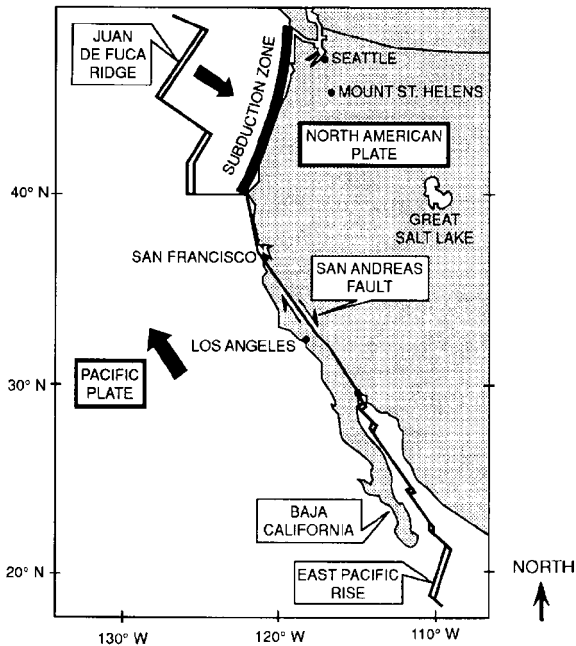


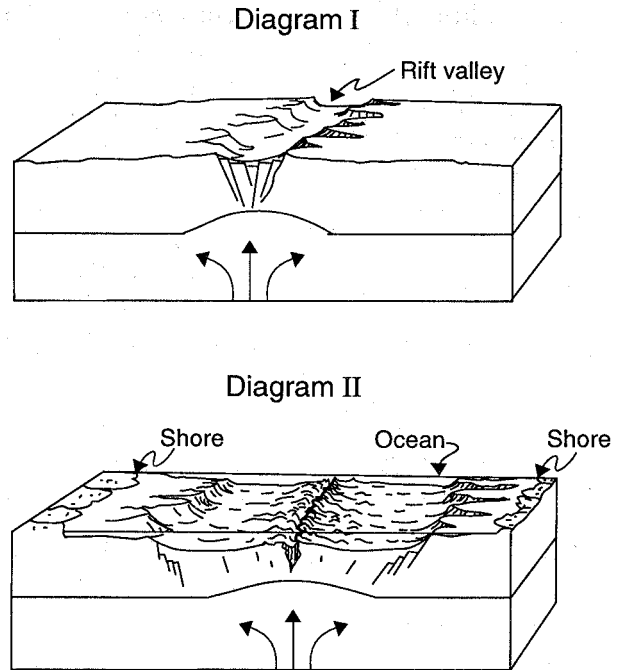
- Recent volcanic activity in different parts of the world supports the inference that volcanoes are located mainly in
  - the centers of landscape regions
  - the central regions of the continents
  - zones of crustal activity
  - zones in late stages of erosion

Base your answers to questions 2 through 4 on the map below, which shows crustal plate boundaries located along the Pacific coastline of the United States. The arrows show the general directions in which some of the plates appear to be moving slowly.



- Which feature is located at 20° North latitude and 109° West longitude?
  - San Andreas fault
  - East Pacific rise
  - Baja California
  - Juan de Fuca Ridge
- Geologic studies of the San Andreas fault indicate that
  - many earthquakes occur along the San Andreas fault
  - the North American plate and the Pacific plate are locked in dynamic equilibrium
  - the subduction zone is the boundary at which the crustal plates are drifting apart
  - the age of the bedrock increases as distance from the fault increases
- Which features are most often found at crustal plate boundaries like those shown on the map?
  - meandering rivers and warm-water lakes
  - plains and plateaus
  - geysers and glaciers
  - faulted bedrock and volcanoes

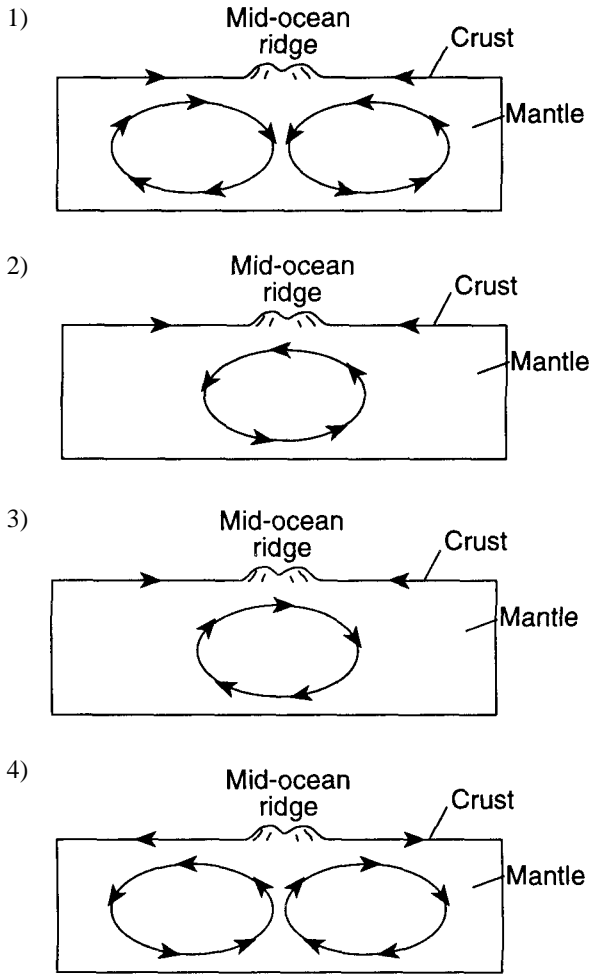
- Diagrams I and II show the same region of the Earth's surface at two different times in the geologic past.



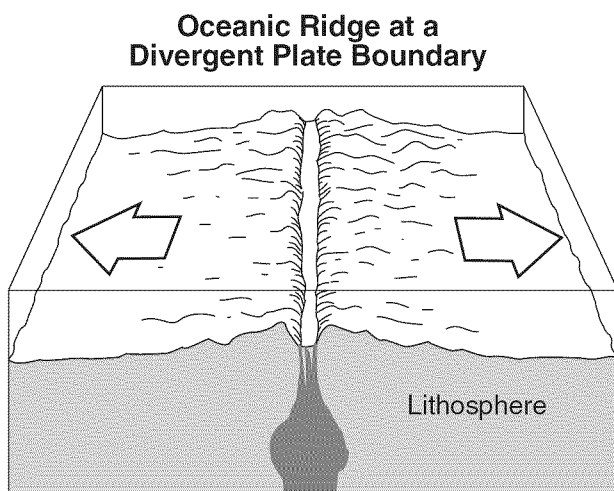
Which statement best explains the basic cause of the changes that occurred in this region?

- Meteor impact on the crust caused widening of the valley.
  - Mantle convection currents caused crustal movement.
  - Climate changes caused flooding.
  - Temperature changes caused melting of polar ice caps.
- Contact zones between tectonic plates may produce trenches. One of these trenches is located at the boundary between which plates?
    - Australian and Pacific
    - South American and African
    - Australian and Antarctic
    - North American and Eurasian
  - The border between the South American plate and the African plate is best described as
    - converging and located at an oceanic ridge
    - converging and located at an oceanic trench
    - diverging and located at an oceanic ridge
    - diverging and located at an oceanic trench

8. Which cross-sectional diagram of a portion of the crust and mantle best shows the pattern of mantle convection currents that are believed to cause the formation of a mid-ocean ridge?



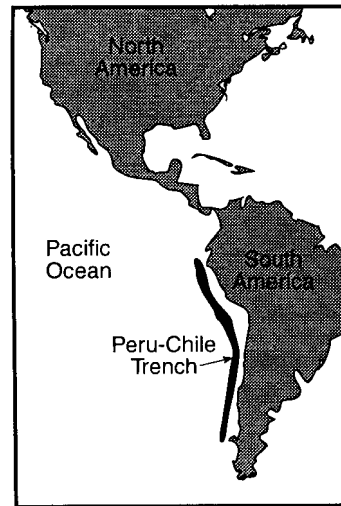
9. The diagram below shows a tectonic plate boundary.



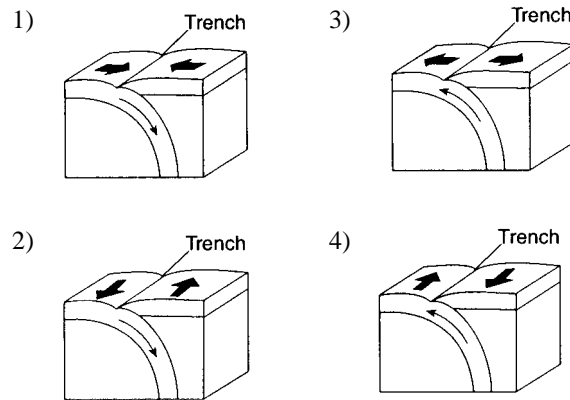
Which mantle hot spot is at a plate boundary like the one shown in this diagram?

- 1) Hawaii Hot Spot
- 2) Yellowstone Hot Spot
- 3) Galapagos Hot Spot
- 4) Canary Hot Spot

10. Base your answer to the following question on the map below, which shows the location of the Peru-Chile Trench.



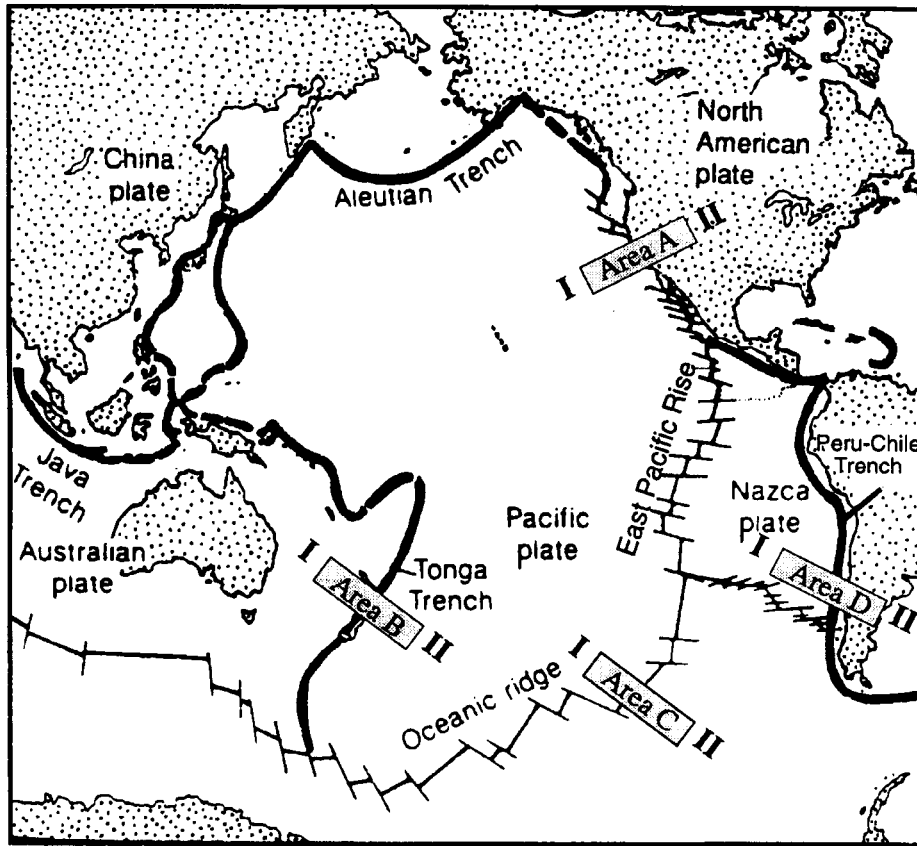
In which diagram do the arrows best represent the motions of Earth's crust at the Peru-Chile Trench?



11. Which statement best supports the theory that all the continents were once a single landmass?

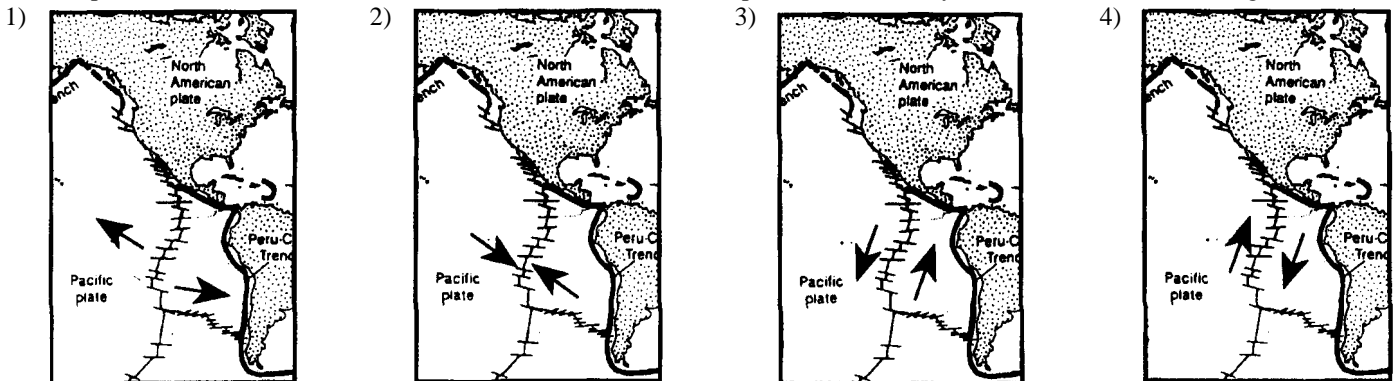
- 1) Rocks of the ocean ridges are older than those of the adjacent sea floor.
- 2) Rock and fossil correlation can be made where the continents appear to fit together.
- 3) Marine fossils can be found at high elevations above sea level on all continents.
- 4) Great thicknesses of shallow-water sediments are found at interior locations on some continents.

Base your answers to questions 12 through 14 on the map below which shows mid-ocean ridges and trenches in the Pacific Ocean. Specific areas A, B, C, and D are indicated by shaded rectangles.

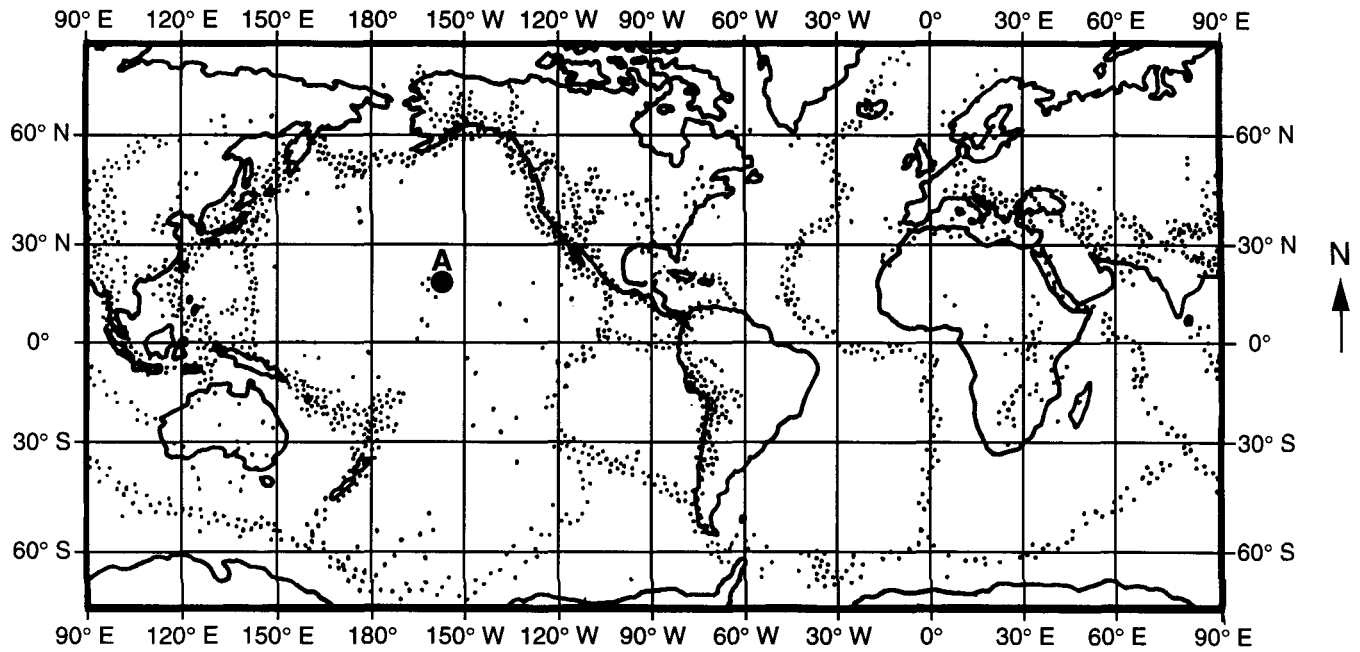


12. The crust at the mid-ocean ridges is composed mainly of
- 1) granite
  - 2) shale
  - 3) basalt
  - 4) limestone
13. Mid-ocean ridges such as the East Pacific Rise and the Oceanic Ridge are best described as
- 1) mountains containing folded sedimentary rocks
  - 2) mountains containing fossils of present-day marine life
  - 3) sections of the ocean floor that contain the youngest oceanic crust
  - 4) sections of the ocean floor that are the remains of a submerged continent

14. Which map best shows the direction of movement of the oceanic crustal plates in the vicinity of the East Pacific Rise (ridge)?

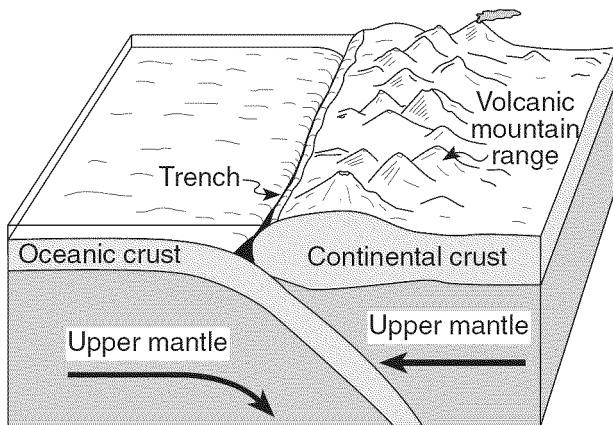


Base your answers to questions 15 and 16 on the map below. Dots on the map show the distribution of major earthquake epicenters. The shaded circle labeled A represents a location on Earth's surface.



15. Location A is best described as an area that is
- 1) within a rift valley at a mid-ocean ridge
  - 2) at the boundary between two diverging plates
  - 3) within a deep-sea trench between two converging plates
  - 4) above a mantle hot spot near the center of a crustal plate
16. Which conclusion can best be inferred from the data shown on this map?
- 1) Earthquakes generally are evenly distributed over the surface of Earth.
  - 2) Most earthquakes occur west of the Prime Meridian and north of the Equator.
  - 3) Most earthquakes are concentrated in zones along plate boundaries.
  - 4) Most earthquakes occur on continents.

17. The diagram below shows the interaction of two tectonic plates.

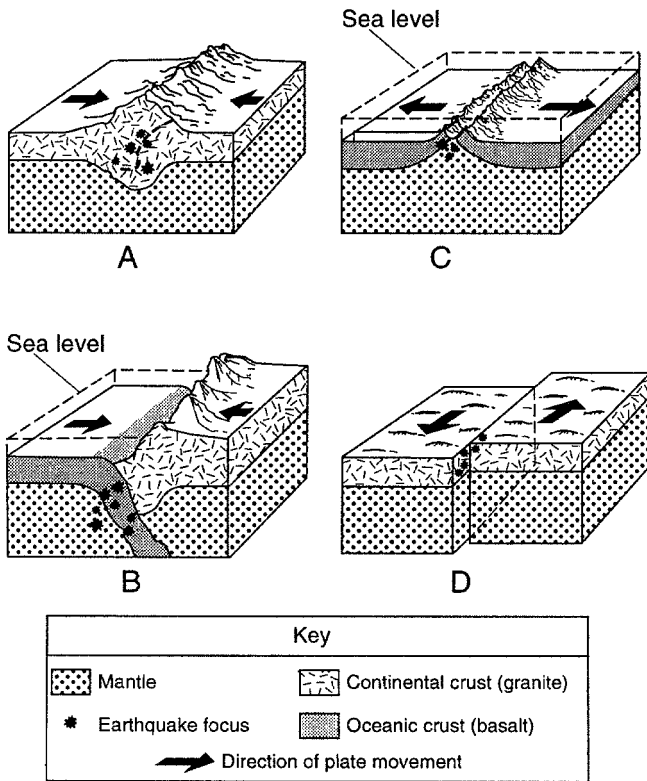


(Not drawn to scale)

The type of plate boundary represented in the diagram most likely exists between the

- 1) Antarctic Plate and the African Plate
- 2) Antarctic Plate and the Indian-Australian Plate
- 3) South American Plate and the Nazca Plate
- 4) South American Plate and the African Plate

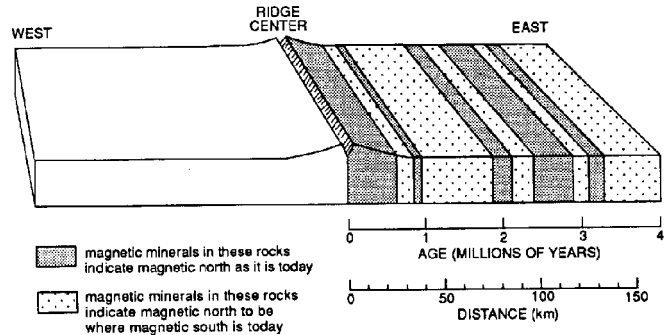
18. Base your answer to the following question on the diagrams below of geologic cross sections of the upper mantle and crust at four different Earth locations, *A*, *B*, *C*, and *D*. Movement of the crustal sections (plates) is indicated by arrows, and the locations of frequent earthquakes are indicated by \*. Diagrams are not drawn to scale.



Which location best represents the boundary between the African plate and the South American plate?

- 1) *A*
- 2) *B*
- 3) *C*
- 4) *D*

Base your answers to questions 19 through 22 on the diagram below which shows the magnetic orientation of igneous rock on the seafloor on the east (right) side of a mid-ocean ridge. The pattern on the west (left) side of the ridge has been omitted. The age of the igneous rock and its distance from the ridge center are shown.



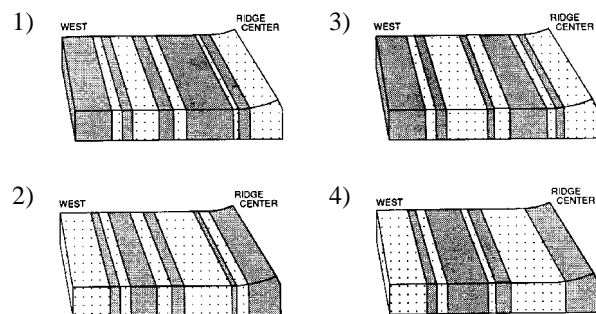
19. Which inference can best be made from the diagram?

- 1) The orientation of the Earth's magnetic field has reversed with time.
- 2) The size of the continents has changed with time.
- 3) The elevation of sea level has changed with time.
- 4) The amount of fossil material preserved in the igneous rock has changed with time.

20. According to the diagram, what is the approximate rate of seafloor spreading?

- 1) 1 km/million years
- 2) 2 km/million years
- 3) 40 km/million years
- 4) 50 km/million years

21. Which diagram below best represents the pattern of magnetic orientation in the seafloor on the west (left) side of the ocean ridge?

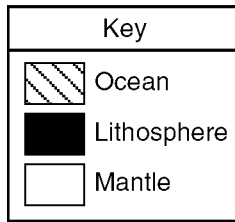
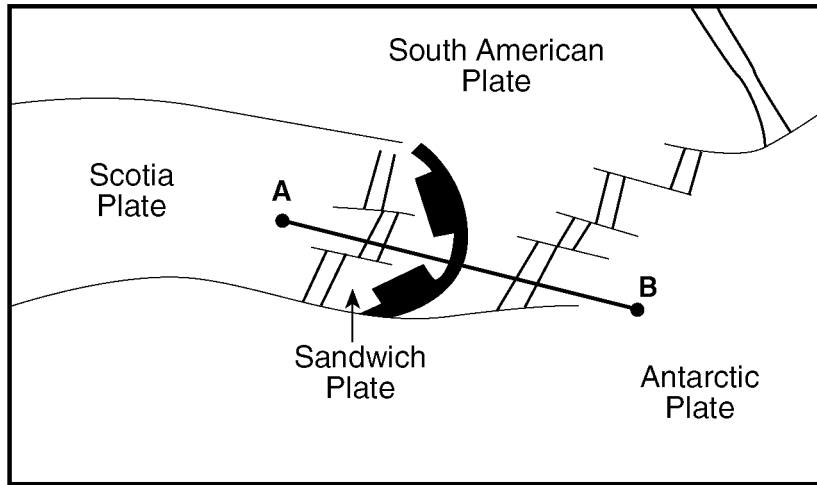


22. As distance from the center of the ridge increases, the age of the rocks

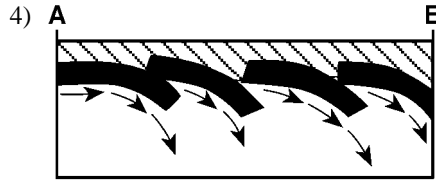
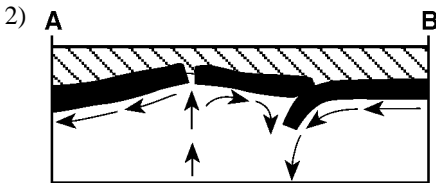
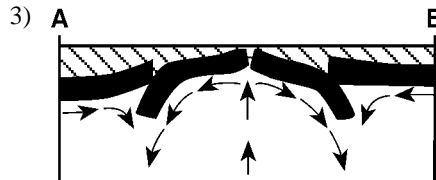
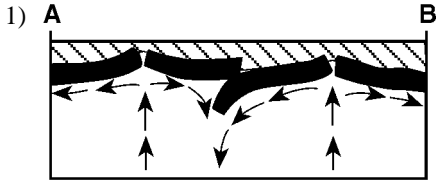
- 1) decreases
- 2) increases
- 3) remains the same



25. On the map below, line *AB* is drawn across several of Earth's tectonic plates in the South Atlantic Ocean.



Which cross section best represents the plate boundaries and mantle movement beneath line *AB*?



## Answer Key

1. 3

2. 2

3. 1

4. 4

5. 2

6. 1

7. 3

8. 4

9. 3

10. 1

11. 2

12. 3

13. 3

14. 1

15. 4

16. 3

17. 3

18. 3

19. 1

20. 3

21. 2

22. 2

23. 4

24. 3

25. 1

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