

## Locating the Epicenter

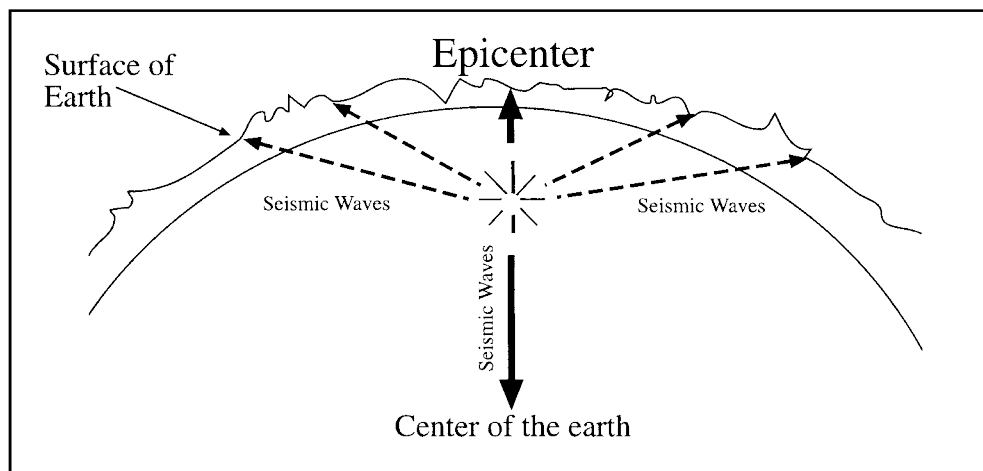
### Testable Question:

Given the following seismic data, where is the epicenter of the earthquake?

Seismograph Site in Hawai'i	Distance from seismograph site to epicenter
Humu'ula Sheep Station (HSSN)	26 km
South Point (SPTN)	47 km
Heiheiahula (HULN)	53 km

### Background Information:

Scientists can use P-waves and S-waves to figure out the distance to the epicenter of an earthquake. The epicenter is the place on the surface of Earth directly above where an earthquake occurred, as shown in the diagram below.



To find the epicenter of an earthquake, scientists must figure out where the origin of P-waves and S-waves recorded on a seismograph. The table above shows the epicenter distances recorded by three seismometers in Hawai'i.

### Hypothesis:

1. Complete the hypothesis below.

If the three seismographs in the data chart recorded accurate data, then the epicenter of the earthquake is \_\_\_\_\_.

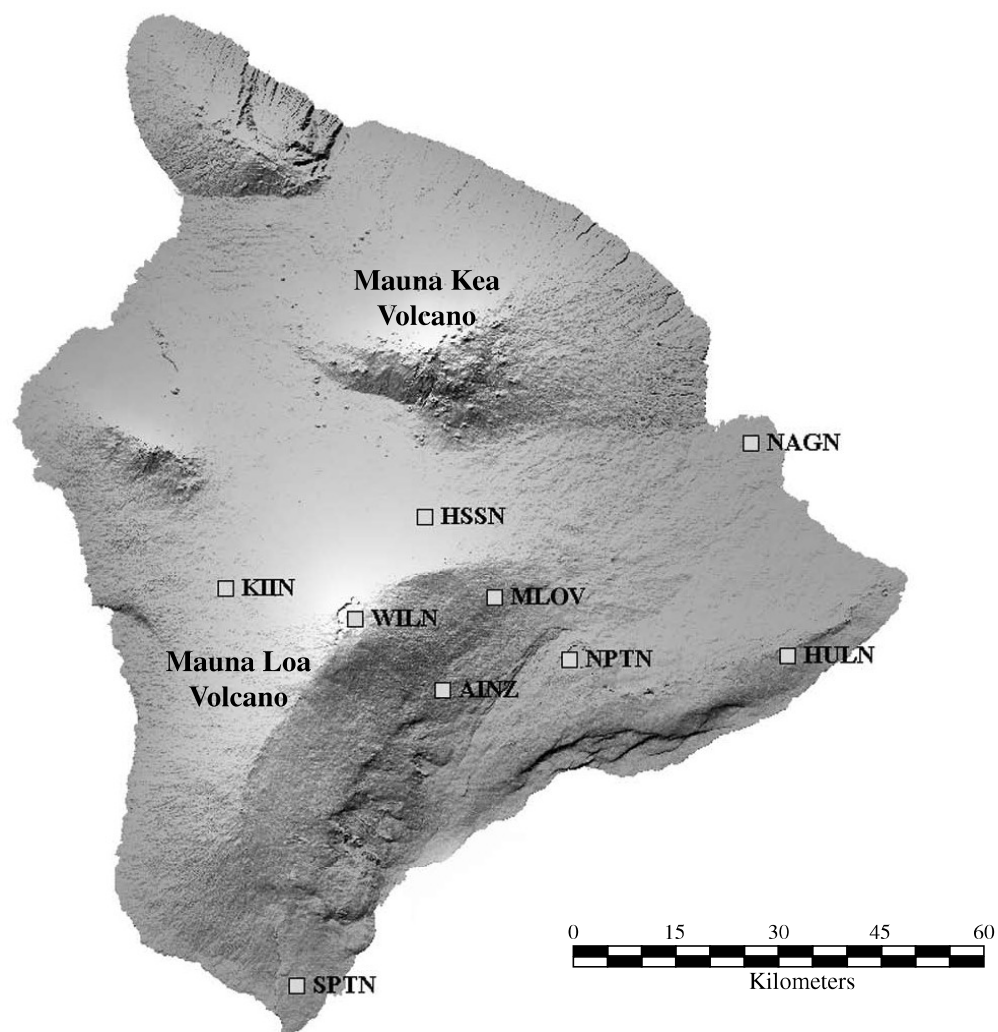
## Locating the Epicenter

### Materials:

Drawing Compass

### Procedure:

1. Use the scale on the map to set the radius of your compass. Match the distance from the HSSN Seismometer to the epicenter. This distance is given in the table on the previous page.
2. After you set the radius of your compass, put the compass pointer on the square that shows the location of the HSSN Seismometer. Draw a circle around the HSSN Seismometer.
3. Repeat steps 1 and 2 for the SPTN Seismometer and the HULN Seismometer.
4. When you finish, three circles should be drawn on your map, one around each seismometer. The point at which these three circles meet is the epicenter of the earthquake.



## Locating the Epicenter

### *Analysis of Data:*

1. Where do the three circles you drew on the map meet?

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### *Conclusion:*

Write your conclusion as a complete sentence on the lines below.

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Was your hypothesis proved or disproved? Explain your answer.

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### *Further Questions:*

1. What is the epicenter of an earthquake?
  - a) The location of the seismometer to first record the earthquake's P-waves.
  - b) The location of the seismometer to first record the earthquake's S-waves.
  - c) The place deep in Earth's crust where the earthquake began.
  - d) The place on Earth's surface directly above where the earthquake occurred.
2. How many seismometers and their epicenter distances are needed to locate the epicenter of an earthquake? \_\_\_\_\_
3. Are earthquakes always caused by volcanoes? How do you know?

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