

Name: _____
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Science 8
Cracker Plate Tectonics Lab

The Theory of Plate Tectonics states that the crust of the Earth is composed of twelve major plates and numerous smaller plates. These plates “ride” on the hot plastic upper mantle called the asthenosphere. This theory also says that most of these plates are in motion, creating a variety of interactions at the plate boundaries. As plate boundaries, plates may converge, diverge, or slip (lateral) past each other in a horizontal motion. In addition, some plates may appear to be inactive.

Draw the following:

Subduction Zone	Divergent Boundary	Convergent Boundary	Transform Boundary

Materials (per group)

1 cracker (4 pieces)
Spoonful of frosting (per group)
Knives or spoons

Wax paper or paper plate
A piece of foam
Small beaker of water

Procedure- Sea Floor Spreading

1. Separate 2 small pieces from the cracker (using the perforations)
2. Using the knife/spoon, spread a thick layer of frosting in the center of the wax paper/paper plate
3. Lay the two small pieces of the cracker side by side on top of the frosting.
4. To simulate sea-floor spreading, press down lightly on the crackers as you slowly push down and apart in opposite directions. Do not push the crackers more than 1 centimeter apart.

Questions

A. What happened to the frosting between the crackers?

B. What do the crackers represent?

C. What does the frosting represent?

Procedure: Convergent Plate Boundaries- Oceanic and Continental

1. Place the remaining larger whole cracker and the foam end-to-end (against each other) on top of the frosting. The cracker represents the thin but dense oceanic plate while the foam board represents the thicker but less dense continental plate.
2. Push the two “plate” models slowly toward each other and observe which plate rides up over the other. **NOTE:** On the actual surface of the earth, the lower and more dense plate is subducted.

Questions

A. Which plate is more dense; continental or oceanic?

B. What rock type is each plate primarily made up of?

C. Which plate will subduct or sink under the other?

More Procedures: Convergent Boundaries- Continental

1. Re-use the individual smaller cracker pieces from the first activity.
2. Each piece of cracker represents a continental plate.
3. Dip one end of each of the two crackers two centimeters into the beaker of water. 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.

Questions:

- A. What happens to the wet ends of the crackers?

- B. In what way do the wet crackers act more like the real crustal plates than the dry crackers?

- C. When two continental plates collide in a convergent boundary, they squeeze together to form what type of geological feature?

Procedure: Transform Boundaries

1. Use the remaining whole cracker and break it into two pieces. Fit the two pieces together side to side on top of the frosting on the paper.
2. Place one hand on each of the 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 eventually breakdown from the opposite applied forces.

Questions:

- A. Why is this movement often described as “horizontal” sliding?

- B. What type of natural disaster frequently occurs near this type of boundary?