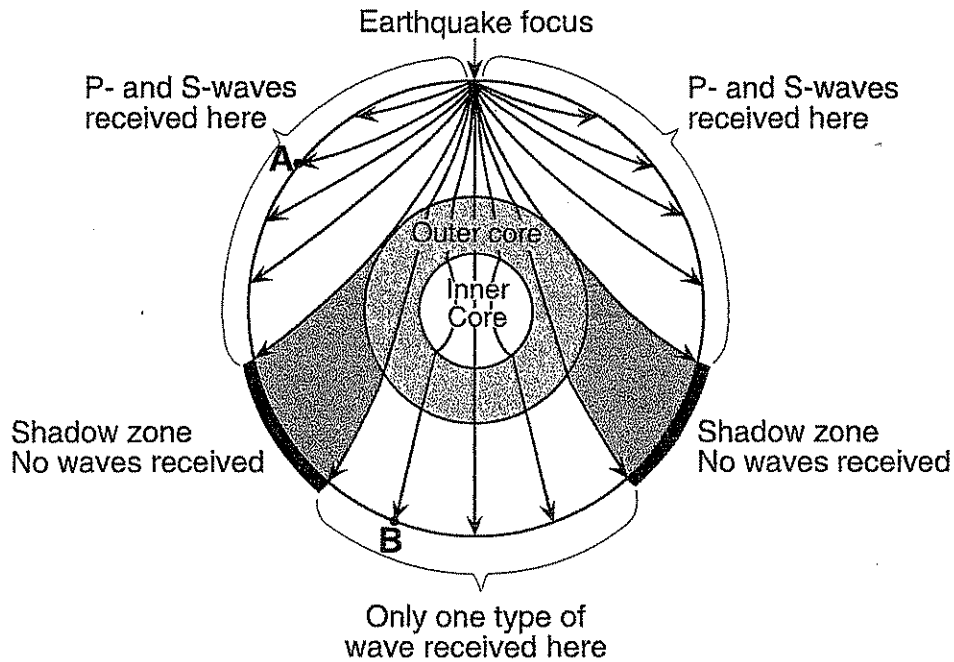


EARTHQUAKE POWER POINT

Base your answers to questions 24 and 25 on the cross-sectional view of Earth below, which shows seismic waves traveling from the focus of an earthquake. Points A and B are locations on Earth's surface.



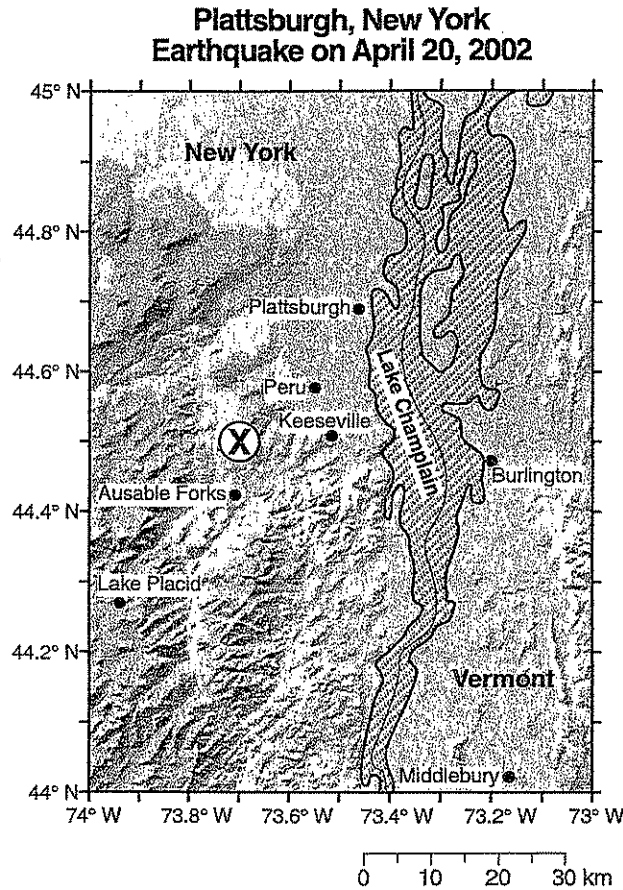
24 Which statement best explains why only one type of seismic wave was recorded at location B?

- (1) S-waves cannot travel through the liquid outer core.
- (2) S-waves cannot travel through the liquid inner core.
- (3) P-waves cannot travel through the solid outer core.
- (4) P-waves cannot travel through the solid inner core.

25 A seismic station located at point A is 5400 kilometers away from the epicenter of the earthquake. If the arrival time for the P-wave at point A was 2:00 p.m., the arrival time for the S-wave at point A was approximately

- | | |
|---------------|---------------|
| (1) 1:53 p.m. | (3) 2:09 p.m. |
| (2) 2:07 p.m. | (4) 2:16 p.m. |

Base your answers to questions 54 through 57 on the map below and on your knowledge of Earth science. The map shows the location of the epicenter, (X), of an earthquake that occurred on April 20, 2002, about 29 kilometers southwest of Plattsburgh, New York.



- 54 State the latitude and longitude of this earthquake epicenter. Express your answers to the *nearest tenth of a degree* and include the compass directions. [1]
- 55 What is the *minimum* number of seismographic stations needed to locate the epicenter of an earthquake? [1]
- 56 Explain why this earthquake was most likely felt with greater intensity by people in Peru, New York, than by people in Lake Placid, New York. [1]
- 57 A seismic station located 1,800 kilometers from the epicenter recorded the *P*-wave and *S*-wave arrival times for this earthquake. What was the difference in the arrival time of the first *P*-wave and the first *S*-wave? [1]

Base your answers to questions 53 through 56 on the world map in your answer booklet and on your knowledge of Earth science. The map shows major earthquakes and volcanic activity occurring from 1996 through 2000. Letter A represents a volcano on a crustal plate boundary.

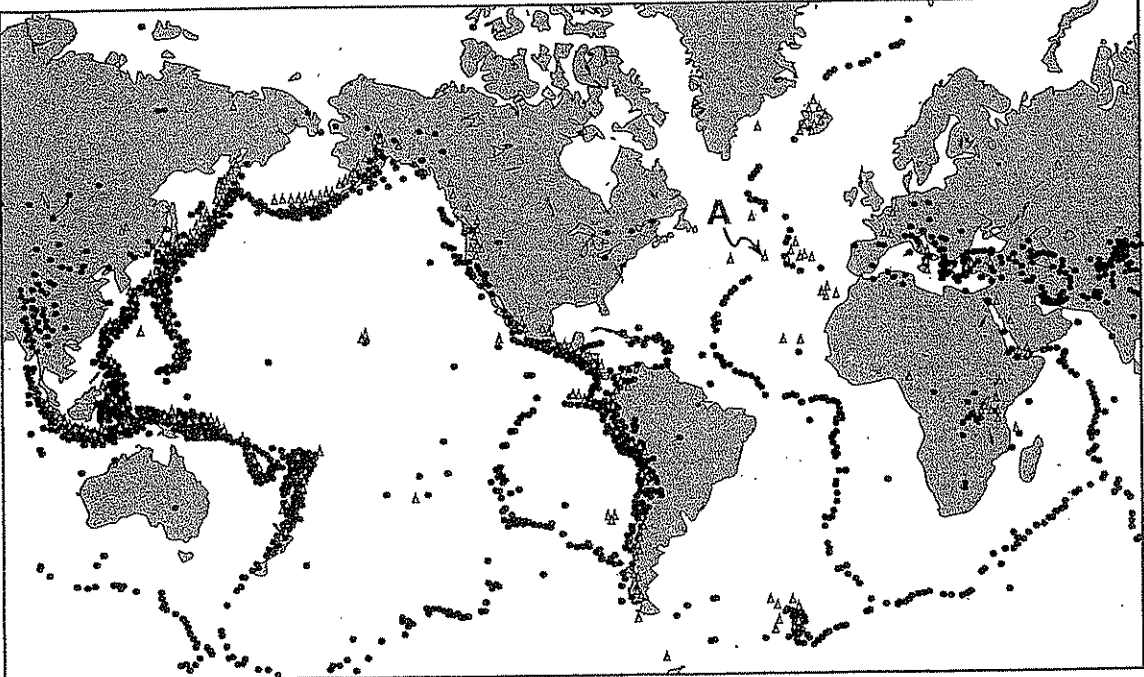
53 In your answer booklet, place an X on the map to show the location of the Nazca Plate. [1]

54 Explain why most major earthquakes are found in specific zones instead of being randomly scattered across Earth's surface. [1]

55 Identify the source of the magma for the volcanic activity in Hawaii. [1]

56 Identify the type of plate movement responsible for the presence of the volcano at location A. [1]

53



Key

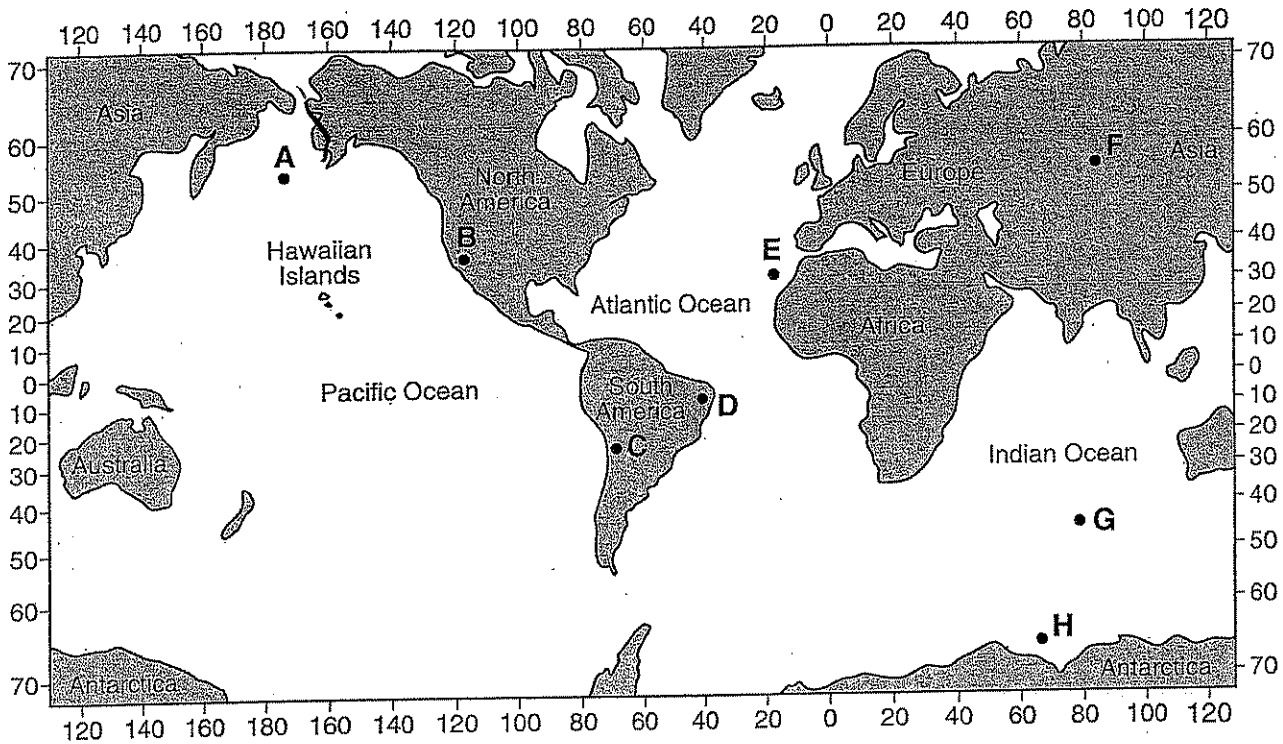
● Earthquakes	△ Volcanoes
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54 _____

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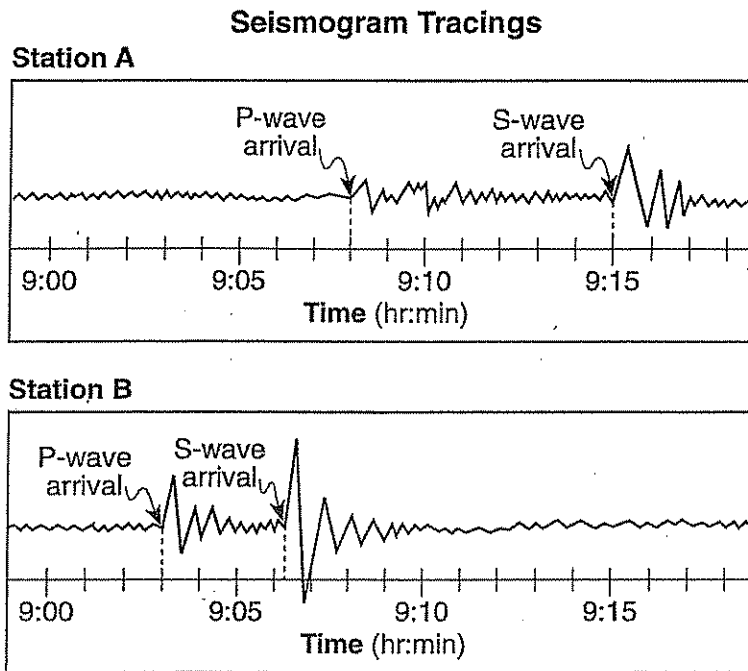
56 _____

Base your answers to questions 80 through 83 on the world map shown below and on your knowledge of Earth science. Letters A through H represent locations on Earth's surface.



- 80 Explain why most earthquakes that occur in the crust beneath location B are shallower than most earthquakes that occur in the crust beneath location C. [1]
- 81 Explain why location A has a greater probability of experiencing a major earthquake than location D. [1]
- 82 Explain why a volcanic eruption is more likely to occur at location E than at location F. [1]
- 83 Explain why the geologic age of the oceanic bedrock increases from location G to location H. [1]

Base your answers to questions 63 and 64 on the diagram below, which shows two seismogram tracings, at stations A and B, for the same earthquake. The arrival times of the P-waves and S-waves are indicated on each tracing.



- 63 Explain how the seismic tracings recorded at station A and station B indicate that station A is farther from the earthquake epicenter than station B. [1]
- 64 Seismic station A is located 5,400 kilometers from the epicenter of the earthquake. How much time would it take for the first S-wave produced by this earthquake to reach seismic station A? [1]
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