

Name: _____

Find the Epicenter Worksheet

Data Table

Seismograph Station	P-wave Arrival Time (hr:min:s)	S-wave Arrival Time (hr:min:s)	Time Delay T_{S-P} (s)	Distance to Epicenter (km)	Map Distance (cm)
New York, NY	5:52:40 a.m.	5:55:18 a.m.			
Louisville, KY	5:49:20 a.m.	5:50:11 a.m.			
Green Bay, WI	5:50:20 a.m.	5:51:52 a.m.			
Pueblo, CO	5:52:00 a.m.	5:54:21 a.m.			
Phoenix, AZ	5:54:40 a.m.	5:58:00 a.m.			

Post-Lab Questions

1. Near what major city is the epicenter located? (Look at a more detailed map of the United States, if necessary.)

Use the Seismic Waves Graph to answer Questions 2 and 3.

2. A seismograph station is 3000 kilometers away from the epicenter of an earthquake. How many seconds after the arrival of the P-wave would the S-wave arrive?

3. What happens to the distance between the P-wave line and the S-wave line as the distance from the epicenter increases? Why is this so?

4. Describe the difference between the focus and the epicenter of an earthquake.

5. Why is useful to know the location of the epicenter once an earthquake has occurred?

9. Record the distance to the nearest hundred kilometers in the data table on the worksheet.
10. Repeat steps 3–9 using the data for each seismograph station.

Part B. Locating the Epicenter

11. Obtain a map of the United States. Note the map scale (1 cm = 200 km). Convert each distance recorded on the data table in kilometers to centimeters by dividing the distance in kilometers by 200. Record each value as “map distance” in the data table.
12. Choose one seismograph city on the map and obtain a drawing compass.
13. Using the scale on the map or a metric ruler, set the compass to the proper radius in centimeters. *Note:* The radius is the distance from the epicenter to the seismograph station.
14. Placing the point of the compass on the selected city, lightly draw a circle in pencil around the city, being careful to keep the compass set at the proper distance. *Hint:* Depending on the type of compass, it may be easier to hold the compass still and rotate the map.
15. As a check, measure the radius of the drawn circle to see if it is the same as the distance recorded in the table. If not, erase the circle, adjust the compass, and draw the circle again.
16. Repeat steps 12–15 for at least two more stations.
17. Circle the area on the map where the circles from the three cities intersect. Label this area “Epicenter.” *Note:* Three or more circles may not intersect at precisely one point; however, they should cluster together in a small area.
18. Answer the *Post-Lab Questions*.

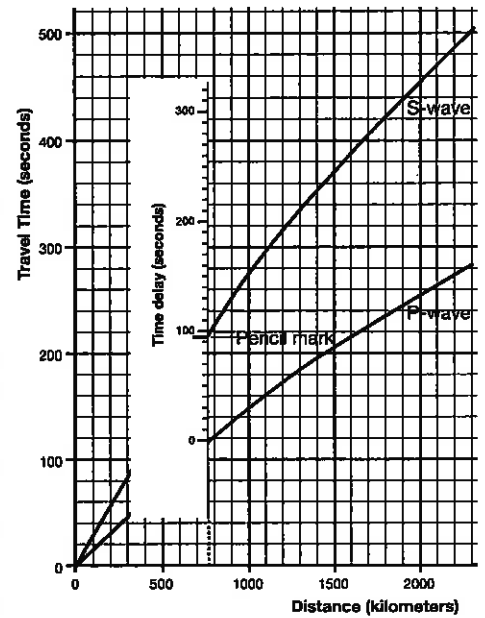
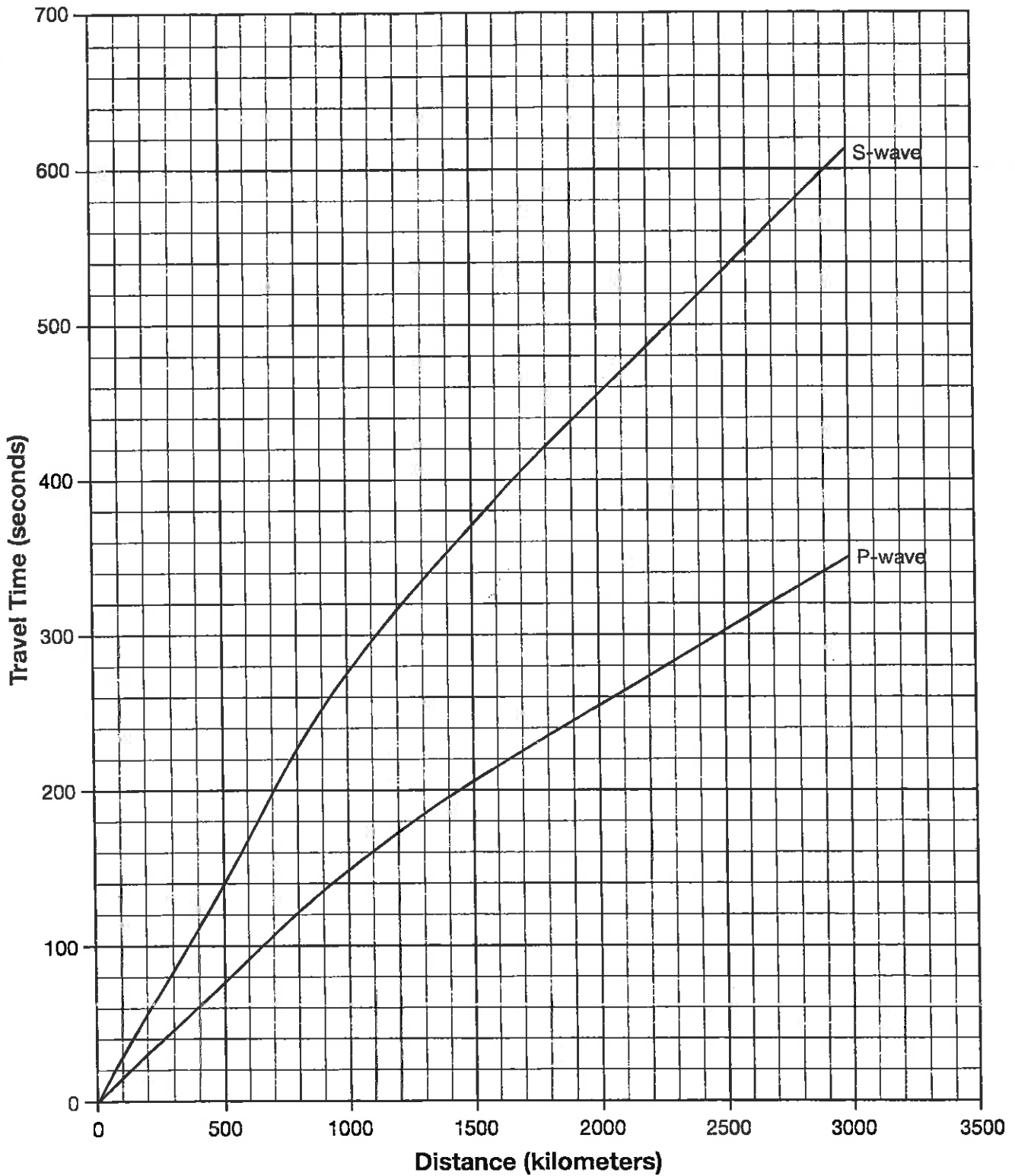


Figure 6.

Find the Epicenter

Seismic Waves Graph



Find the Epicenter United States Map

