Study Guide

Earth consists of three main layers. The crust is the outermost layer. The mantle is made up of rock that is hot but solid. The core occupies Earth's center.

LESSON 1 The Earth System

1. Which is part of Earth's hydrosphere?

a. liquid outer core **b.** solid inner core

c. granite **d.** ocean water

2. Earth's system has two sources of energy, which are heat from the sun and heat flowing out of Earth as it cools.

3. **Infer** Explain how the hydrosphere and biosphere interact in this swamp.

The roots of the trees in the biosphere take up water from the swamp in the hydrosphere.

4. **Classify** Are the forces that cause lava to erupt from a volcano and flow over Earth's surface constructive or destructive forces? Explain.

The forces are constructive forces, because when lava cools and hardens, it adds new rock to Earth's landmasses.

LESSON 2 Earth's Interior

6. What is the relatively soft layer of the upper mantle called?

a. continental crust
b. lithosphere
c. asthenosphere
d. inner core

7. To learn about Earth's structure, geologists use seismic waves, which are vibrations produced by an earthquake.

8. **Relate Cause and Effect** What do scientists think produces Earth's magnetic field?

Convection currents in Earth's outer core

9. **Sequence** Name each layer of Earth, starting from Earth's center. Include both layers of the core and all layers of the mantle.

Inner core, outer core, mesosphere, asthenosphere, and lithosphere (which includes the crust)

10. Summarize What is the relationship between temperature and depth inside Earth? Is this relationship the same for pressure?

Temperature increases as depth increases. Pressure also increases as depth increases.

LESSON 3 Convection and the Mantle

12. What is the transfer of heat by direct contact of particles of matter called?

a. conduction **b.** radiation

c. convection **d.** pressure

13. Compared to air and water, most rock has a high density, which means it has a high amount of mass for a given volume.

14. **Identify** Name the two layers below Earth's surface in which convection takes place.

The mantle and the outer core

15. Explain What conditions allow rock in the mantle to flow?

High temperature and great pressure allow rock in the mantle to flow.

16. Develop Hypotheses Suppose a certain part of the mantle is cooler than the parts surrounding it. What might happen to the cooler rock? In your answer, discuss the role of gravity.

The cooler rock is denser than the rock surrounding it. So gravity will pull the cooler rock back down to the mantle.

1. The illustration below shows a pot of boiling water.

What process is heating the water?

A radiation
B conduction
C convection
D destruction

2. Which part of Earth's system is made up of plants and animals?

A biosphere
B hydrosphere
C atmosphere
D geosphere

3. Which part of Earth's interior is made mostly of nickel and iron and has liquid and solid parts?

A lithosphere **B** crust

C asthenosphere **D** core

4. What is one result of convection currents in Earth's outer core?

A erosion
B Earth's magnetic field
C melted glaciers
D Earth's force of gravity

5. How do pressure and temperature change inside Earth as depth increases?

A pressure and temperature decrease
B pressure increases; temperature decreases
C pressure decreases; temperature increases
D pressure and temperature increase