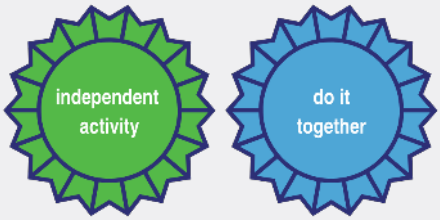
Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences --particularly students of color and girls -- by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are availble at www.projectexploration.org/stemathome.

In this activity, you will:

explore tectonic plate boundaries with pantry items. They will be able to understand how different boundaries move and the effects the movement has on the surface of our planet. You may explore this on your own or with others!



Supplies Required:

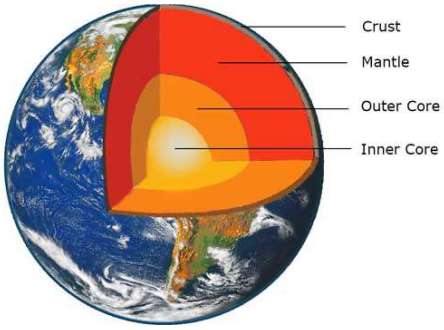
6 whole graham crackers
1 cup of water
1 sheet of wax paper OR 1 plate
whipped cream OR cream cheese OR butter OR frosting/icing
1 small spatula

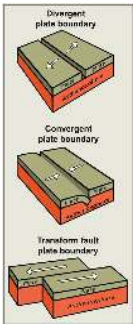
Video

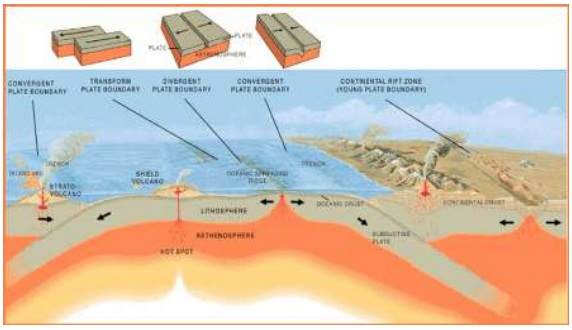
Follow along and see how graham crackers can teach us about plate boundaries: https://tinyurl.com/yb66fpr3

Overview

The Theory of Plate Tectonics states that the crust of the Earth is composed of 12 major plates and numerous smaller plates. These plates move on the top of the hot flowing upper mantle known as the asthenosphere. The mantle is moving because of the convection currents—hot magma rises to the crust, cools, and then sinks down to the bottom, where it's heated again. 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 sideways motion. The purpose of this lab is to demonstrate interactions of plate boundaries.







Instructions

Divergent Plate Boundaries:

1. Break one of the whole graham crackers into two square pieces.
2. Using a knife, spread a thick layer of whipped cream (or the like) in the center of the wax paper (or plate). The spread should be about the size of the graham cracker, but twice as thick.
3. Lay the two pieces of the cracker side-by-side on top of the cream, so that they are touching. To imitate the result of diverging plates, press down on the crackers as you slowly push down and apart in opposite directions. Observe.

Convergent Plate Boundaries:

1. Repeat above steps 1 and 2.
3. Dip each end of the halves into a cup of water (about 2 cm).
4. Immediately remove the crackers and lay them end to end on the cream with the wet ends nearly touching.
5. Slowly push the two crackers together. Observe.

Transform Plate Boundaries:

3. Fit the two halves together side by side on top of the cream.
4. Place one hand on each of the pieces and push them together, while at the same time pushing them away from each other--push one top towards the top of your work space, and one towards the bottom. Observe.

Additional Resources

Think About It! Answer these questions to take your learning to the next level! 1. In each boundary, what did the graham cracker represent? What about the cream? 2. What happened to the graham crackers in each of the boundaries? 3. Do you think that plate boundaries destroy or build up the earth's surface? Explain your thinking!

1. Listen to Bill Nye the Science Guy explain volcanoes and earthquakes: https://tinyurl.com/lmrhddu
2. Learn about plate tectonics with BrainPop: https://tinyurl.com/yandmrm8

Share It Out

Film yourself doing the activity and share on your social media! Or, research where the different boundaries are and create a video where you about the landforms at each boundary! Re-create a map, and mark where the play boundaries are and take a photo!

Use the hastags:

#PlateTectonics
#ProjectExploration
#StemAtHome

Share via PE's website: Students who complete STEM@home activities and share what they learned with the PE team via our website will earn points which can be traded in for cash prizes at the Explore Store. Your project number is 234. Learn more at www.projectexploration.org/explore-store

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