Name:

Exam 2

Chapters 7-11: Geologic Time, Journey to the Center of the Earth, Formation of Earth, Motion inside Earth, and Deformation of Rocks.

Remember to:

Read all directions

Read all questions carefully

Show all work

Label sketches

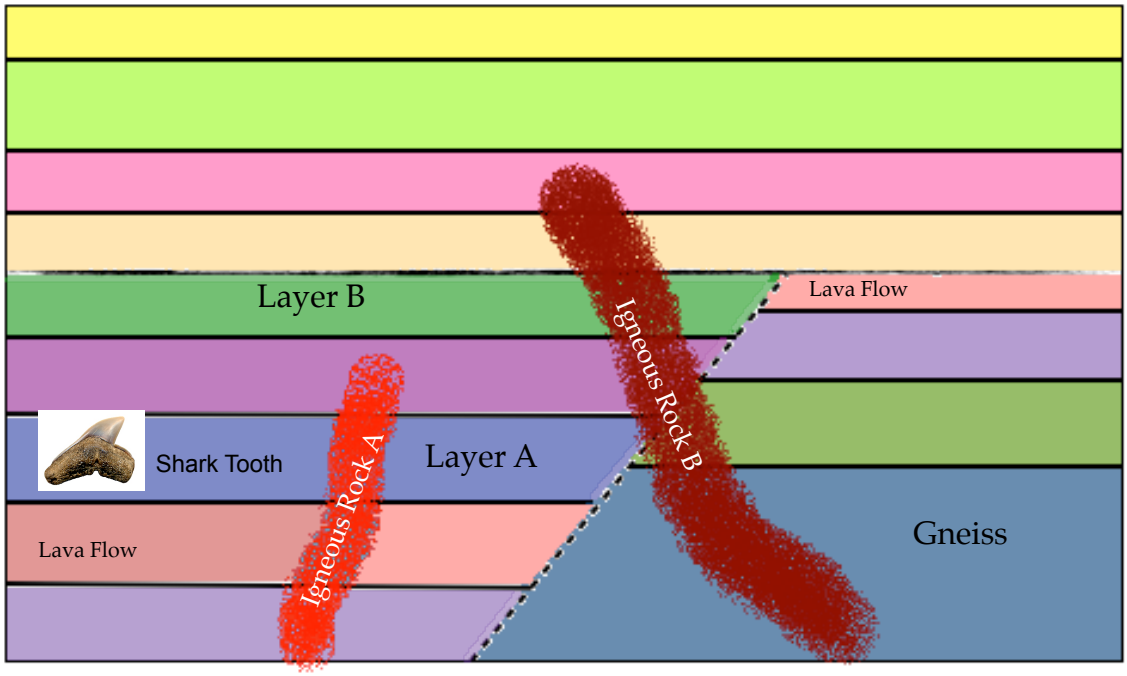
Define terms

Part 1: Pick either question 1 or 2 and you must answer question 3.

1. Sketch and explain each of the five principles of relative dating, providing an example of each principle.

2. Sketch an angular unconformity, a nonconformity, and a disconformity, and describe what sequence of events is implied by each.

3. How can you determine if limestone found near where you live might be the same limestone you see on a visit 100 miles out of town?



If the rock type is not indicated then the rock layer is a sedimentary layer

Part 2: You must answer all questions in this part.

1. Place the layers and structures in order from oldest (1) to youngest (11). Label the unconformities and indicate the type of each unconformity.

2. Samples have been collected from the three igneous rocks from this area. Calculate the dates of these rocks using the information provided in Table 1.

3. A shark tooth has been discovered layer A. Can you determine and approximate age of this tooth, if yes give the age (or range). Explain your answer.

4. Layer B has been dated to 280 million years. Layer B is 1 meters thick, Layer C is 2 meters thick, and Layer A is 3 meters thick. Where the sedimentation rates constant in the sedimentary layers deposited between the Lava Flow and Layer B? How do you know.

Table 1

Sample	Analysis	Age (years)
Lava Flow	75% parent remains and isotope has a half-life of 704 million years	
Igneous Rock A	Isotopic ratio is 1:3 and isotope has a half-life of 150 million years	
Igneous Rock B	Isotopic ratio of 1:15 and isotope has a half-life of 50 million years	

Part 3:Answer One question from each group.

Group 1:

A. Describe and sketch how we know composition of the Earths interior. Make sure to include information on velocity of seismic waves, Moho, low velocity zone, mantle transfer zone, and core composition.

B.Sketch and describe how our solar system probably formed.

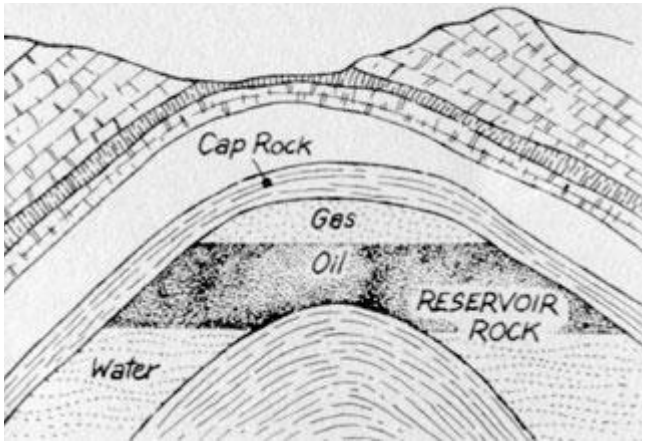
Group 2:

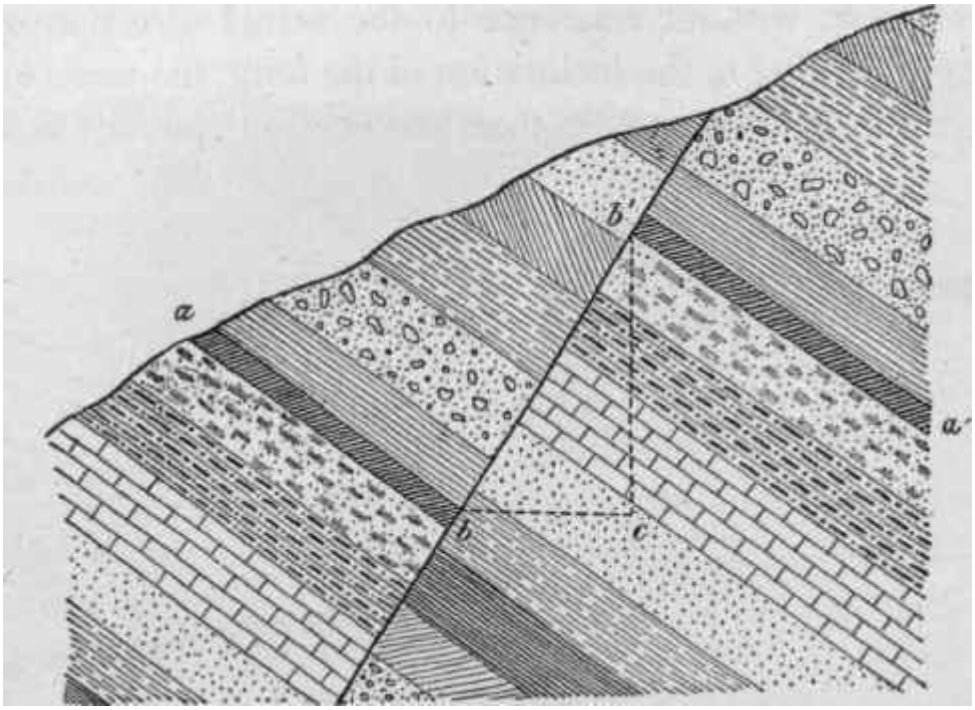
A.Sketch and explain how a lava lamp works (what is happening, how it happens, and why it happens) and how it is analogous to what happens inside Earth.

B.Sketch and describe the geologic structures that result from the three types of stress. Make sure to describe each type of stress, label structures and define terms.

Part 4:You must answer both of these questions.

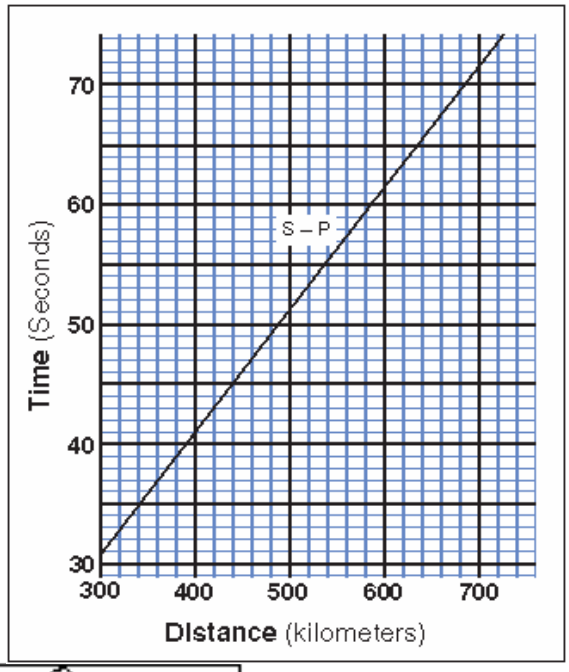
1. Determine the structural features in the two diagrams below (i.e. type of fold or fault). Make sure to label fold axis when appropriate, the hanging wall and footwall or limbs, and indicate type and direction of stress.

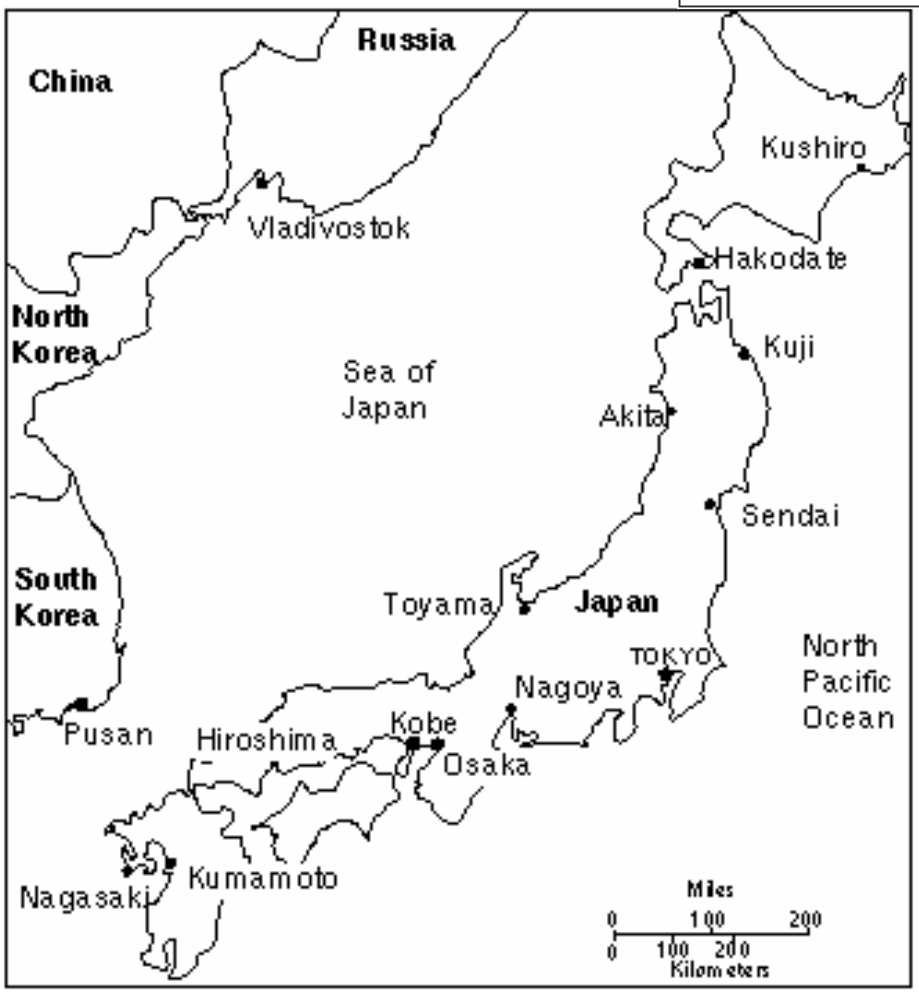




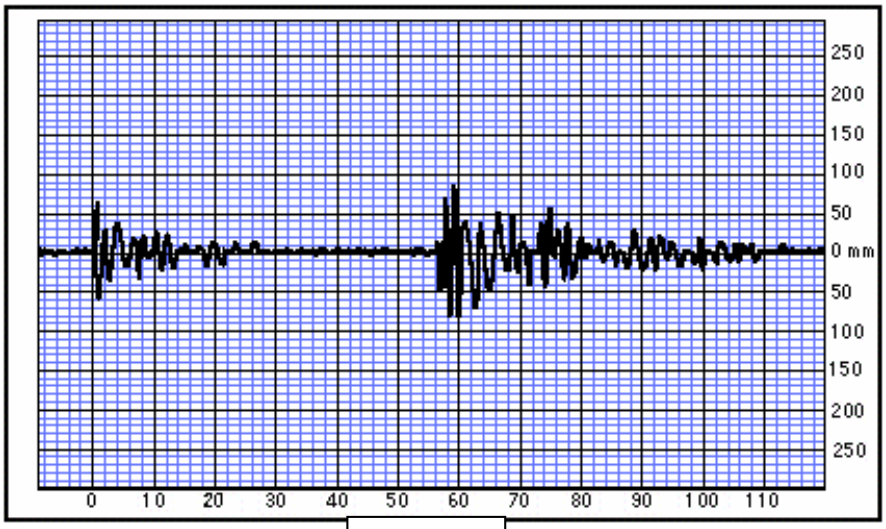
2. Using the seismographs on the next page to locate the epicenter. Label the P and S waves on all three seismographs. Plot the determined time interval for each seismogram on the graph (make sure you label the locations on the graph).

Note the Y-axis is time difference between the P and S wave.





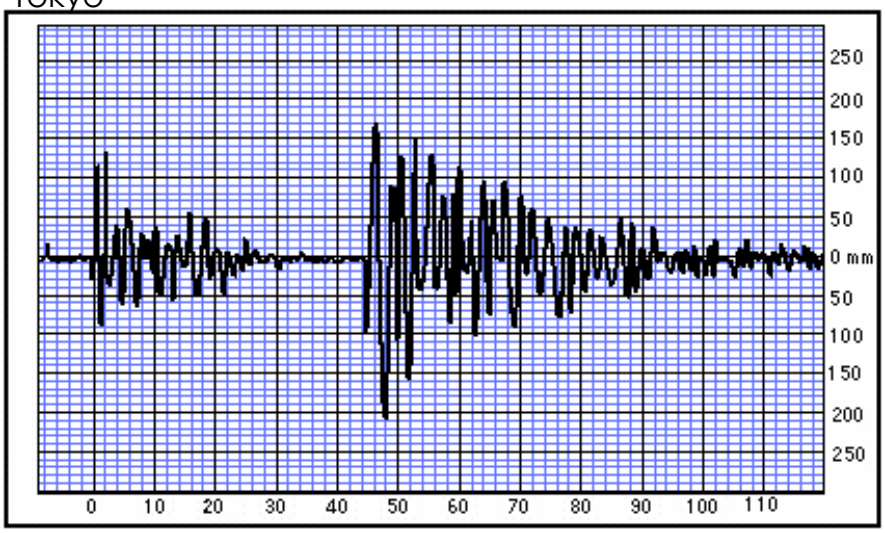
Pusan



Time lag=

Distance to Epicenter=

Tokyo



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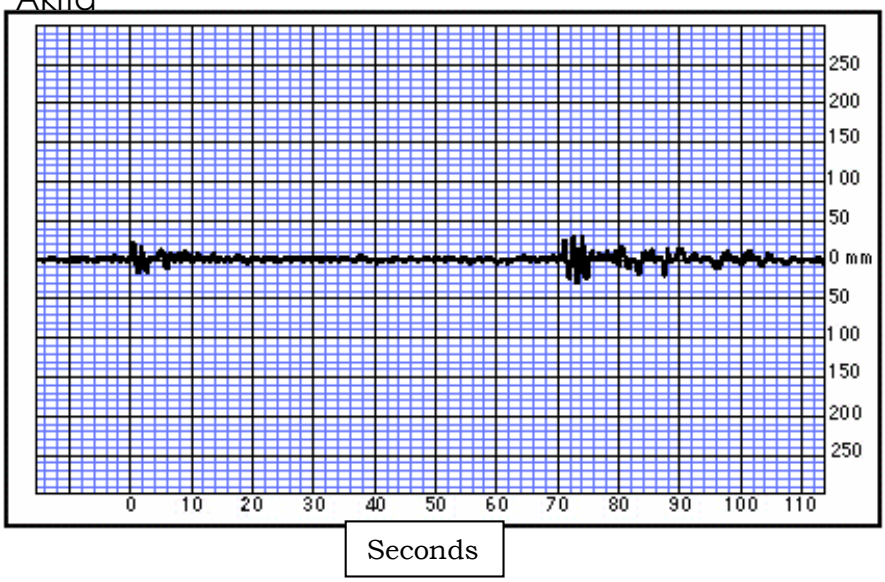
Distance to Epicenter=

Akita



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Distance to Epicenter=