

Chapter 8 Earthquakes and Earth's Interior

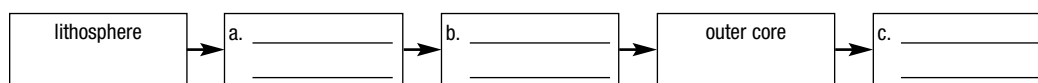
Section 8.4 Earth's Layered Structure

This section describes Earth's layers and their composition.

Reading Strategy

Sequencing After you read, complete the sequence of layers in Earth's interior. For more information on this Reading Strategy, see the **Reading and Study Skills** in the **Skills and Reference Handbook** at the end of your textbook.

Earth's Internal Structure



Layers Defined by Composition

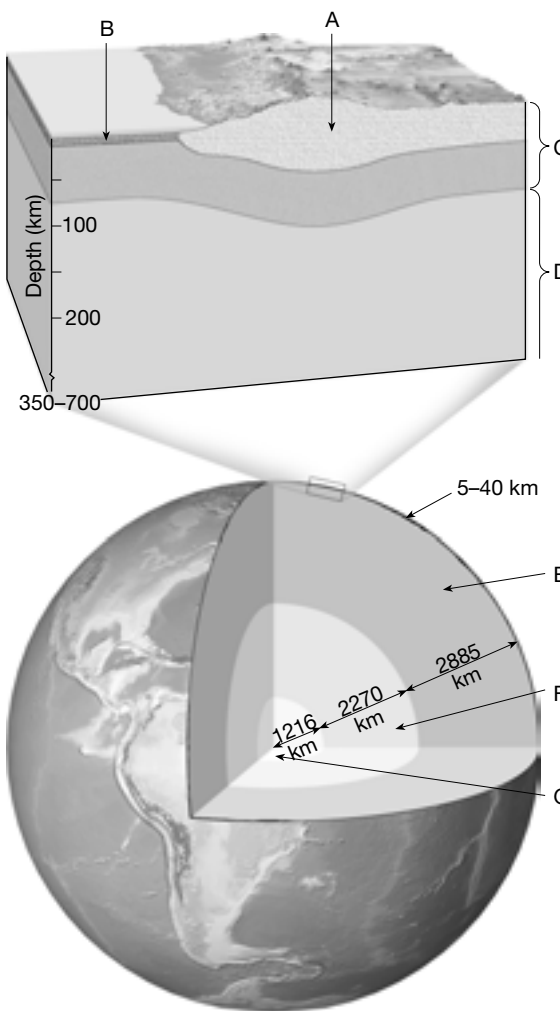
1. Use the figure of Earth's structure to write the letter(s) that represents each of the following layers.

mantle _____

continental crust _____

oceanic crust _____

core _____



Chapter 8 Earthquakes and Earth's Interior

Layers Defined by Physical Properties

2. Use the figure of Earth's structure on the previous page to write the letter that represents each of the following layers.

inner core _____

asthenosphere _____

outer core _____

lithosphere _____

Match each description with its Earth layer.

Description	Earth Layer
_____ 3. soft, weak rock with some melting	a. asthenosphere
_____ 4. liquid iron-nickel alloy that generates Earth's magnetic field	b. inner core
_____ 5. cool, rigid crust and uppermost mantle	c. outer core
_____ 6. solid iron-nickel alloy	d. lithosphere

Discovering Earth's Layers

7. The boundary called the _____ separates the crust from the mantle.

8. Is the following sentence true or false? Geologists concluded that the outer core was liquid because P waves could not travel through it. _____

9. Why do P waves bend when they travel into the outer core from the mantle? _____

Discovering Earth's Composition

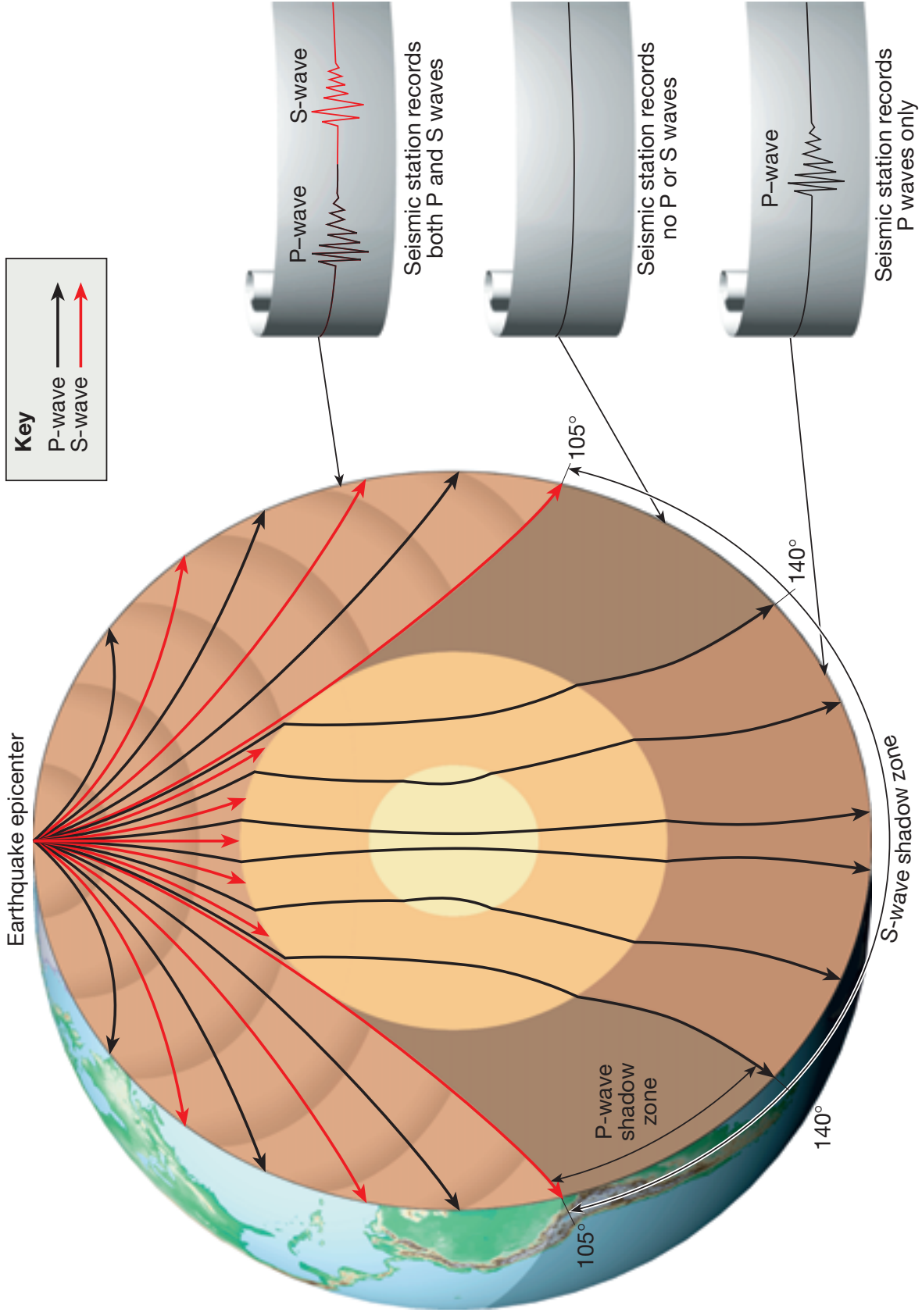
Match each composition with its Earth layer.

Composition	Earth Layer
_____ 10. basaltic rock	a. continental crust
_____ 11. granitic rock	b. oceanic crust
_____ 12. similar to stony meteorites	c. core
_____ 13. similar to metallic meteorites	d. mantle

14. _____ that collide with Earth provide evidence of Earth's inner composition.

15. Is the following sentence true or false? Until the late 1960s, scientists had only seismic evidence they could use to determine the composition of oceanic crust. _____

P and S wave paths



Interpreting and Applying

13–17. Figure 15.1 illustrates the paths taken by seismic waves set in motion by an earthquake. The locations of five seismograph stations are indicated by the letters A, B, C, D, and E. Figure 15.2 shows seismograph readings for the five stations. In the space beside each seismogram, write the letter of the station that would record that pattern of seismic waves.

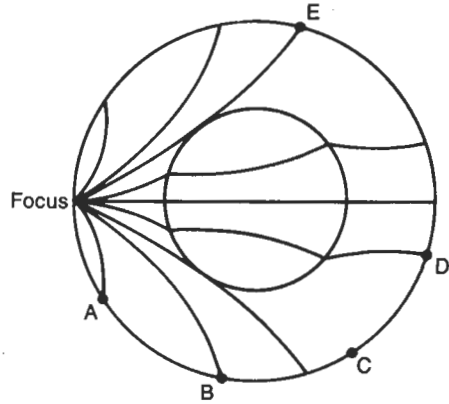


Figure 15.1

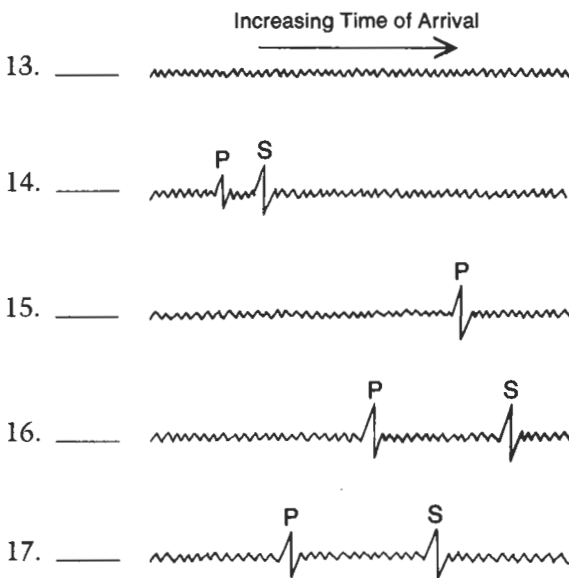


Figure 15.2

18–22. Column A below lists descriptions of certain effects. The items in Column B are causes. In the space provided beside each effect, write the letter of the cause that brought about that effect.

- | A | B |
|--|--|
| 18. _____ <i>S</i> waves stop moving when they reach the boundary between the mantle and the core. | a. The station is located at or near the epicenter of the earthquake. |
| 19. _____ Although an earthquake occurs, a seismograph station receives no seismic waves. | b. Earth's outer core is liquid. |
| 20. _____ As they travel through Earth's interior, seismic waves do not follow straight paths. | c. The nature and density of the materials that make up Earth's interior vary considerably with depth. |
| 21. _____ <i>P</i> waves and <i>S</i> waves arrive almost simultaneously at a seismograph station. | d. The station is in the shadow zone. |
| 22. _____ The velocity of seismic waves increases as the waves cross the Moho. | e. The materials that make up the mantle are denser than those that make up the crust. |