

## Bellringer

How do we find or determine the epicenter of an earthquake?

## Learning Objectives:

Students will interpret and calculate P waves & S waves data to locate the epicenter of an earthquake.

## Purpose of Learning about Earthquakes

Earthquakes occur every day all over the United States and all over the world. Most of these earthquakes are small tremors that can't be felt by people, but occasionally an earthquake occurs on a large magnitude that causes millions of dollars in property damage and kills hundreds to thousands of people. Earthquakes can also cause tsunamis, which are very large waves that can damage coastlines and put coastal residents in danger.

Some places are more prone to earthquakes than others. For example, the western United States has earthquakes more frequently and on a larger scale than the eastern part of the country. Earthquakes occur along faults, which are cracks in the Earth's crust that build tension. When the tension becomes too great, the fault slips, causing an earthquake. The western U.S. has more faults than the eastern U.S., and therefore the western U.S. has more earthquakes. The nation's most famous fault is the San Andreas Fault, which runs along a north-south trend in southern California, and happens to run directly through Los Angeles.

Draw a triangle that has the following measurements.

Side A = 80 mm

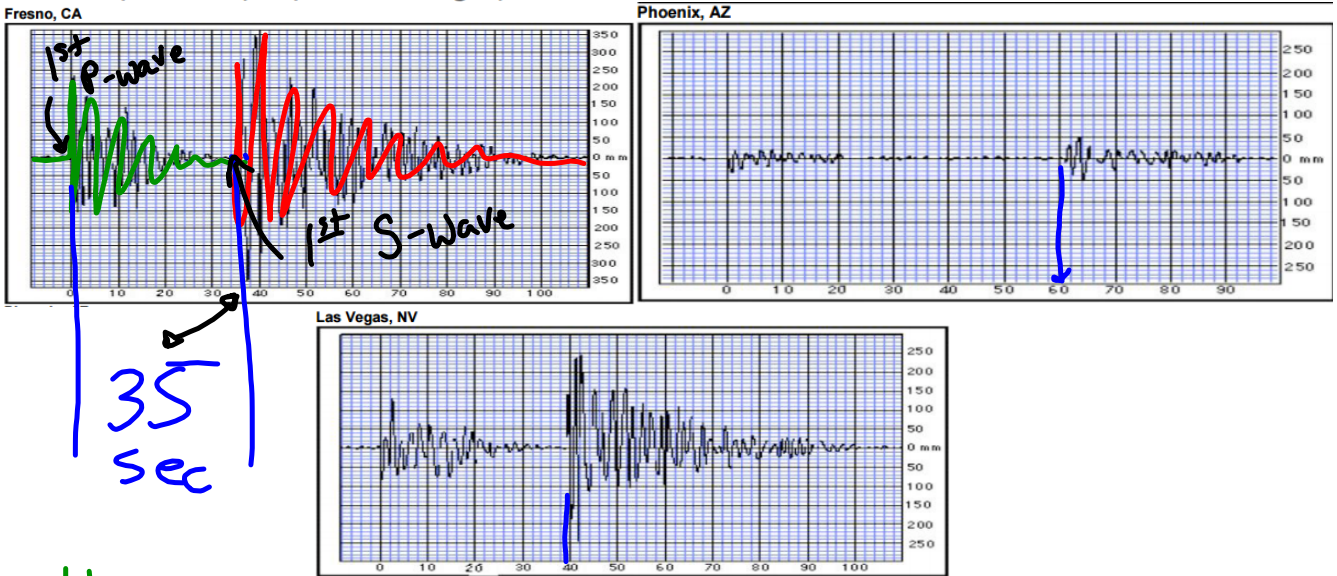
Side B = 2 in.

Side C = 8 cm

*The ends/points  
must line up.*

*Hint: Triangulation*

Seismograms From Seismic Stations in Fresno, CA, Phoenix, AZ, and Las Vegas, NV



How to Measure Time from 1<sup>st</sup> primary waves to the first Secondary Waves.  
\* see Animation to convert time → distance.

How do we locate the epicenter?



How do we locate the epicenter?



Must have 3 seismograph locations to pin point.  
(see Animation link for how they convert time to distance)

