

CLASS SET – DO NOT WRITE ON!!!!

Modeling Plate Tectonics II

“Snack Tectonics”

Purpose: The purpose of this activity is to construct models of Earth’s tectonic plates and observe interactions of the plate boundaries, along with how the lithosphere and the asthenosphere relate.

Hypothesis:

- 1) - Write a testable question that you want to answer about the movement of Earth’s tectonic plates.
- 2) - Write a testable question that you want to answer about one of the types of plate boundaries.

Materials:

Wax paper sheet	Spoon
Plastic knife	Water (<i>substituted for milk</i>)
Two paper towels	1/3 container icing
Fruit roll-up 2	Cup for icing
Graham crackers 2	

Procedure: Snack Tectonics

1. Students will work in pairs during this part of the lab activity.
2. Students will wash hands with soap and water before performing this lab.
3. Clean the table and gather the materials listed above (wax paper through milk).
4. Follow the directions for the “set up” of the asthenosphere for your models as shown below.
5. Follow the instructions for “Snack Tectonics” and replace the water with the milk in Figure 4. Also in Figure 5, keep slowly adding pressure and friction when sliding the two plates past each other.
6. Record your observations under the Snack Tectonic figure on the Data Pages.
7. Then draw the model after constructing each Snack Tectonic plate boundary as shown on “Snack Tectonics” Figures #2, #3, #4 and #5.
8. Divide the “plate boundaries” equally among the students at your table. Set these aside, clean the table.
9. Draw color and label each type of plate boundary that you modeled during this experiment.

10. Wait for the teacher to give permission to consume "plate boundaries."

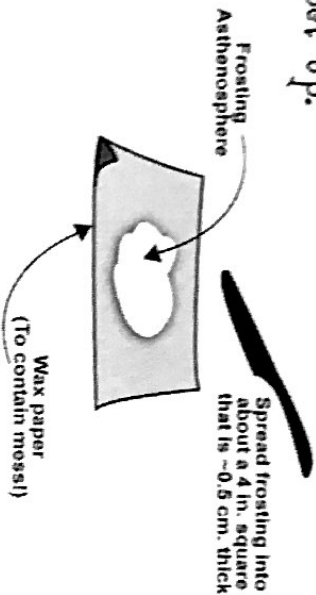
After you complete the lab answer the following questions below on the back of your lab answer sheet.

Conclusion Questions:

1. In Snack Tectonics #2, what does the frosting represent? What does the fruit roll-up represent? What happened to the frosting between the fruit rollup when the rollup was moved like a divergent plate boundary? How does it look?
2. What type of feature is produced by divergent plate boundary movement? Describe one specific area of on Earth.
3. In Snack Tectonics #3, what type of plate do the graham crackers represent? What process occurs when continental and oceanic plates collide? Define the process and what types of landforms are formed in this zone.
4. Describe how Snack Tectonic # 4 is different from Snack Tectonic #3. What feature is represented where curling and folding occurred at the end of the wet graham cracker?
5. Describe how Snack Tectonics #5 is different from Snack Tectonics #4. What happened to the graham crackers after adding more pressure and friction? Describe at least one place in the United States where this type of boundary activity takes place.
6. What did you learn from this lab?
7. How did your model represent the theory of plate tectonics?
8. What do you think will happen to the continents in the next 500 million years? 1billion years? How could this affect life on Earth?

Snack Tectonics

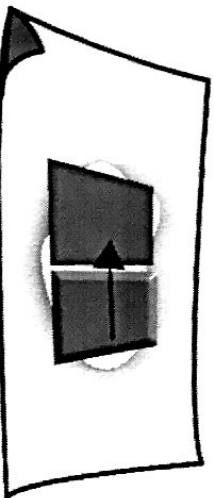
Set up:



Snack Tectonics 3

Continental-oceanic collision

1. Remove one of the fruit roll ups from the frosting.
2. Place one graham cracker lightly onto the frosting asthenosphere next to the remaining fruit roll up. Continental crust is less dense than oceanic crust. It floats high on the asthenosphere so don't push it down.
3. Gently push the continent (graham cracker) towards the ocean plate (fruit roll up) until the two overlap and the graham cracker is on top. The oceanic plate has been subducted!

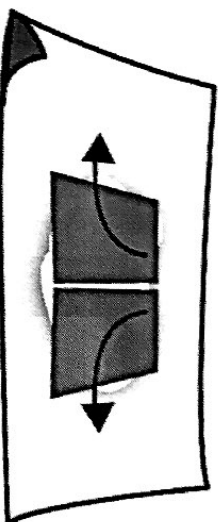


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Snack Tectonics 2

Divergent plate boundary

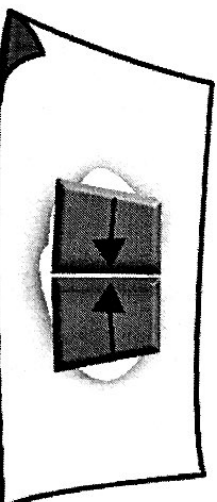
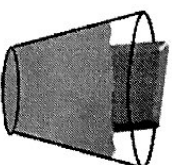
1. Place the two plates of oceanic crust (fruit roll up pieces) side by side tightly on the frosting asthenosphere.
2. Press down slowly on the oceanic plates (because they are dense and will sink a bit into the asthenosphere) as you slowly push them apart about half a cm.



Snack Tectonics 4

Continent-continent collision

1. Remove both the cracker and fruit roll up from the frosting asthenosphere.
2. Place one edge of both crackers into the glass of water for just a few seconds.
3. Place the crackers onto the frosting with wet edges next to each other.
4. Slowly push the graham crackers towards each other.

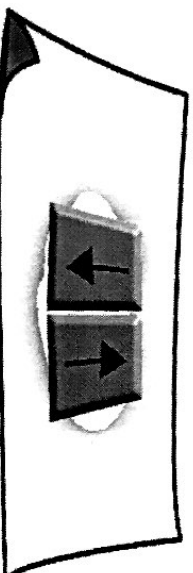


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Snack Tectonics 5

Transform plate boundaries

1. Pick the two crackers up off the frosting and turn them around so that two dry edges are next to each other.
 2. Push one cracker past the other to simulate a transform plate boundary like the San Andreas fault!
- Final step: Eat all remaining model materials (except, of course, wax paper and plastic utensils!)



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Name: _____ Period _____

Snack Tectonics Figure # 2 - Divergent Boundary - Oceanic Crust – Oceanic Crust

Describe what you observed as you pushed down on the crust (Fruit Roll-Up) against the asthenosphere (icing).

What happened to the asthenosphere as the crust was pulled away from each other?

Draw color pictures of a divergent boundary using your model and try to illustrate what you saw.

Snack Tectonics Figure # 3 – Convergent Boundary – Continental Crust - Oceanic Crust

Describe what you observed as you pushed the Oceanic Crust (Fruit Roll-Up) against Continental Crust (graham cracker).

What happened to the asthenosphere as the two boundaries were pushed together?

Did Subduction of the oceanic crust occur in your model? Illustrate Subduction in your drawing.

Draw color pictures of a convergent boundary using your model and try to illustrate what you observed.

Snack Tectonics Figure # 4 – Convergent Boundary - Continental Crust – Continental Crust
Describe what you observed as you pushed the two continental crust plates together. What happened to the edges of the crust that were dipped in water? What would this represent on your model?

Draw color pictures of continental crust colliding with continental crust and what happens based on your model.

Snack Tectonics Figure # 5 – Transform Boundary – Continental Crust – Continental Crust
Describe what you observed as you moved the two Continental Crust Plates past each other?

Describe how easy it was to push the plates past each other while they were in contact with each other. Describe the motion of the plate (smooth or jerky)? Describe what you think caused this. Draw a color picture to illustrate your observations based on your model.