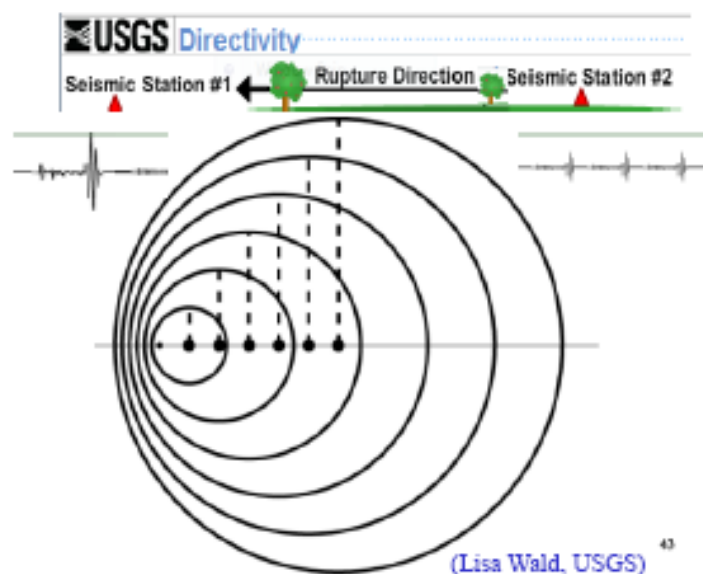


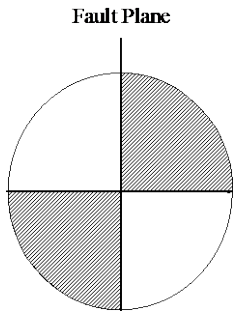
Assignment for Earthquake Energy Release Mechanism

Question No.1.

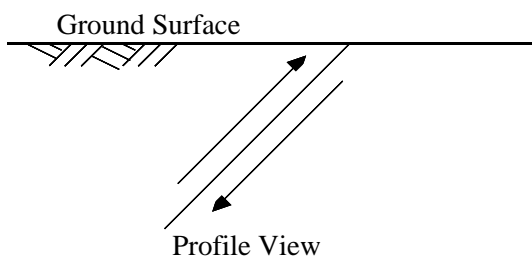
- a) Draw a sketch of right lateral fault system.
- b) Why do most earthquakes occur in narrow localized bands within the globe?
- c) Why are seismologists expecting an earthquake north of Los Angeles anytime now?
- d) What type of earthquake is associated with volcanic activity? Draw a sketch.
- e) What type of faulting mechanism is associated with the Himalayan Mountains? Draw a sketch.
- f) Why are the Hawaiian Islands in a chain?
- g) What is the theory of Plate Tectonics? Draw a sketch.
- h) Draw a sketch of a blind fault.
- i) Draw a sketch of a subduction type fault mechanism.
- j) Draw a sketch of a spreading ridge. How do we know that such ridges have been spreading for a long geological time?
- k) Volcanic activity is strong in the State of Washington, but much less so in California. Why?
- l) Why is it assumed that one of the deep zones within the earth is in a fluid state?
- m) Draw an annotated sketch showing fault rupture terminology
- n) Discuss the figure below as relates to Directivity



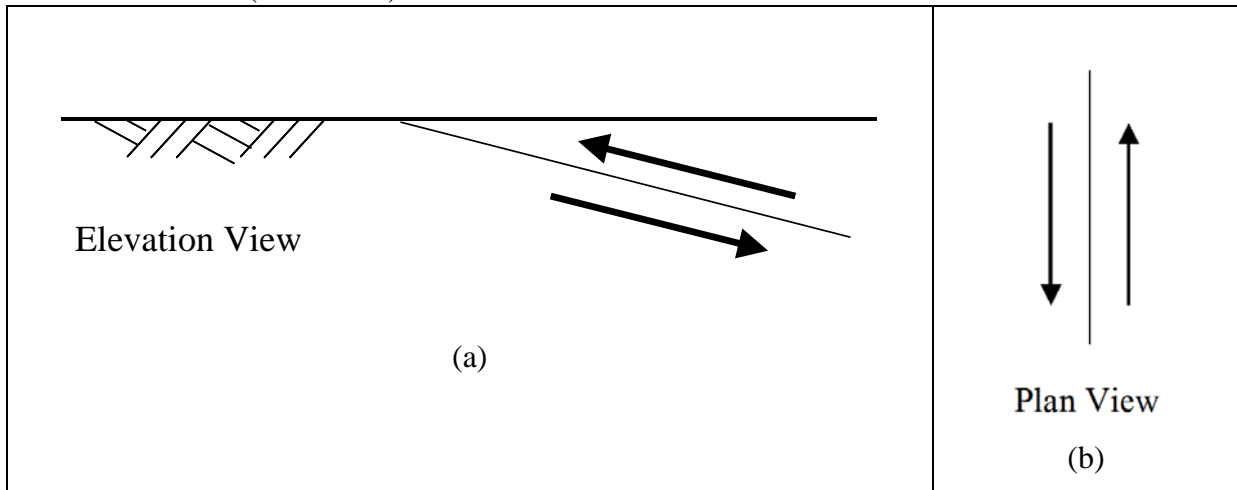
2. For the following focal mechanism, sketch and describe the fault movement.



3. Describe relative fault movement and sketch the focal mechanism.



4. For each of the cases (a) and (b) below, describe relative fault movement and sketch the focal mechanism (beach ball).



5. The fault-plane solution and map on the following page show information from an April 2, 1981 earthquake in southern Alaska.

- A. Determine the azimuths strikes for the two possible faults in this solution. (hint: Strike is referenced to the North directions as shown on figure).
- B. Give the sense of slip for each fault (thrust, normal, right lateral strike slip, etc.)
- C. Qualitatively estimate the dips of the two faults as mildly dipping, steeply dipping, etc., and estimate the general direction of dip, SW, NE, etc.
- D. Which is the most likely solution (which represents the actual fault plane), and why? (hint: check out the fault trace at ground surface)

