

Name _____

Plate Tectonics Lab Activity

The theory of plate tectonics states that the crust of the Earth is composed of 7 major plates and numerous smaller plates. These plates move on the top of the hot plastic upper mantle known as the asthenosphere. This theory also says that most of these plates are in motion, creating a variety of interactions at the plate boundaries. At the plate boundaries, plates may converge (collide), diverge (separate), or slide past each other in a lateral motion. In addition, some plates may appear to be inactive. The purpose of this lab is to demonstrate interactions of plate boundaries.

Materials

2 whole graham crackers	wax paper
1 rice krispy treat	frosting
Cup of water	plastic knife

Procedure

Part 1 -- Divergent Plate Boundaries

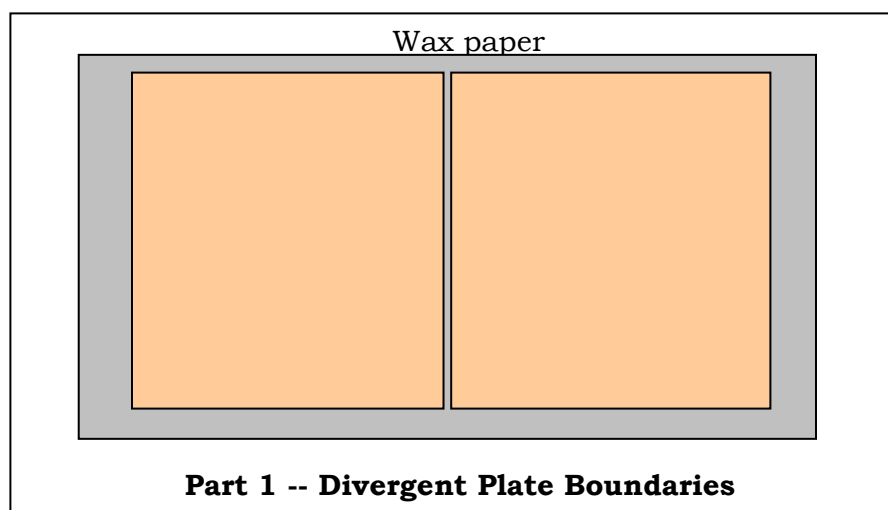
Part 2 -- Convergent Plate Boundaries (Continental and Oceanic)

Part 3 -- Convergent Plate Boundaries (Continental)

Part 4 -- Transform Plate Boundaries

Read and follow all instructions for each part, then answer the questions that follow.

You will be given permission to eat your tectonic plates only after you have turned in your completed lab to your teacher. Have fun!

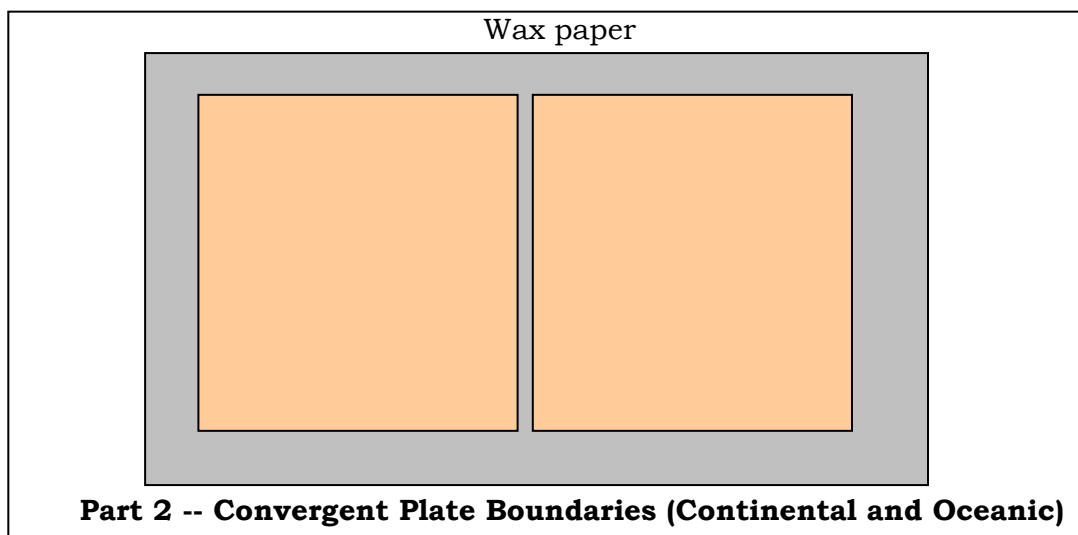


Procedure:

1. Break a whole graham cracker into two square pieces.
2. Using the knife, spread a thick layer of frosting in the center of the wax paper. It should be about the size of a whole graham cracker but twice as thick.
3. Lay the two pieces of graham cracker side by side on top of the frosting so they are touching.
4. To imitate the result of diverging oceanic plates, press down on the crackers as you slowly push down and apart in opposite directions.
5. Remove the graham crackers from the frosting and scrape any frosting off the crackers and return it to the wax paper. Set the crackers aside.

DISCUSSION QUESTIONS – PART 1

1. What happened to the frosting between the crackers?
2. What do the graham crackers represent?
3. What does the frosting represent?
4. Name a specific location on the Earth where this kind of boundary activity takes place.
5. What type of feature is produced by this movement?
6. What is the process called that creates new ocean floor from diverging plates?



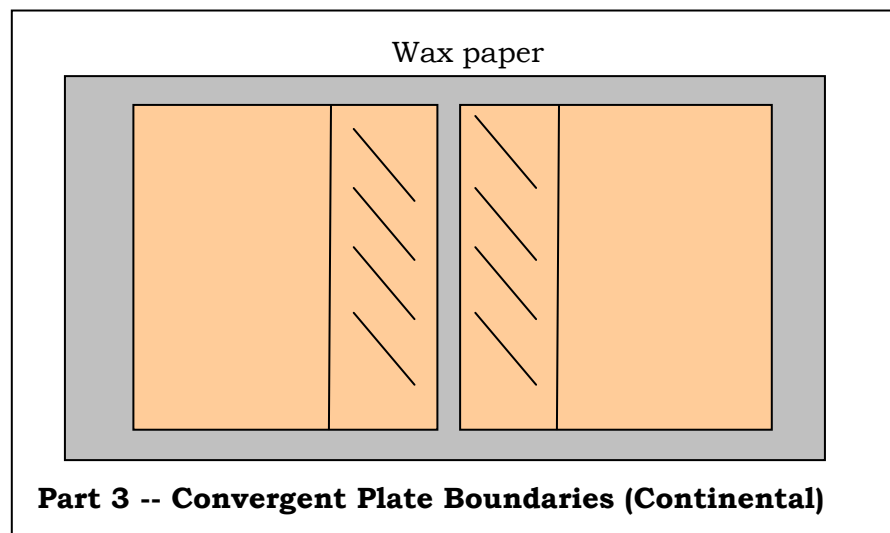
Procedure:

1. Take one of the graham cracker squares you used in Part 1 and lay it on top of the frosting. This represents the thin but dense oceanic plate.
2. Lay the rice krispy treat next to the graham cracker so they are almost touching, end to end. The rice krispy treat represents the thicker but less dense continental plate.
3. Push the two "plates" slowly toward each other and observe which plate rides up over the other. On the actual surface of the Earth, the lower plate is subducted.

DISCUSSION QUESTIONS – PART 2

1. What happens when a tectonic plate gets subducted?

2. Name a specific location on the Earth where this kind of boundary activity takes place.
3. What features are formed on the continent along this boundary?
4. What feature is formed in the ocean along the subduction zone?



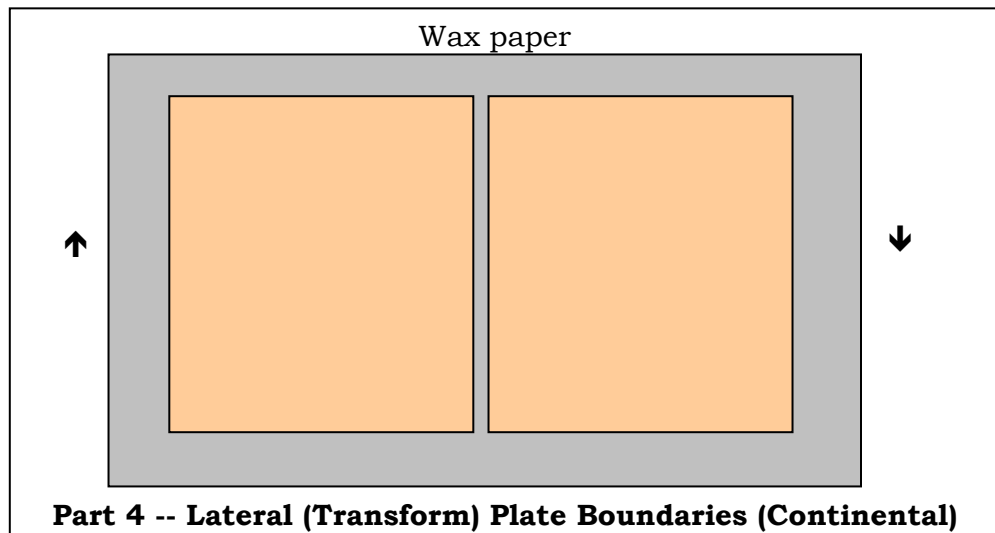
Procedure:

1. Break the other whole graham cracker in half, and then break each half in half again so you have 4 pieces. Use only two of the pieces for Part 3, saving the other two for Part 4.
2. Each piece of graham cracker represents a continental plate.
3. Dip one end of each of the two graham crackers into a cup of water (about 2 cm). Immediately remove the crackers and lay them end to end on the frosting with the wet edges nearly touching.
4. Slowly push the two crackers together.

DISCUSSION – PART 3

1. What happens to the wet ends of the graham crackers?
2. In what way do the wet crackers act more like the real crustal plates than the dry crackers?
3. What feature do the resulting ends of the wet crackers represent?

4. Name a specific location on the Earth where this type of boundary activity takes place.



Procedure:

1. Use the last two remaining graham cracker pieces for this part. Fit the two pieces together side to side on top of the frosting on the wax paper.
2. Place one hand on each of the graham cracker pieces and push them together by applying steady, moderate pressure. At the same time, also push one of the pieces away from you while pulling the other toward you. If you do this correctly, the cracker should hold while you increase the push-pull pressure, but will finally break from the opposite forces.

DISCUSSION – PART 4

1. Why is this movement often described as “horizontal” sliding?
2. Name a specific location on the Earth where this type of boundary activity takes place.
3. Nothing happens at the beginning, but as the pressure is increased, the crackers finally break. What do we call the breaking and vibrating of the Earth’s crust?

CONCLUSION:

1. Give an example of how plate movement directly affects the construction of Earth’s surface.
2. Give an example of how plate movement directly affects the destruction of Earth’s surface.