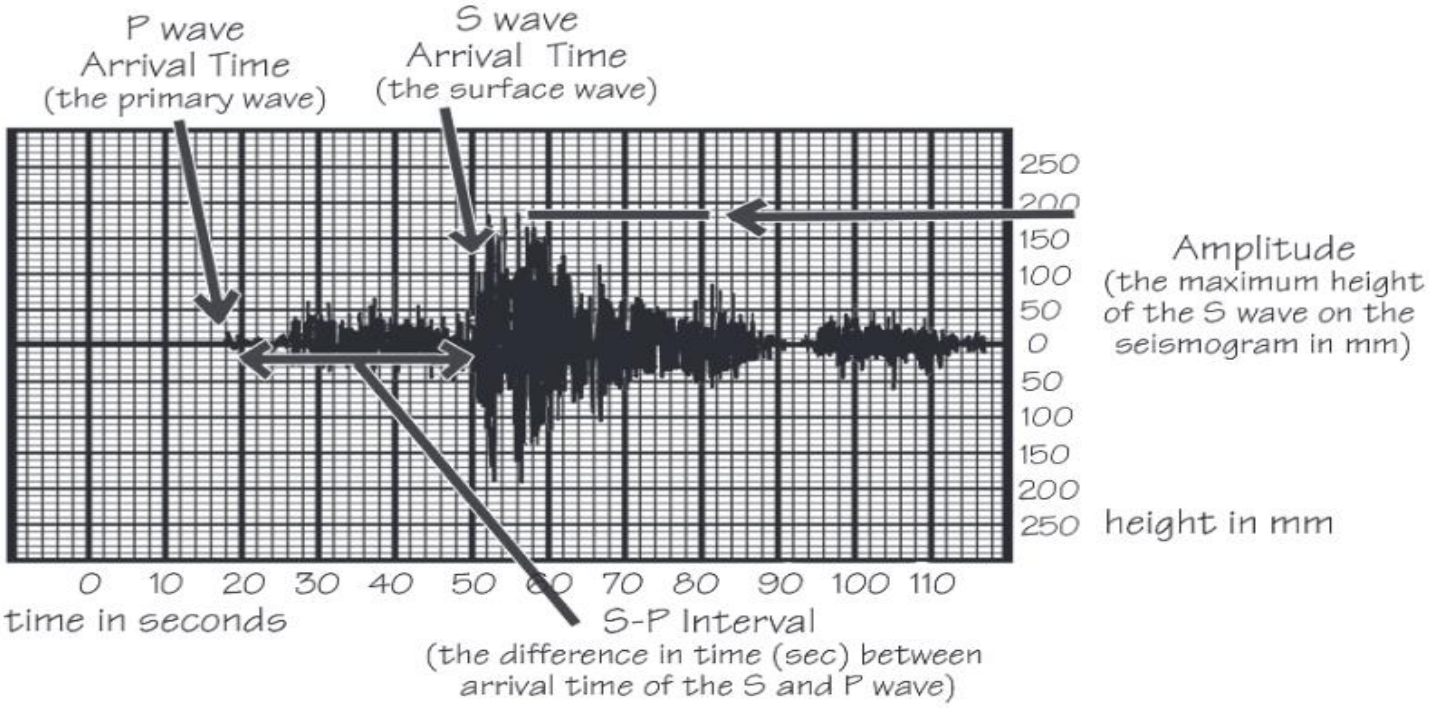
Name _____ Date _____ Period _____

QUAKE QUEST

Activity 1 – Understanding Seismograms and Nomograms

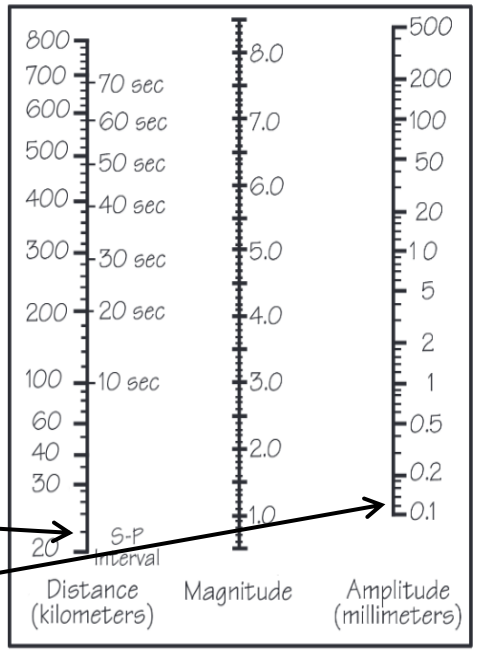


1. According to the seismogram above, what is the S-P interval?

2. How many seconds are between the arrival of the P wave and S wave on the seismogram above? (This is called the S-P Interval)

3. Describe how to find the amplitude from the seismogram above.

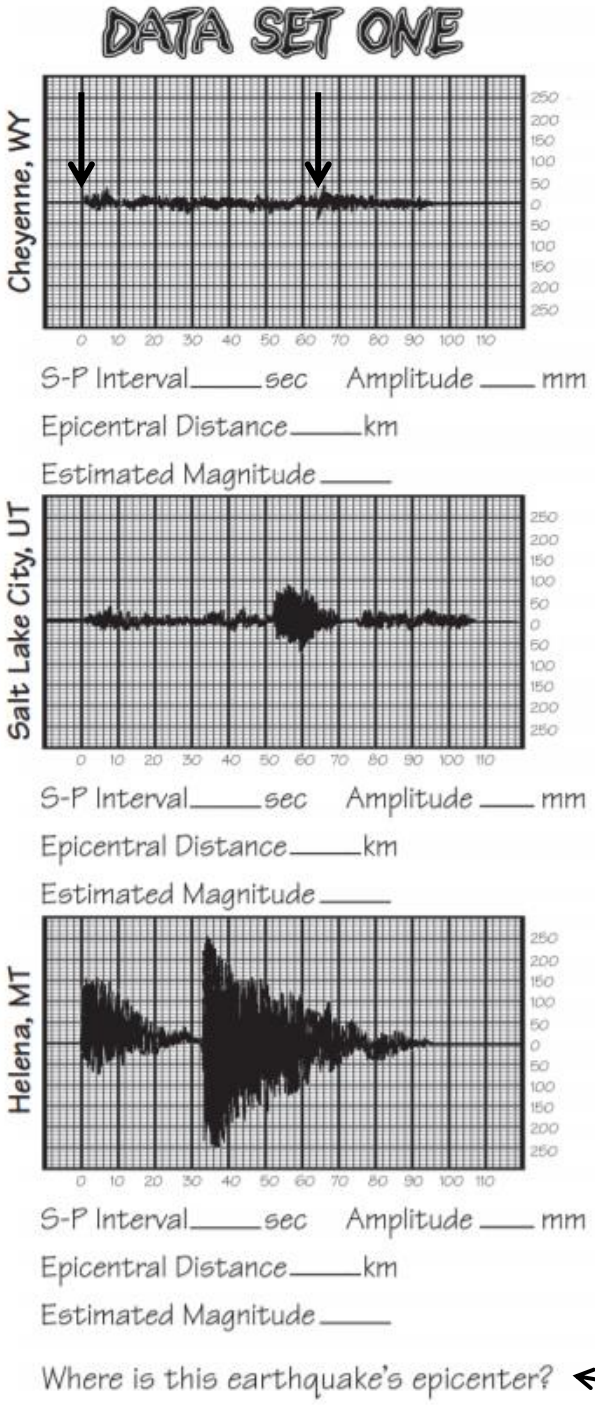
4. What is the amplitude from the seismogram above?
5. Use the Richter Nomogram to identify the size of the earthquake that created the seismogram above using the following procedures
   a. Find the line that says S-P Interval
   b. Place a small dot with your pencil on the interval line that shows S-P Interval from the seismogram above (it's the answer to question 2)
   c. Find the line that says amplitude.
   d. Place a dot, with your pencil on the amplitude line that shows the amplitude.
   e. Use a ruler to make a line that connects the 2 dots. The line will cross the magnitude of the earthquake.
   f. What is the distance of the earthquake? (look at the nomogram, the answer is there). _____km
   g. What is the magnitude of the earthquake? _____ (look at the nomogram, the answer is there)
   h. Believe it or not, you just found the size of the earthquake that created the seismogram above.

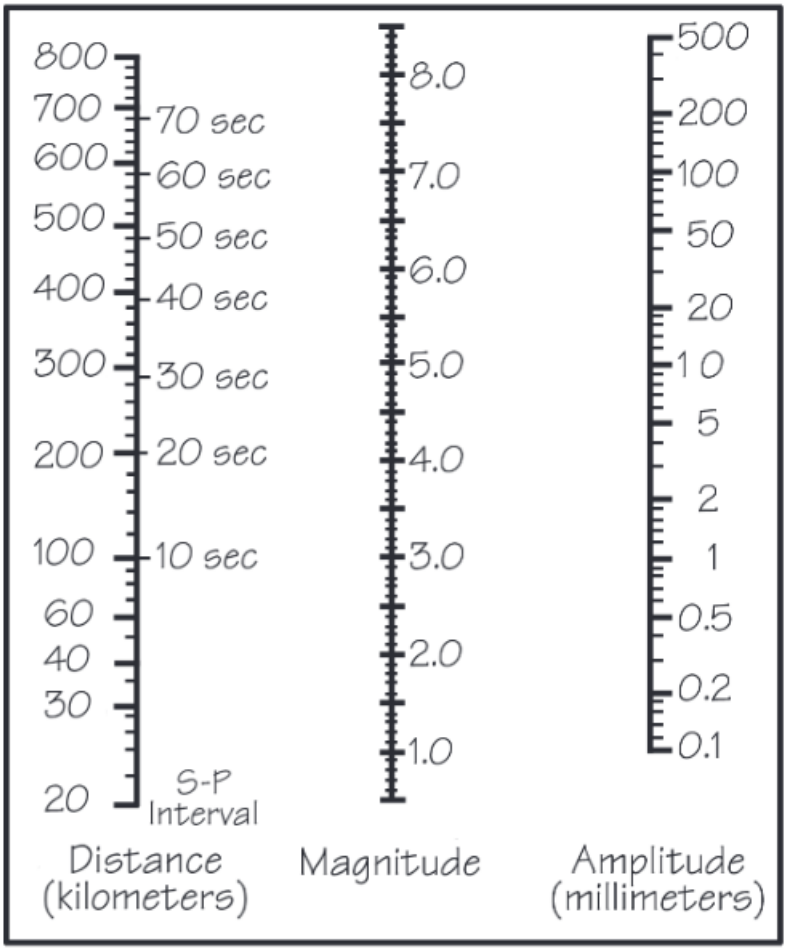


The Richter Nomogram

Activity 2 – Finding the Epicenter

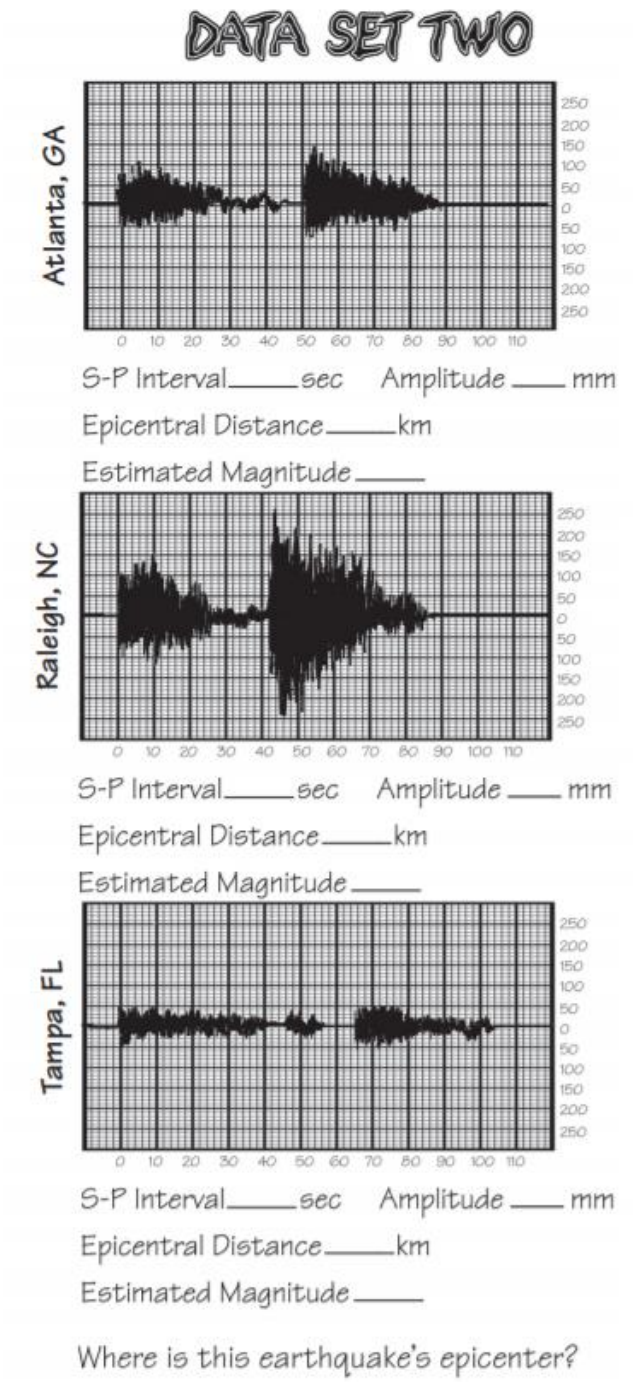
The epicenter is simply the location where the earthquake started. It is where the rigid rock in the lithosphere breaks and released energy in the form of waves. Using the tools from activity 1 and a map of the United States, you will use triangulation to locate the epicenter of 2 different earthquakes. May the force be with you!!

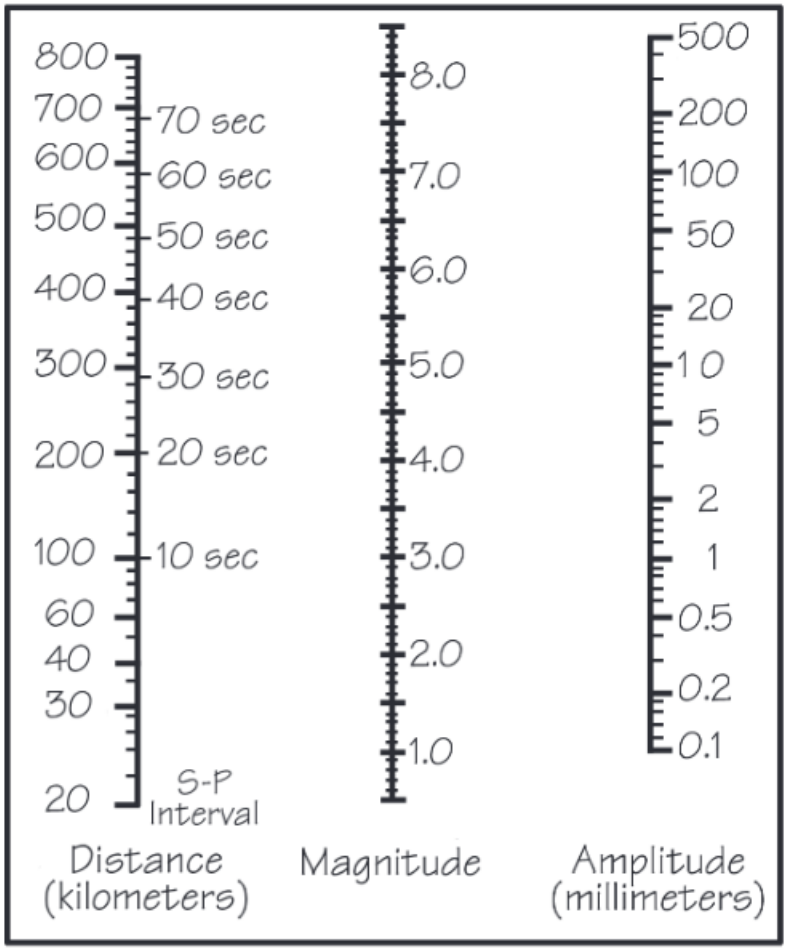




The Richter Nomogram

Once you have the information from all 3 seismograms, you need to use the map and the distance card that closest match with those in your kit. Then use triangulation described by the teacher. Where all 3 intersect is the epicenter of the earthquake.





The Richter Nomogram

Activity 3 – You Be the Engineer Part 2 – Design

You have been hired as the structural engineers in charge of designing a new 3–story building. There are building codes you **MUST** follow. The building will be located near a strike-slip earthquake fault.

1. What type of earthquake is created by strike-slip faults?

Your building must meet the following requirements (codes)

- Must be at least 30 cm tall

- Must have 3 stories at least **10 cm** tall **each** – attics and basements do not count.
- Each story must support at least 1 bag of sand (25 g) without collapsing
- Each floor must be separated from other floors by a minimum of 10cm
- You must include a washer on 2 of the floors (top floors must be able to hold one each; it cannot go on the bottom floor or base!)
- Allow room for clamps on the base (bottom).

You have a budget of **$100** so be careful. Use the data table to figure out what materials you will need to build this prototype next class. Keep in mind, if the first test doesn't work, you can redesign your building and add more materials only **IF** you have money left over

Material	Cost	Quantity	Total
Stir Straw	$3 each		
Drinking Straw	$5 each		
Toothpicks	$2 each		
Marshmallows	$1 Each		
Pipe Cleaners	$8 Each		
1 Meter of Tape	$20 Each meter		
		Grand Total	

In the space below, draw a detailed design of your house. **Remember you have codes you need to follow**. In the details you must label the materials. This will help you to stay within budget. Next class you will actually build and test your design.