

Unit 3 Handout 74

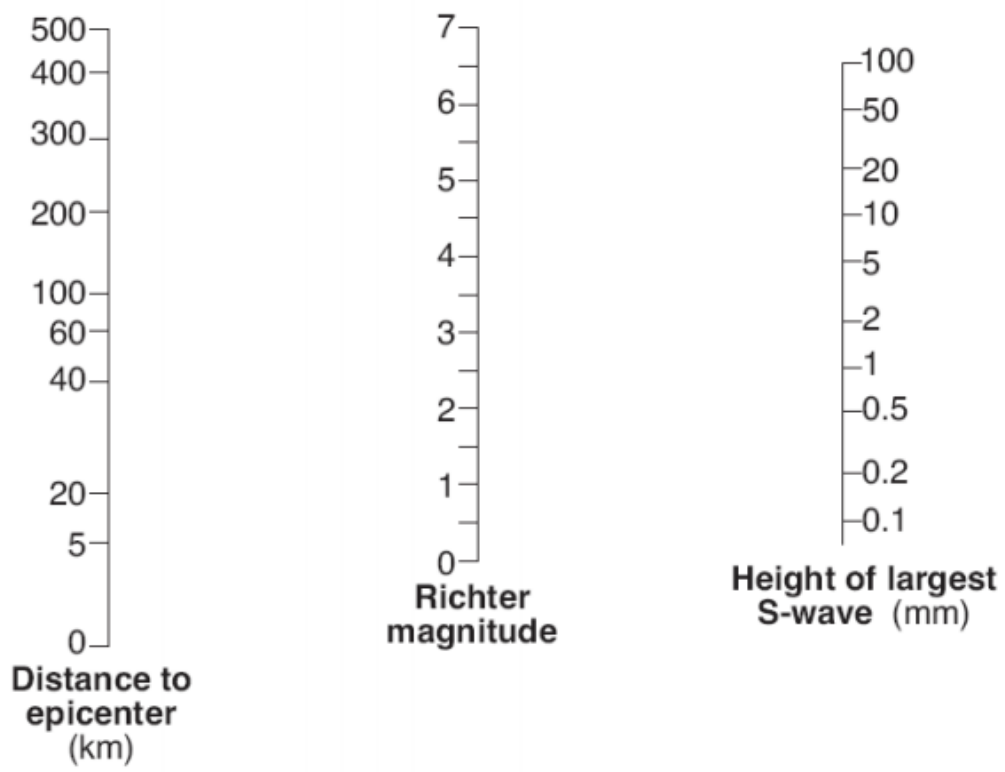
Lesson 4: Finding Magnitude

Purpose: To practice calculating the magnitude of an earthquake.

Guiding Question: - How is the magnitude of an earthquake determined?

Instructions: Below is a nomogram which scientists use to determine the magnitude of an earthquake. To use a nomogram, you must know **1)** the distance to the epicenter and **2)** the amplitude of the S-wave from the earthquake. You find these points on the nomogram and connect them. Wherever that line crosses the center line is the magnitude of the earthquake.

Example: If the epicenter distance is 300km and the amplitude of the S-wave was 2mm, what is the approximate magnitude?



Continue on to the back and practice finding the magnitude of these hypothetical earthquakes.

1. A seismograph located 60km from the epicenter of an earthquake recorded the amplitude of the S-wave to be 50mm. What was the magnitude of this earthquake?

2. A seismograph located 5km from the epicenter of an earthquake recorded the amplitude of the S-wave to be 1mm. What was the magnitude of this earthquake?

3. An earthquake with a magnitude of 4.0 caused an S-wave of 2mm to be recorded by a seismograph. How from the epicenter was the seismograph?

4. What would be the maximum amplitude of an S-wave, if an earthquake with a magnitude of 1.5 was detected at a distance of 5km from the epicenter?

5. What magnitude earthquake would provide an S-wave amplitude of 1mm at a distance of 100km from the epicenter?

6. A seismograph reports that an earthquake hit with a lag time of 1.5 minutes. The s-wave amplitude is 1mm. What is the magnitude of the earthquake?