

**Plate Tectonics** ▪ *Guided Reading and Study*

## Convection and the Mantle

*This section describes how heat is transferred from Earth's hot core through the mantle.*

### Use Target Reading Skills

*As you read about heat transfer, complete the outline to show the relationships among the headings.*

Convection and the Mantle	
I.	_____
A.	_____
B.	Conduction
C.	_____
II.	Convection Currents
III.	_____
	_____
	_____

### Types of Heat Transfer

1. The movement of energy from a warmer object to a cooler object is called \_\_\_\_\_.
2. List the three types of heat transfer.  
a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_
3. What is radiation? \_\_\_\_\_  
\_\_\_\_\_
4. What are two forms of radiation? \_\_\_\_\_  
\_\_\_\_\_
5. What is conduction? \_\_\_\_\_  
\_\_\_\_\_
6. What is an example of conduction? \_\_\_\_\_  
\_\_\_\_\_

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**Convection and the Mantle** *(continued)*

7. What is convection? \_\_\_\_\_  
\_\_\_\_\_
8. Heat transfer by convection is caused by differences of \_\_\_\_\_  
and density within a fluid.
9. A measure of how much mass there is in a volume of a substance is  
\_\_\_\_\_.
10. Circle the letter of the sentence that describes what happens to a fluid  
when its temperature increases.
- a. Its particles occupy less space.
  - b. Its density decreases.
  - c. Its particles move more slowly.
  - d. Its particles settle together more closely.

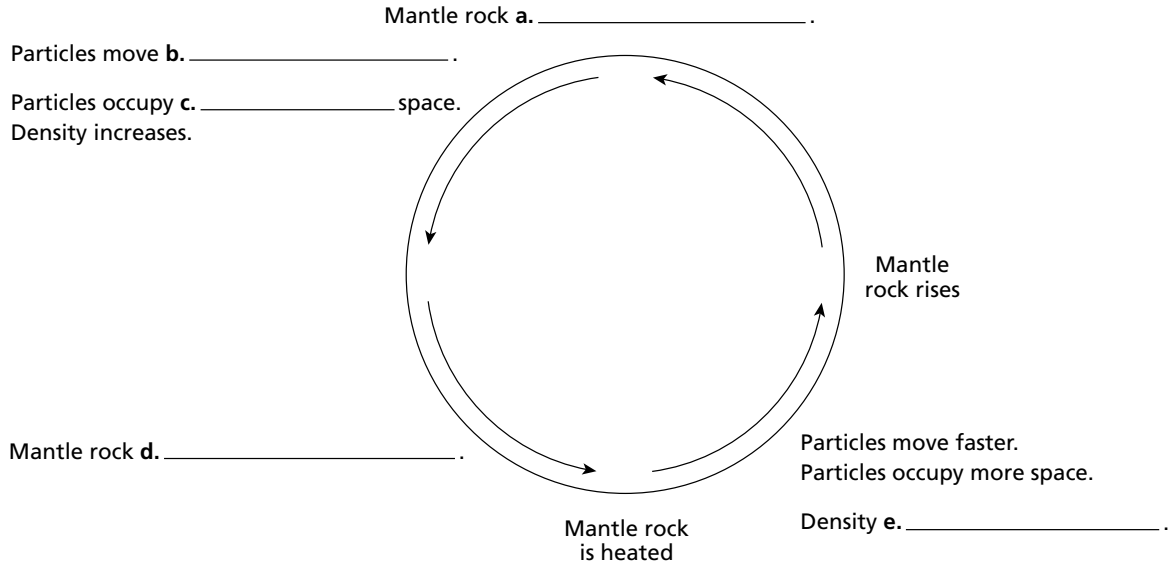
**Convection Currents**

11. What three factors set convection currents in motion? \_\_\_\_\_  
\_\_\_\_\_
12. What happens to convection currents when the liquid or gas is no longer  
heated? \_\_\_\_\_  
\_\_\_\_\_

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**Convection Currents in Earth**

13. Complete the graphic organizer to show the relationships among heat, movement, and density in mantle rock.



f. Why is this relationship shown as a cycle? \_\_\_\_\_

g. In the cycle shown, where would mantle rock be the densest? \_\_\_\_\_

14. Is the following sentence true or false? The heat source for the convection currents in the mantle is the sun. \_\_\_\_\_

