Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**MS-ESS2-1 --> Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.**

**Learning Target: I CAN model how convection cycles Earth’s materials.**

Period\_\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**EARTH’S INTERIOR**

**Convection Currents**

Topic 7 Lesson 1 pages 288-289

Page 288

1. Heat is a form of \_\_\_\_\_\_\_\_\_\_\_\_\_\_that flows. It transfers from matter at a

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_temperature to matter at a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_temperature.

2. This heat transfer in the mantle drives a process called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

3. What happens to the density of water as it is heated? Name two things: \_\_\_\_\_\_\_\_\_\_\_\_

and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

4. What three things set convection currents in motion.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

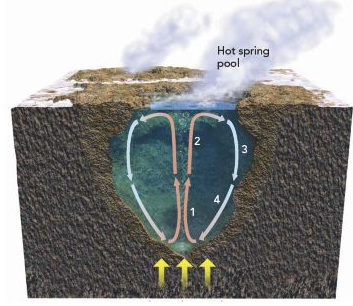
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5. Hot springs are common in Yellowstone National Park. Here, melted snow and rainwater seep far below the crust into the mantle, where a shallow magma chamber heats the rock of Earth’s crust. The rock heats the water to more than 200o C (392o F) and puts it under very high pressure. This superheated groundwater rises to the surface and forms pools of hot water.

Compare and Contrast: The heated water is (more or less) dense than the melted snow and rainwater. What process causes convection currents to form in a hot spring?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Page 289

6. Where does the heat come from to drive the convection currents? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

7. As the oceanic lithosphere cools and sinks, it drives a pattern of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

8. The cold lithosphere (sinks or rises) into the mantle (the asthenosphere), where it is (heated or cooled) and then it (sinks or rises) to the base of the lithosphere where it begins to cool again and the cycle continues.

9. One full convection cycle can take \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of years.

10. What do convection currents produce at the Earth’s surface?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

11. Complete the figure below by using these terms:

***hotter, colder, less dense, more dense, sinks, rises.***

Temperature:\_\_\_\_\_\_\_\_\_

Density:\_\_\_\_\_\_\_\_\_\_\_\_\_

The Rock:\_\_\_\_\_\_\_\_\_\_\_

Temperature:\_\_\_\_\_\_\_\_\_

Density:\_\_\_\_\_\_\_\_\_\_\_\_\_

The Rock:\_\_\_\_\_\_\_\_\_\_\_

