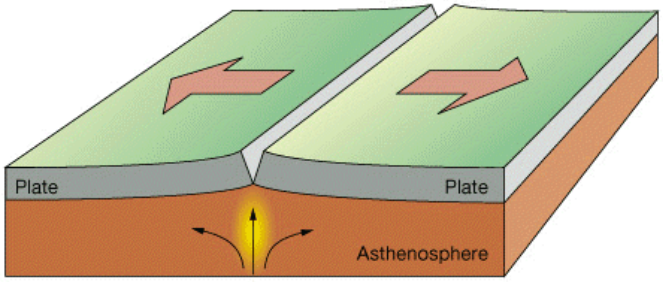

- Three Types of Convergent Boundaries
  - _____
  - _____
  - _____

# Class Notes: Plate Tectonics

- Divergent Boundary - _____

  _____

  - Example: part of the Mid-Atlantic Ridge emerges from the ocean and splits Iceland in half




  - Sea-Floor Spreading - _____

    _____

  - Mid-Ocean Ridge - _____

    _____

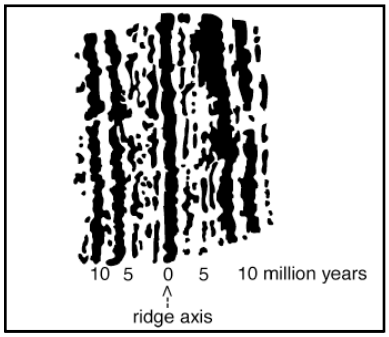
  - Mid-Atlantic Ridge - _____

    _____

    - Separates the N. and S. American Plates from the Eurasian and African Plates
  - Rift Valley - _____

    _____

  - Divergent Plate Boundary Evidence



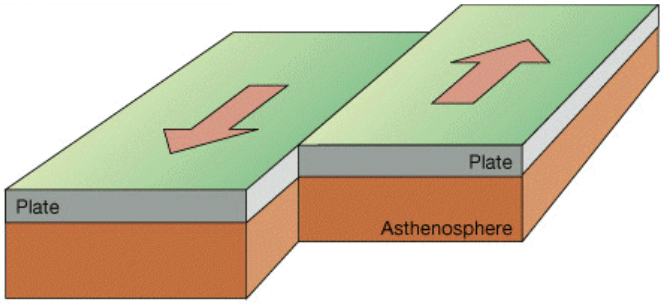

    - Scientists dragged a _____ across the ocean floor and discovered a unique magnetic pattern where stripes of _____ and _____ polarity parallel the mid-ocean ridge flipping every 200,000 to 300,000 years (the last one was 781,000 years ago).
    - Rock samples of the deep ocean floor show that basaltic oceanic crust becomes progressively _____ as you approach the mid-ocean ridge

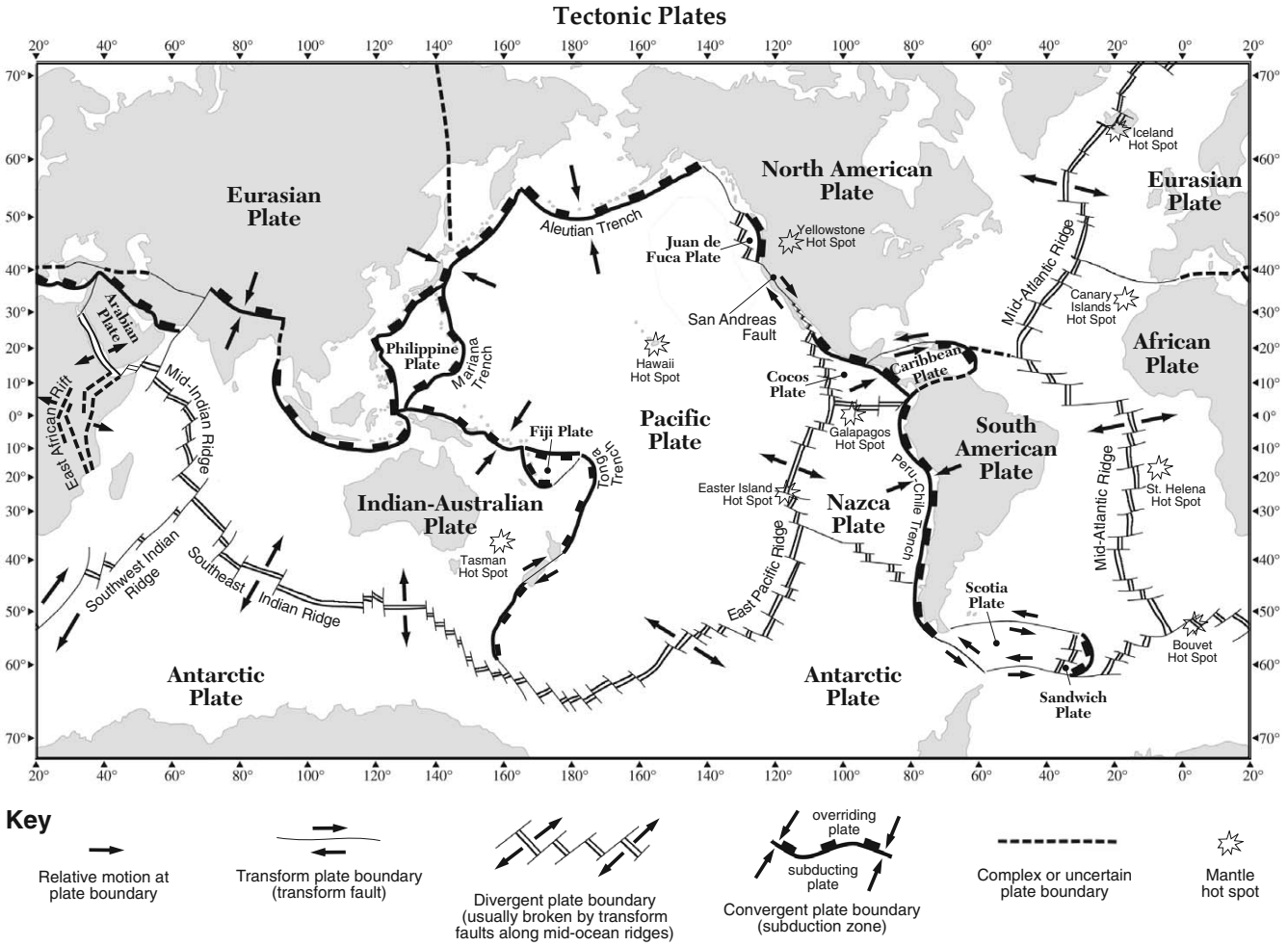
# Class Notes: Plate Tectonics

- Transform Boundary - _____

_____

  - Example: the San Andreas Fault is 800 km long and runs throughout California



## IV. Earth's Interior

- Earth's interior structures are known through the study of _____
- Seismic waves refract, _____, _____ and are absorbed depending on the material they are transmitted through

- Lithosphere - _____

  _____

  - Continental Crust - _____

    _____

  - Oceanic Crust - _____

    _____

- MOHO - thin interface separating the lithosphere from the asthenosphere

- Asthenosphere - _____

  _____

  - Discovery: a decrease in velocity from earthquake waves

- Mantle - _____

  _____

- Outer Core - _____

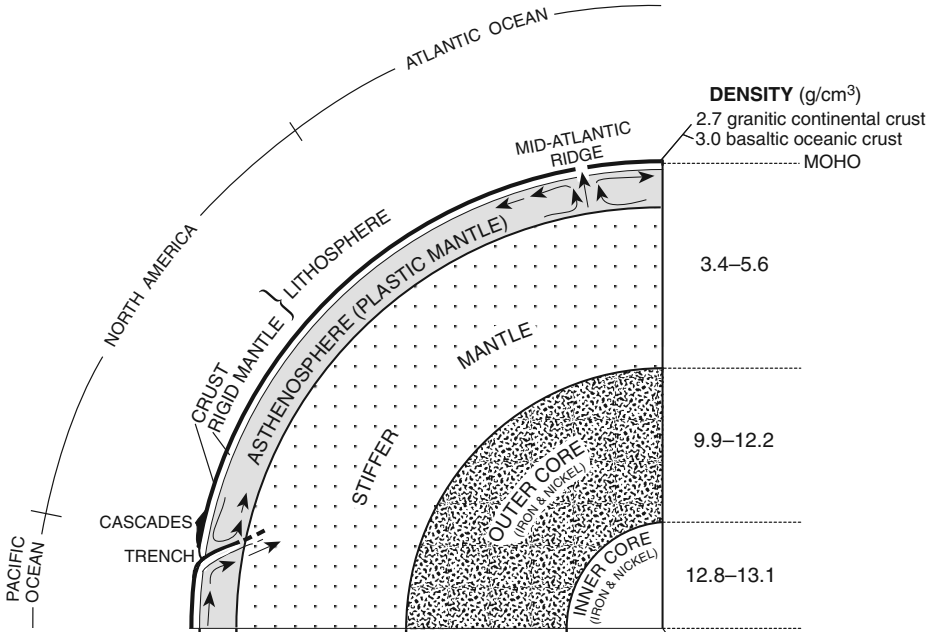
  _____

  - Discovery: absorption and refraction of earthquake waves

- Inner Core - _____

  _____

  - Discovery: an increase in velocity from earthquake waves




## V. Earthquakes

- Earthquake - _____

  _____

  - Most earthquakes are caused by a movement along a fault where _____ energy is given off as a seismic wave

- Epicenter - _____

  _____

- Focus - _____

  _____

- Seismometer - _____

  _____

- Seismogram - _____

  _____

# Class Notes: Plate Tectonics

- Mercalli Scale - scale that measures the _____ of an earthquake based on the effects to Earth's surface, humans, objects in nature, and other man-made structures
    - The values will differ based on the distance from the epicenter
        - _____
        - _____

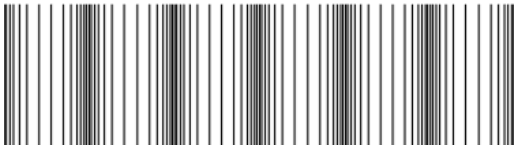
| Intensity | Type of Damage |
|---|---|
| I | Instrumental |
| II | Feeble |
| III | Slight |
| IV | |
| V | Rather Strong |
| VI | |
| VII | Very Strong |
| VIII | |
| IX | Ruinous |
| X | Disastrous |
| XI | Very Disastrous |
| XII | |

- Richter Scale - logarithmic scale that measures the _____ released during an earthquake
- Magnitude - a number to quantify the amount of _____ released from an earthquake
- The Richter Scale's magnitude is determined from the following measurements:
    - _____
    - _____
    - _____

# Class Notes: Plate Tectonics

- Primary Wave (P-wave)
  - _____
  - Travel through _____, _____, and _____
  - Compressional - _____

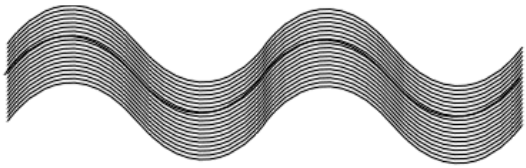
    _____



Compressional Wave (P-wave)

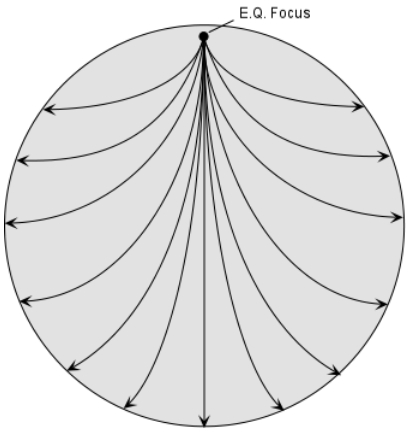
- Secondary Wave (S-wave)
  - _____
  - Travel through _____ only
  - Shear - _____

    _____



Shear Wave (S-wave)

- Seismic waves radiate away from the focus

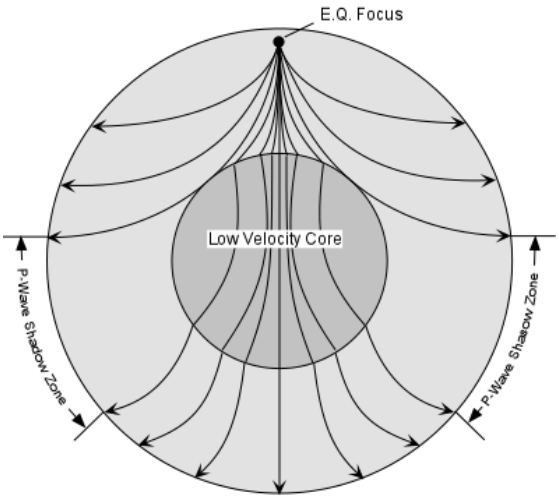


# Class Notes: Plate Tectonics

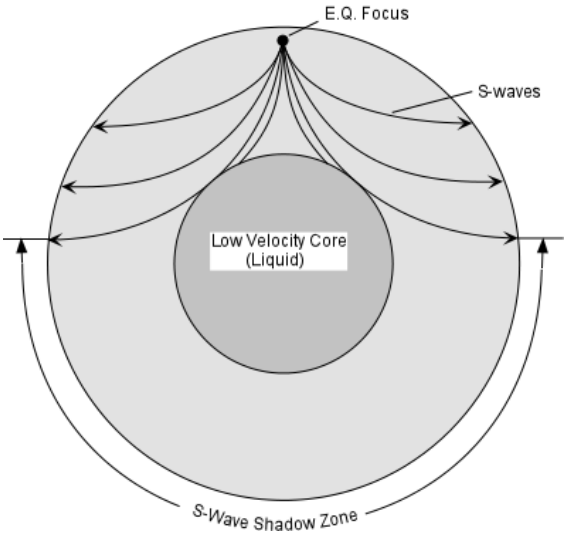
- Shadow Zone - _____

  _____

  - P-waves are _____ when they reach the liquid outer core
  - S-waves are _____ when they reach the outer core and are not transmitted through to the other side

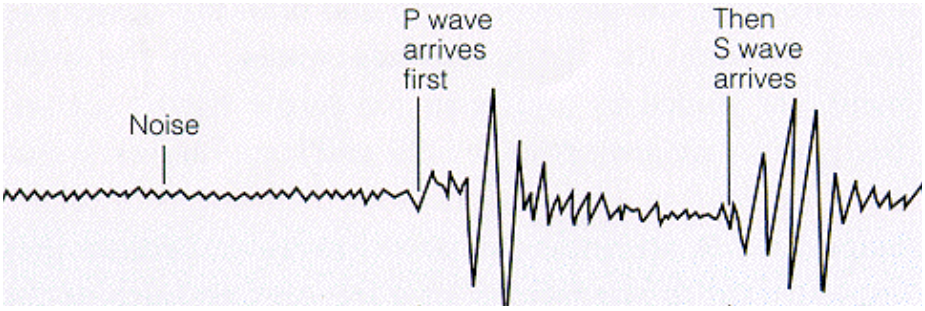



P-wave Shadow Zone



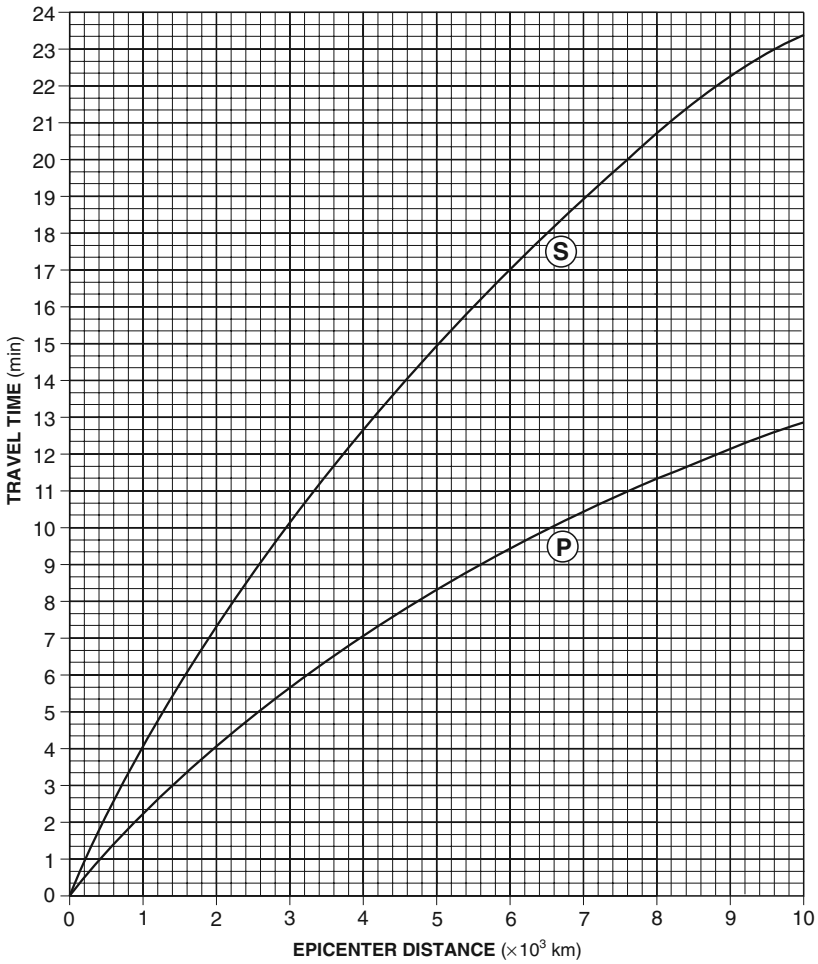

S-wave Shadow Zone

- Epicenters are located using the velocity differences between the p-wave and s-wave




  - Since the p-waves travel _____ then s-waves, as your distance _____ from the earthquake's epicenter the arrival time between the two waves will be _____

- Distance to the epicenter is determined by comparing the arrival times and the E.S.R.T.




- To find the epicenter location you need to triangulate a position using _____ different seismometer stations