

Unit
3Handout
75

Lesson 4: Magnitude vs Intensity

Purpose: To explain the differences between magnitude and intensity

Guiding Questions: - How is the severity of an earthquake determined?

Instructions. Read pages 56-59 in the XPT book. Then, answer the following questions.

1. What is magnitude?
2. What scale is used to measure magnitude?
3. How is the magnitude of an earthquake determined?
4. Carefully read the last paragraph on page 57 that explains the relationship between magnitude numbers. Summarize what you read.
5. Based on the last paragraph on page 57:
 - 5.1. How much more energy does a magnitude 7.2 earthquake release than a magnitude 6.2 earthquake?
 - 5.2. **Optional Challenge:** How much more energy does a magnitude 6.7 earthquake release than a 5.4 earthquake? How do you know? (*Hint: the actual difference in energy per magnitude is 31.6227. Therefore, a difference in 2 magnitudes would be about 1000 more energy. A difference in 3 magnitudes would be about 31,622.5 times more energy. See a pattern?*)
6. Look at the Richter Magnitude Scale on page 57. What is the relationship between magnitude and frequency (average number each year)?

7. What is intensity?

8. What are some factors that affect the intensity of an earthquake?

9. What intensity rating would the following earthquake receive: tearful children are running from large bookcases toppling around them and because Santa no longer has an entry point into the house.

10. What intensity rating would the following earthquake receive: a parent mistakes the earthquake for a powerful burp; a car alarm is heard in the distance.

11. **Think about this:** If two people are the same distance from the epicenter, will they feel the same **magnitude** earthquake? Explain.

12. **Think about this:** If two people are the same distance from the epicenter, will they feel the same **intensity** earthquake? Explain.