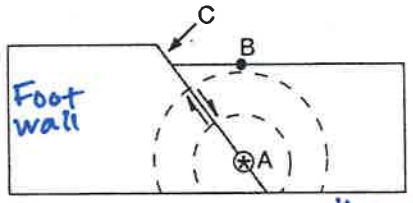
EARLS' ANSWERS

Study Guide – Earthquakes Test

Complete the following with detailed answers. Use notebook paper if you need more space.

1. In the diagram below, label the focus, the fault line, and the epicenter. Give the name of the fault and explain what might cause this.



A = Focus (Hypocenter)
B = EPICENTER
C = Normal Fault
Explain what causes this fault: Tension at a divergent boundary

2.

Wave Type	Speed of wave (fastest, slowest, medium speed)	How does it move the rock or crust?	How do the rock particles move in comparison to the direction the wave energy is moving?	What kind of wave is it? (Compressional/ Longitudinal Wave or Transverse Wave or Surface Wave?)	What states of matter can it move through?	How destructive is the wave?
P-Wave	Fastest	↔	↔ R.P. → E	Compression wave	all states Solids + Liquids	Least destructive
S-wave	Medium speed	↕	↕ R.P. → E	Transverse wave	only solids; not liquid	medium in destruction
Surface wave	Slowest	↻	↻ R.P. E →	Surface wave	only solid surface	most destructive

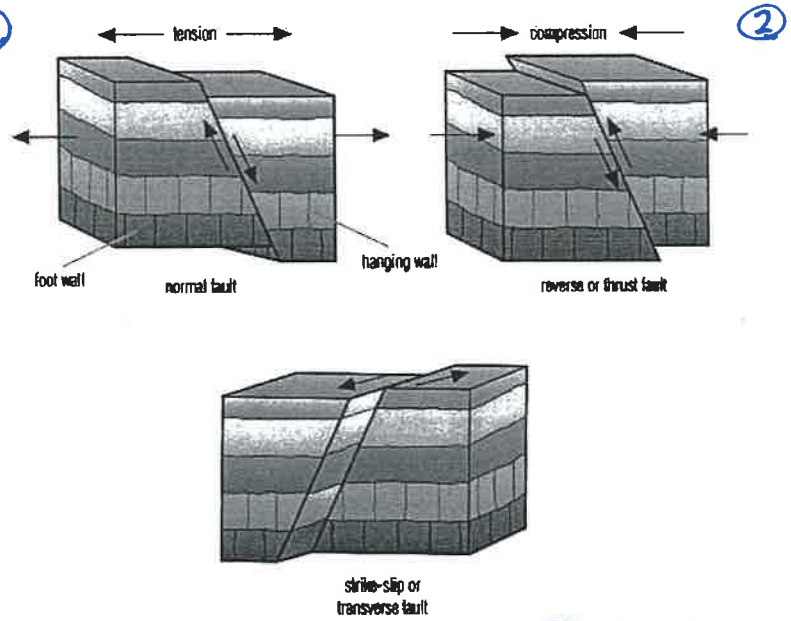
3. What is a seismograph? How many locations are needed to locate an earthquakes epicenter? Instrument used to measure ground movement and seismic waves. Three seismic stations are needed to locate epicenter.

4. What parts of the earth are each type of wave able to travel through?
   a. P-waves - all earth layers; solids + liquids
   b. S-waves - only solids; does not travel through outer core
   c. L-waves (Surface waves) - only travel on crust at surface

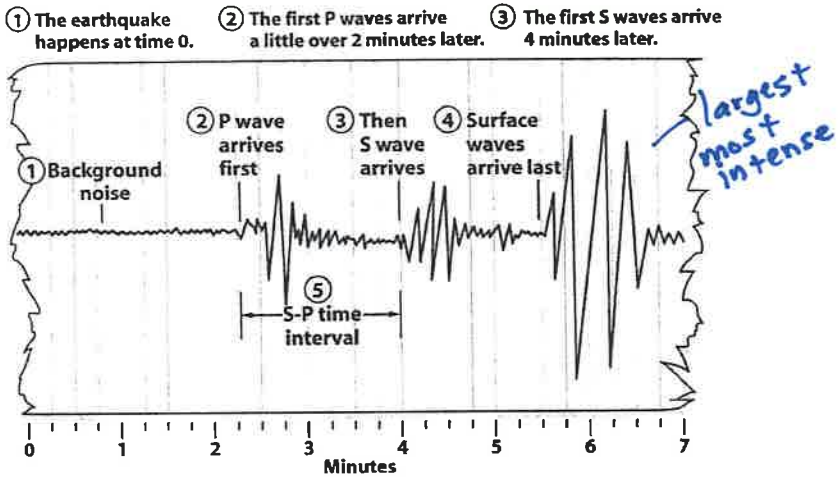
5. What is the Mercalli scale used for? to rate the damage
   How is the Mercalli scale different from the Richter Scale?
   Mercalli measures damage done
   Richter measures size of seismic wave

6. What can cause a Tsunami? How do scientists predict their arrival time?
   Earthquakes, landslides + volcanoes on ocean floor cause Tsunamis / Scientists predict using seismograms and epicenter.

7. Name the 3 fault types and explain the stress that causes them.



Fault 1 = NORMAL Stress = TENSION
Fault 2 = Reverse Stress = Compression
Fault 3 = Strike-Slip Stress = Shearing

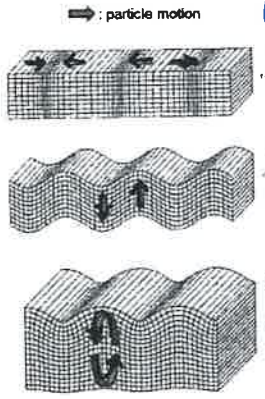


8. Look at each of the 3 seismic waves. Rate them according to their energy or intensity. Rate the most intense as 1 and the least intense as 3.

① Surface waves - largest on seismogram. most intense
② Secondary - medium intensity
③ Primary - least intense

9. Look at step 5 on the diagram above. What is the name given to the time interval between the time the p wave and s wave arrive? LAG TIME

10.



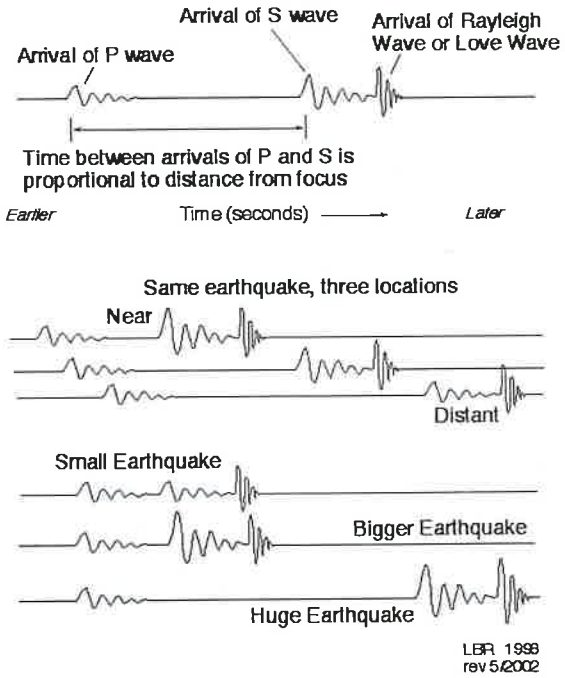
↔ R.P. E → (compression wave) ground moves back + forth in compressions

R.P. ↕ E → ground moves up and down; energy moves perpendicular to ground movement (TRANSVERSE WAVE)

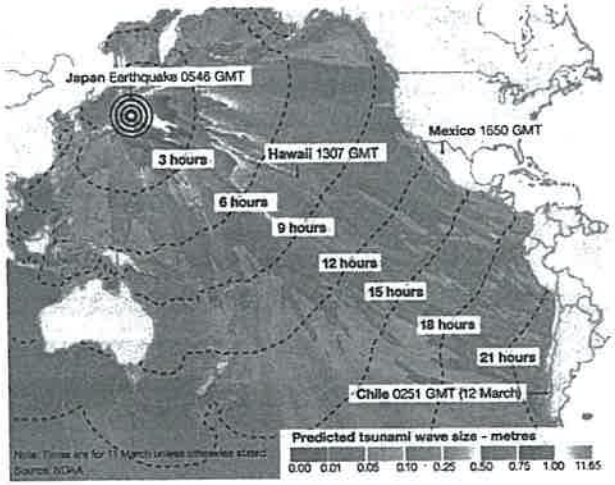
ground (crust) rolls like an ocean wave (SURFACE WAVE)

Describe how each wave makes the ground move and label each as compressional or transverse. or Surface wave.

Seismograms



11. Look at the diagram above. According to the seismogram, how do you determine if the earthquake was near or far? Explain. How does this show up on the seismogram? If the lag time is big; then the earthquake is further away; if lag time is small, then earthquake is close.



12. Where did the tsunami originate? JAPAN

13. How long would it take the tsunami to arrive in Mexico? 12 HOURS

14. How long would it take for the tsunami to arrive in Ch 21 Chile Hours