

Convection in the Mantle

Name _____ KEY _____

Step One: Lightly color the diagram according to the following keys:

Map Feature	Color
Ocean	Blue
Mountains	Green/White
Inner Core	Light Black/Grey
Outer Core	Yellow
Mantle	Orange
Crust	Brown

Arrow	Color
Arrows showing the movement of crust	Black
Arrow showing magma rising through crust	Red
Arrows showing less dense magma RISING	Red
Arrows showing more dense magma SINKING	Blue

Step Two: Answer the following questions. *Answers may be used more than once.*

1. At which letter on the map is subduction occurring? D
2. At which letter on the map is magma cooling down and sinking in the mantle? C
3. At which letter on the map is magma heating up and rising within the mantle? B
4. Which letter on the map best represents magma that is more dense? C
5. Which letter on the map best represents magma that is less dense? B
6. Which letter on the map best represents where the mid-ocean ridge is forming? A
7. Which letter on the map best represents the youngest crust? E
8. Which letter on the map best represents the oldest crust? D*** or H***
9. Where on this map would magma exit the mantle through the crust? A
10. Where on this map is new crust being formed? A
11. Where on this map is old crust being destroyed/recycled? D
12. Which letter represents continental crust? H
13. Which letter represents oceanic crust? E
14. Which letter represents the inner core? G
15. Which letter represents the outer core? F
16. Which two letters represent a convection current? B and C
17. Which letters best represent the source of heat that drives convection in the mantle? F and G
18. Describe what is happening to the density of magma at letter B. Why is the density changing?
The density of the magma is decreasing because it is being heated.
19. Describe what is happening to the density of magma at letter C. Why is the density changing?
The density of the magma is increasing because it is cooling down.
20. How does the movement of arrows at letter B and C drive the movement of Earth's crust?
Heat from Earth's interior causes convection currents of hot rising magma and cooler sinking magma to flow, moving the crust along on top of it.

***Students may take this question two ways. Continental crust (H) is almost always older than oceanic crust. However, when teaching seafloor spreading, teachers often focus on the rock near the mid-ocean ridge being younger than the rock near the continents. So, students may be thinking of this if they answer that D, the subducting crust, is older.

Example of Student Work

