

SECTION 17.2 Seafloor Spreading

In your textbook, read about seafloor spreading.

In the space at the left, write *true* if the statement is true; if the statement is false, change the italicized word or phrase to make the statement true.

- _____ 1. Sonar uses sound waves to measure water depth.
- _____ 2. Maps made from sonar and magnetometer data led to the discovery of *ocean ridges and deep-sea trenches*.
- _____ 3. *Deep-sea trenches* are vast, underwater mountain chains.
- _____ 4. Rock samples taken near ocean ridges are *older* than rock samples taken near deep-sea trenches.
- _____ 5. The thickness of ocean-floor sediments *decreases* with distance from an ocean ridge.
- _____ 6. The oldest ocean floor rocks are about 3.8 *billion* years old.
- _____ 7. The study of the magnetic record preserved in Earth's rocks is called *paleomagnetism*.
- _____ 8. An *isochron* is a change in Earth's magnetic field.
- _____ 9. Earthquake activity and volcanism are common along *ocean ridges*.
- _____ 10. The magnetic patterns on either side of a *deep-sea trench* are mirror images of each other.
- _____ 11. The theory of *continental drift* states that new ocean crust is formed at ocean ridges and destroyed at deep-sea trenches.
- _____ 12. As new seafloor is carried away from an ocean ridge, it *heats up, expands, and becomes less dense* than the material beneath it.
- _____ 13. The theory of seafloor spreading explains that Earth's continents move because they *ride atop ocean crust as it moves away from ocean ridges*.

The statements below describe the steps involved in the process of seafloor spreading. Number these steps in the order in which they occur.

- _____ 14. Magma fills the gap that is created.
- _____ 15. Magma hardens to form new ocean crust.
- _____ 16. Magma is forced upward toward the crust.

SECTION 17.2 Seafloor Spreading, continued*In your textbook, read about magnetism.*

Use each of the terms below just once to complete the passage.

combine	stronger	isochron	lower	magnetic field
normal polarity	older	cancel	reversed polarity	younger

Earth's (17) _____ has changed over time. A field with the same orientation as today's field is said to have (18) _____. A field that is opposite the present field has (19) _____. Magnetometers have been used to measure the ocean floor's magnetic field. When the ocean floor's magnetic readings match the present field, the two fields (20) _____. This produces a(n) (21) _____ than normal reading. When the magnetic readings of the ocean floor are reversed compared to today's field, the two fields partially (22) _____ to produce a(n) (23) _____ than normal reading. Magnetic data of the ocean floor has been used to generate (24) _____ maps, which have shown that the ocean floor is (25) _____ near ocean ridges and (26) _____ near deep-sea trenches.

In your textbook, read about ocean rocks and sediments, magnetism, and seafloor spreading.
For each item in Column A, write the letter of the matching item in Column B.

Column A

- _____ 27. Device that can detect small changes in magnetic fields
- _____ 28. Minerals containing this act like small compass needles and record the orientation of Earth's magnetic field at the time of their formation
- _____ 29. Was constructed from data gathered from continental basalt flows
- _____ 30. This type of line connects points on a map that have the same age
- _____ 31. Each cycle of spreading and magma intrusion along an ocean ridge results in the formation of this

Column B

- a. isochron
- b. iron
- c. geomagnetic time scale
- d. new ocean crust
- e. magnetometer