

M O D E R N E A R T H S C I E N C E

Chapter 4

Plate Tectonics**Review**

Choose the best response. Write the letter of that choice in the space provided.

- _____ 1. The German scientist Alfred Wegener proposed the existence of a huge landmass called
a. Panthalassa. b. rift valley. c. *Mesosaurus*. d. Pangaea.
- _____ 2. Support for Wegener's hypothesis of continental drift includes evidence of changes in
a. climatic patterns. b. Panthalassa.
c. terranes. d. subduction.
- _____ 3. New ocean floor is constantly being produced through the process known as
a. subduction. b. continental drift.
c. seafloor spreading. d. terranes.
- _____ 4. An underwater mountain chain formed where new crust is created by seafloor spreading is called a
a. divergent boundary. b. subduction zone.
c. mid-ocean ridge. d. convergent boundary.
- _____ 5. The term *tectonics* comes from a Greek word meaning
a. "movement." b. "plate." c. "continent." d. "construction."
- _____ 6. The layer of mantle with plastic rock that underlies the plates is called the
a. lithosphere. b. asthenosphere. c. oceanic crust. d. terrane.
- _____ 7. To date, scientists have identified approximately
a. 5 plates. b. 30 plates. c. 15 plates. d. 50 plates.
- _____ 8. Two plates moving away from each other form a
a. transform boundary. b. convergent boundary.
c. fracture. d. divergent boundary.
- _____ 9. The collision of one lithospheric plate with another forms a
a. convergent boundary. b. transform boundary.
c. rift valley. d. divergent boundary.

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- _____ **10.** The region along lithospheric plate boundaries where one plate is moved beneath another is called a
- a. rift valley.
 - b. transform boundary.
 - c. subduction zone.
 - d. convergent boundary.
- _____ **11.** Two plates grind past each other at a
- a. transform boundary.
 - b. convergent boundary.
 - c. subduction zone.
 - d. divergent boundary.
- _____ **12.** Convection occurs because heated material becomes
- a. less dense and rises.
 - b. more dense and rises.
 - c. more dense and sinks.
 - d. less dense and sinks.
- _____ **13.** Scientists think that the upwelling of mantle material at mid-ocean ridges is caused by the motion of lithospheric plates and comes from
- a. the lithosphere.
 - b. the asthenosphere.
 - c. terranes.
 - d. rift valleys.
- _____ **14.** The parts of the continents that are made up of formerly separate pieces of lithosphere are called
- a. terranes.
 - b. plates.
 - c. continental crust.
 - d. oceanic crust.

Critical Thinking

Read each question or statement and answer it in the space provided.

- 1.** In what ways might the concept of continental drift be compared to a jigsaw puzzle?

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Read each question or statement and answer it in the space provided.

- 2. If Alfred Wegener had found identical fossil remains of plants and animals that had lived no more than 10 million years ago in both eastern Brazil and western Africa, what might he have concluded about the breakup of Pangaea?

- 3. Assume that the total surface area of the earth is not changing. If new material is being added to the earth's crust at one boundary, what would you expect to find happening at another boundary?

- 4. Explain the following statement: Due to the process of seafloor spreading, the ocean floor is constantly renewing itself.

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Application

Read each question or statement and answer it in the space provided.

- 1. Explain the role of technology in the progression from the hypothesis of continental drift to the theory of plate tectonics.

- 2. If you wanted to prove that a microplate terrane had been scraped onto the North American plate, what kind of evidence would you search for?

- 3. Construct a **concept map** using 10 of the new terms listed on page 78 of your textbook by making connections that illustrate the relationship among the terms.

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