

Directed Reading

Section: Studying Earthquakes

- _____ 1. What is the study of earthquakes and seismic waves called?
- a. meteorology
 - b. seismology
 - c. zoology
 - d. cartography

RECORDING EARTHQUAKES

- _____ 2. A seismograph is an instrument that records vibrations
- a. in the ground.
 - b. in the atmosphere.
 - c. above the ground.
 - d. in Earth's core.
3. Name the types of motion that a modern three-component seismograph records.

4. How do seismographs record motion?

5. A tracing of earthquake motion that is recorded by a seismograph is called a(n)

6. Why are P waves the first waves to be recorded by a seismograph?

7. What is the second type of wave to be recorded by a seismograph?

8. What type of wave is the slowest, and therefore the last to be recorded by a seismograph?

Directed Reading *continued*

LOCATING AN EARTHQUAKE

- _____ 9. Scientists determine the distance to an epicenter by analyzing
- a. the length of the P waves and S waves.
 - b. the frequency of the P waves and S waves.
 - c. the power of the P waves and S waves.
 - d. the arrival times of the P waves and S waves.
- _____ 10. The longer the lag time between the arrival of the P waves and the S waves,
- a. the closer the earthquake occurred.
 - b. the weaker the earthquake's vibrations.
 - c. the farther away the earthquake occurred.
 - d. the stronger the earthquake's vibrations.
- _____ 11. Before computers were widely available, scientists consulted a lag-time graph to determine how far an earthquake occurred from
- a. a given seismograph station.
 - b. the earthquake's focus.
 - c. the earthquake's epicenter.
 - d. the equator.
- _____ 12. A lag-time graph translates the difference in arrival times of the P waves and S waves into distance from the epicenter to
- a. the earthquake.
 - b. each station.
 - c. each pole.
 - d. the equator.
- _____ 13. What can a lag-time graph determine about an earthquake?
- a. its focus
 - b. its strength
 - c. its start time
 - d. its end time
14. Before computers were widely available, what earlier, less precise technique did scientists use to locate the epicenter of an earthquake?

15. On the maps, what did the radius of each circle represent?

Directed Reading *continued*

16. Where would the epicenter of the earthquake be found on the map?

EARTHQUAKE MEASUREMENT

- _____ 17. Scientists who study earthquakes are interested in the amount of
- a. P waves and S waves in an earthquake.
 - b. energy absorbed by an earthquake.
 - c. energy released by an earthquake.
 - d. electricity released by an earthquake.

In the space provided, write the letter of the description that best matches the term or phrase.

- | | |
|-----------------------------------|---|
| _____ 18. magnitude | a. the amount of damage caused by an earthquake |
| _____ 19. Richter scale | b. the measure of earthquake strength based on the size of the area of the fault that moves, the average distance that the fault block moves, and the rigidity of the rocks in the fault zone |
| _____ 20. moment magnitude | c. the measure of the strength of an earthquake |
| _____ 21. intensity | d. a measurement system that expresses earthquake intensity in Roman numerals and describes the effects of each intensity |
| _____ 22. modified Mercalli scale | e. a measurement system that bases earthquake strength on ground motion |

23. Which magnitude scale was widely used for most of the 20th century?

24. Which magnitude scale do scientists generally prefer now?

25. For what do the Richter scale and the moment magnitude scale provide similar values?

26. What is the moment magnitude scale more accurate for measuring?

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27. What is the highest moment magnitude recorded for an earthquake so far?

28. What was the moment magnitude of the earthquake in China in 2008 that devastated the country just before it hosted the Olympic Games?

29. What is the moment magnitude of earthquakes that are generally not felt by people?

30. How is Intensity I described on the modified Mercalli intensity scale?

31. How is Intensity XII described on the modified Mercalli intensity scale?

32. Upon what does the intensity of an earthquake depend?
