

Unit 3 Handout 8

Lesson 3: Locating Epicenters

**Purpose:** To practice reading seismograms and using them to locate epicenters

- Guiding Questions:**
- How is a seismogram used to determine the epicenter of an earthquake?
  - How is a seismogram used to determine the magnitude of an earthquake?

**Background.** Seismologists are able to find where an earthquake occurred by reading a seismogram.

1. They do this by first identifying the arrival times of p-waves and s-waves.
2. Then, they calculate the lag time.
3. Next, they use a time-distance graph to convert the lag time from time to the distance the earthquake's epicenter is from the seismographic station that created the seismogram. The distance they calculate is the radius from the station.
4. They draw a circle, with the seismograph station at the center, that has the radius they previously calculated. The earthquake's epicenter occurred somewhere on this circle.
5. They re-do steps 1-4 with 2 other seismographic. Where all 3 circles overlap is the epicenter of the earthquake.

**Instructions.** In this activity, you will find the epicenter of various earthquakes. **Take your time completing this activity!** Answers that are slightly off will affect your circles, and thus result in errors finding the epicenter.

Visit [7bscience.com](http://7bscience.com) and click on the link for the Virtual Earthquake website. Read the information on the page and then click on "Execute VirtualEarthquake." From here, carefully read the instructions on the page. Once you have successfully determined the epicenter of an earthquake, record the data table that appears on the 6th page of the web site (you'll get to the page if you are successful!).\*\*

**Location:** \_\_\_\_\_

	Your Data		Actual Data	
Recording Station	S-P Interval	Epicentral Distance	S-P Interval	Epicentral Distance

\*\* If you don't get the measurements close enough, it will make you do it again! You have to get an "Excellent" from the site in order to move on.

Now determine the magnitude of the earthquake: \_\_\_\_\_.

If you've done well, you will be taken to a page where you can make your own certificate. You are not required to make the certificate.

However, if there is still time remaining, please re-start the activity and choose a new location to work with! There are extra tables below.

**Location:** \_\_\_\_\_

	Your Data		Actual Data	
Recording Station	S-P Interval	Epicentral Distance	S-P Interval	Epicentral Distance

Now determine the magnitude of the earthquake: \_\_\_\_\_.

**Location:** \_\_\_\_\_

	Your Data		Actual Data	
Recording Station	S-P Interval	Epicentral Distance	S-P Interval	Epicentral Distance

Now determine the magnitude of the earthquake: \_\_\_\_\_.

Name ..... Period ..... Date .....

Location: \_\_\_\_\_

	Your Data		Actual Data	
Recording Station	S-P Interval	Epicentral Distance	S-P Interval	Epicentral Distance

Now determine the magnitude of the earthquake: \_\_\_\_\_.