Crazy Continuous Convection Currents

Name:_____ Date: _____

Purpose: Throughout today's activities, you will learn all about convection currents (IV). You will discover how these currents are responsible for the movement of the Earth's plates (DV). Notice, you will also be practicing your scientific method skills within the boxes on this sheet.

Dazzling Demo:

1. Describe what you observed from the demo your teacher performed?

2. Use your observations to make an inference about why this has happened? What experience or knowledge did you use to make this inference?

In the space below, write a **PROBLEM** to go with this demonstration:

What is the effect of convection currents on the movement of the Earth's plates (lithosphere)?

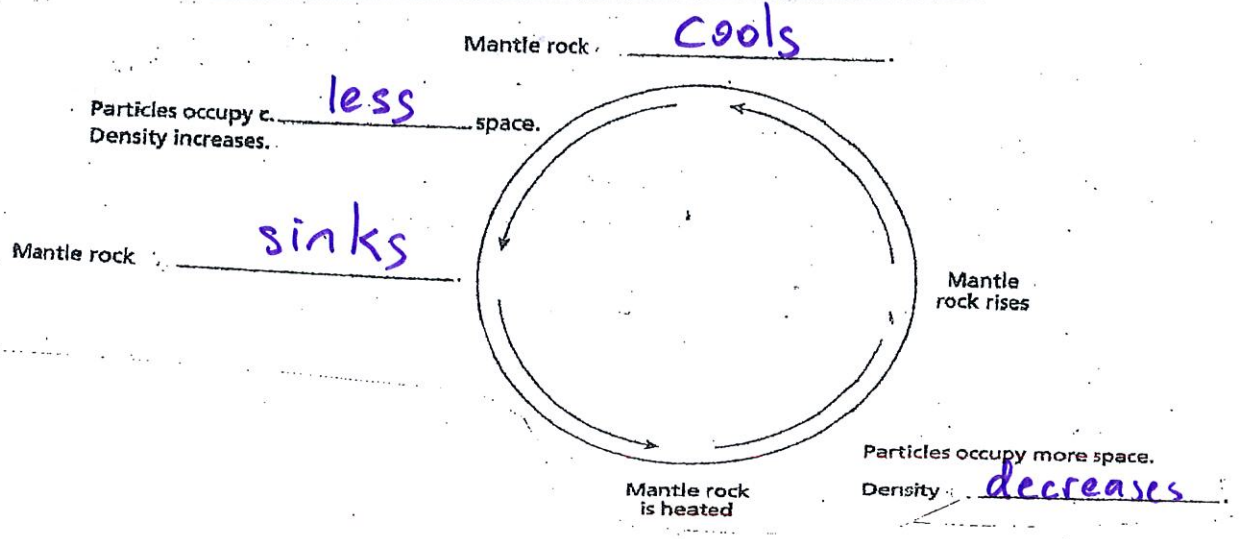
RESEARCH the topic:

(read pages 132 – 135 and answer the following questions)

1. Describe how convection currents form.
   Heating and cooling of fluid, changes in density, force of gravity.
2. What causes the convection currents in the mantle?
   Heat from the core and the mantle.
3. In general, what happens to the density of a fluid as it becomes hotter?
   The fluid becomes less dense.
4. Where does the heat come from that drives the convection currents in the mantle?
   The core and the lower mantle.

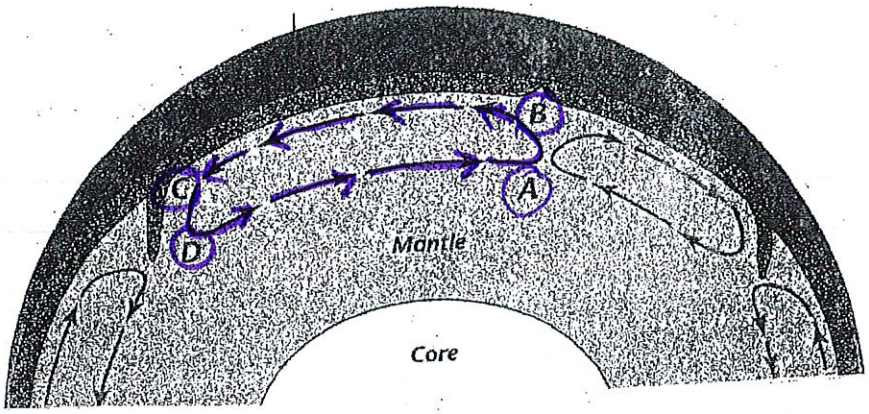
5. Use the word bank to complete the graphic organizer to show the relationship between heat, movement, and density in the mantle rock!

Less	Sinks	Cools	Decreases



RESEARCH (cont.)

Use the picture below to answer the following questions:



1. Where is the temperature of the mantle material greater, at point A or point B? Explain.

   Point A because it is closer to the core (heat source)

2. Where is the density of the material greater, at point B or point C? Explain.

   Point C because it has had more time to cool.

3. What force causes the convection current to turn down at point C?

   Gravity.

4. What direction do you think the plate (that is above the ABCD current) is moving?

   Left / counter-clockwise.

Stop

Write your **HYPOTHESIS** for what you think will happen. Remember, this should be research-based!

If convection currents occur in the asthenosphere below the Earth's plates, then the plates will move because of the movement of the convection currents. (conveyor belt)

Go With the Flow Activity:

1. Read all of the reminders on the Materials & Procedures sheet found at your station. Be sure all group members understand the ground rules!
2. Begin the activity by carefully following the procedures and reminders.

Conclusion Questions:

Comprehension & Application: Complete the following chart based on your observations during the lab.

Material Used	Comprehension: Record your Observations of what happened during the lab	Application: Tell what each material represented and defend your answer
Water	Heated and cooled water in pie tin.	Heating and cooling in mantle.
Food Coloring	Moved counter-clockwise around the pie tin.	Convection currents in the mantle.
Paper Dots	Moved in same direction as food coloring.	Lithospheric plates.

Analysis: Explain what caused the movement of the food coloring and the paper dots.

Synthesis: Hypothsize about what would happen to the convection currents in the mantle if the Earth's interior eventually cools down. Explain.

Evaluation: How well do you think this lab modeled the movement of the Earth's plates? What factors weren't you able to model in this lab?

Convection Currents Cartoon Project

In the space below, create a single frame cartoon (like The Farside). Your cartoon must have something to do with convection currents! Please add a maximum 2-sentences for a caption (speaking bubbles are okay, but not encouraged!) For full credit, include 4 colors minimum.

Now, DESCRIBE the concept of "convection currents". In a quality, 7th grade paragraph, include what they are and how your cartoon shows/describes the concept!