

## Plate Tectonics Short Study Guide

### Multiple Choice

Identify the letter of the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. The existence of coal beds in Antarctica indicates that the continent once had \_\_\_\_\_.  
a. been part of Africa  
b. a temperate, rainy climate  
c. a cold, dry climate  
d. been farther from the equator
- \_\_\_\_\_ 2. \_\_\_\_\_ is a fossil fern that helped support Wegener's hypothesis of continental drift.  
a. *Gondwanaland*  
b. *Kannemeyrid*  
c. *Mesosaurus*  
d. *Glossopteris*
- \_\_\_\_\_ 3. Many early mapmakers thought Earth's continents had moved based on \_\_\_\_\_.  
a. plate boundary locations  
b. fossil evidence  
c. climatic data  
d. matching coastlines
- \_\_\_\_\_ 4. Continental drift was not widely accepted when it was first proposed because \_\_\_\_\_.  
a. Wegener couldn't explain why or how the continents moved  
b. continental landmasses were too big to move slowly over Earth's surface  
c. magnetic and sonar data proved that Wegener's hypothesis was incorrect  
d. mantle convection currents weren't in motion at that time
- \_\_\_\_\_ 5. Compared to ocean crust near deep-sea trenches, crust near ocean ridges is \_\_\_\_\_.  
a. younger  
b. older  
c. the same age  
d. magnetically reversed
- \_\_\_\_\_ 6. Isochron maps of the seafloor indicate that ocean crust is \_\_\_\_\_.  
a. oldest near ocean ridges  
b. youngest at deep-sea trenches  
c. youngest near ocean ridges  
d. thinnest in subduction zones
- \_\_\_\_\_ 7. Features found at divergent boundaries include \_\_\_\_\_.  
a. ocean ridges  
b. deep-sea trenches  
c. crumpled mountains  
d. island arc volcanoes
- \_\_\_\_\_ 8. Subduction results in the formation of \_\_\_\_\_.  
a. a deep-sea trench  
b. a magnetic reversal  
c. a rift valley  
d. new continental crust
- \_\_\_\_\_ 9. Crust is neither destroyed nor formed along which of the following boundaries?  
a. convergent  
b. divergent  
c. transform  
d. magnetic
- \_\_\_\_\_ 10. The driving forces of tectonic plates are related to convection currents in Earth's \_\_\_\_\_.  
a. crust  
b. mantle  
c. inner core  
d. outer core

### Completion

Complete each sentence or statement.

11. Wegener's hypothesis of \_\_\_\_\_ stated that Earth's continents had once been joined as a single landmass.

12. The transfer of thermal energy by the movement of heated matter is \_\_\_\_\_.
13. The theory of \_\_\_\_\_ explains how new ocean crust is created at ocean ridges and destroyed in deep-sea trenches.
14. Plates come together at \_\_\_\_\_.
15. A change in Earth's magnetic field is called a(n) \_\_\_\_\_.

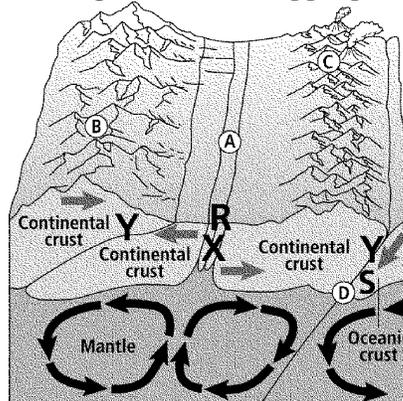
**Matching**

Match each item with the correct statement below.

- |                        |                    |
|------------------------|--------------------|
| a. magnetometer        | e. Gondwanaland    |
| b. convection currents | f. transform       |
| c. rift valley         | g. deep-sea trench |
| d. plate tectonics     | h. ridge push      |

- \_\_\_\_\_ 16. A device that measures changes in Earth's magnetic field
- \_\_\_\_\_ 17. A narrow, elongated depression in the seafloor
- \_\_\_\_\_ 18. A narrow, long depression in continental crust
- \_\_\_\_\_ 19. Type of boundary characterized by long faults and shallow earthquakes
- \_\_\_\_\_ 20. Theory that states that Earth's crust and upper mantle are broken into enormous slabs
- \_\_\_\_\_ 21. The mechanisms thought to be associated with plate movements
- \_\_\_\_\_ 22. The process that helps to move an oceanic plate toward a subduction zone

Match each letter that appears on the diagram with the appropriate feature below.



- \_\_\_\_\_ 23. Subduction zone
- \_\_\_\_\_ 24. Rift valley
- \_\_\_\_\_ 25. Volcanoes

**Short Answer**

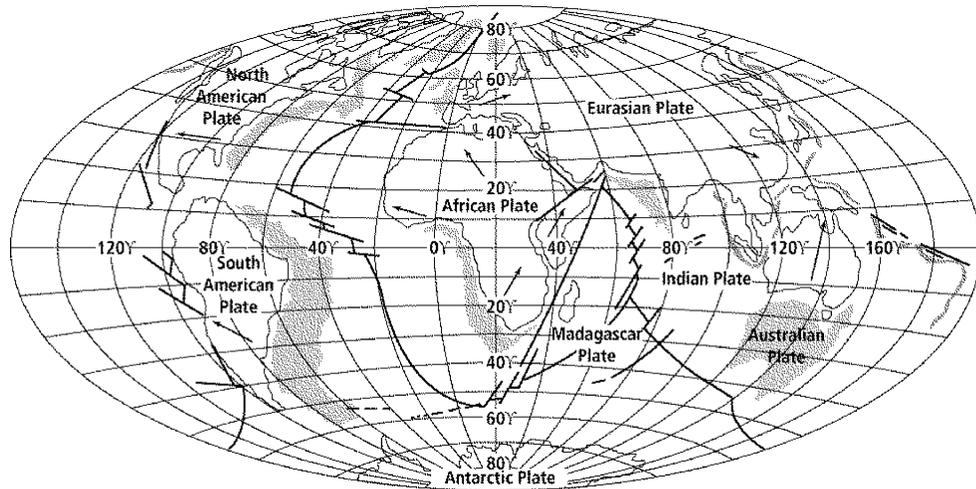
26. How did Wegener use glacial deposits to support his hypothesis of continental drift?

27. Listed below are the steps involved in the process of seafloor spreading. Sequence the steps in the correct order.

	The seafloor contracts and sinks.
	Crust spreads along an ocean ridge and magma fills the gap that is created.
	New seafloor moves away from the ridge, cools, and becomes more dense than the material beneath it.
	Hot magma which is less dense than surrounding material, is forced toward the crust.
	New ocean floor forms as the magma hardens.

28. Even Alfred Wegener acknowledged that the apparent fit of continents or “matching” of continental coastlines was crude at best. Propose an explanation for this inexact fit.
29. About 200 million years ago, extensive tropical swamps existed in North America. At the same time, glaciers covered southern Africa, southeastern South America, much of India, portions of Australia, and nearly all of Antarctica. How does this information support Wegener’s idea of continental drift?

Scientists have studied the motions of Earth's tectonic plates and recorded many of their findings as maps. Based on the assumption that the direction and rate of plate movement taking place today will continue for the next 50 million years, researchers have made predictions about the world's future geography. The results of those predictions are presented in the diagram below, which shows the configuration of the continents 50 million years from the present. The shaded areas of the diagram represent the present positions of the continents.



30. Locate the small strip of land off the northwestern coast of the North American plate. Describe where you think this land came from and how it got there.

## Plate Tectonics Short Study Guide Answer Section

### MULTIPLE CHOICE

1. B
2. D
3. D
4. A
5. A
6. C
7. A
8. A
9. C
10. B

### COMPLETION

11. continental drift
12. convection
13. seafloor spreading
14. convergent boundaries
15. magnetic reversal

### MATCHING

16. A
17. G
18. C
19. F
20. D
21. B
22. H
  
23. D
24. A
25. C

### SHORT ANSWER

26. Some areas of South Africa, India, South America, and Australia have glacial deposits. Wegener reasoned that in order for glaciers to have existed on these continents, the landmasses must have been closer to the south pole in the past. Over time, the continents drifted to their present locations.

27. 5, 2, 4, 1, 3
28. Possible response: Earth processes such as weathering, erosion, and deposition continuously change Earth's landscape, including continental coastlines. Also, the tectonic processes involved in the formation and break up of Pangaea over 200 million years ago greatly changed Earth's coastlines. Any such changes could make the fit of continents inexact.
29. About 200 million years ago, Wegener's supercontinent, Pangaea, was an enormous landmass made up of all of Earth's present continents. At that time, the land making up present North America must have been near the equator, where swamps thrived in the tropical climate. Southern Africa, southeastern South America, much of India, portions of Australia, and nearly all of Antarctica must have been situated near the south pole, which would account for the presence of glacial deposits observed in that region of the landmass. Since that time, the continents have drifted to their current positions and their climates have changed.
30. This small strip of land was once the slice of southern California that is presently west of the San Andreas Fault. From the map, it appears to have slid north along this transform boundary past the North American Plate.