

Edible Plate Tectonics

Divergent, convergent, and transform! Learn how Earth's tectonic plates interact in this delicious activity. Model the plates' movements using frosting and graham crackers to understand how Earth's landscape can change over time.

TEKS:

3.7B: The student knows that Earth consists of natural resources and its surface is constantly changing. The student is expected to investigate rapid changes in Earth's surface such as volcanic eruptions, earthquakes, and landslides.

4.7B: The students know that Earth consists of useful resources and its surface is constantly changing. The student is expected to observe and identify slow changes to Earth's surface caused by weathering, erosion, and deposition from water, wind, and ice.

Materials:

- 4 dollops of frosting
- Marker
- Paper plate
- ½ rice cake
- Small dish of water
- Spoon
- 4 graham cracker squares

How To:

Part 1: Divergent Plate Boundaries

1. Using a marker, divide your paper plate into four equal sections.
2. Put a dollop of frosting in each section.
3. Break one graham cracker square in half. In one section of your plate, lay the two pieces of graham cracker side by side on top of the frosting. The graham cracker pieces should lay so that they are touching.
4. Press down on the crackers as you slowly pull them apart in opposite directions. You've just made a model of diverging oceanic plates!

31 Days of STEM FUN!

Part 2: Convergent Plate Boundaries – Oceanic and Continental Subduction

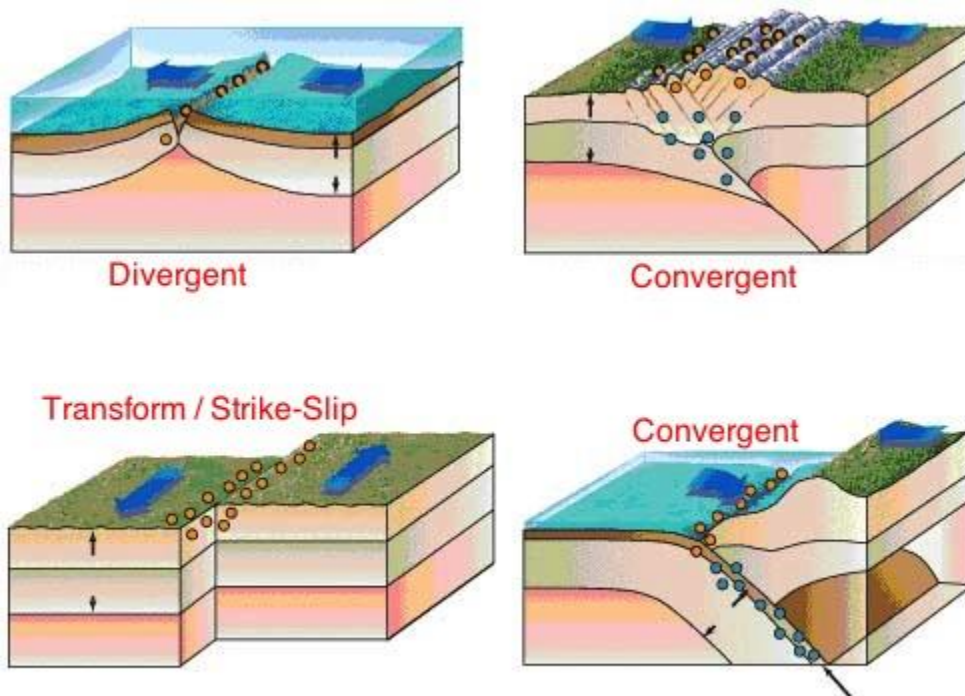
1. In a different section of your plate, take another graham cracker and lay it on top of the frosting next to the straight side of the rice cake half so that they are almost touching. The graham cracker represents an oceanic plate, and the rice cake represents a continental plate.
2. Push the two “plates” slowly towards each other. Which plate rides up over the other? The oceanic plate (graham cracker) is subducted, or sinks, under the continental plate (rice cake).

Part 3: Convergent Plate Boundaries – Continental Mountains

1. Take another graham cracker square and break it in half. Each piece represents a continental plate.
2. Dip one end of each of the two cracker pieces into a cup of water. Don't let them soak too long or they will fall apart!
3. In a third section of your plate, lay the crackers end to end on the frosting with the wet edges almost touching.
4. Slowly push the two crackers together. What happens? What feature is formed?

Part 4: Transform Plate Boundaries

1. Take your last graham cracker square and break it in half. In the last section of your plate, lay the two pieces side by side on top of the frosting so that the pieces are touching.
2. Push the pieces together while sliding them in opposite directions – one towards the top of the plate and one towards the bottom of the plate. This can be a bit tricky, but if done correctly the cracker will eventually break due to the opposite forces!



<http://edwinllarkin.blogspot.com/2012/09/plate-tectonics-and-continental-drift.html>

31 Days of STEM Fun!

www.destember.org | #deSTEMber | © 2016 by Girlstart www.girlstart.org

DeSTEMber is a trademark of Girlstart

STEM Explanation:

Plate tectonics explains how many of Earth's surface formations have formed. Earth's lithosphere (surface) is broken into 15 major pieces called plates. The plates move approximately 2 cm to 10 cm per year. The plates can collide (convergent plate boundary), separate (divergent plate boundary), or slide past each other (transform boundary). Movement of the plates causes earthquakes and creates mountains and volcanoes.

There are two different types of plates. Oceanic plates are thin, but dense and heavy. Continental plates are thicker, but less dense than oceanic plates. If a continental plate and an oceanic plate collide, the oceanic plate is subducted (sinks) because it is heavier. As it sinks under the continental plate, it begins to melt in the Earth's mantle. The melted rock (magma) rises up to form volcanoes. When plates diverge (pull apart), this also can cause volcanoes to form. Much like when you cut yourself and a scab forms, when the earth's surface pulls apart (at divergent plate boundaries), hot magma rises up to form new land and volcanoes. Sometimes valleys form when either plates diverge or at transform boundaries where plates slide past each other. In California, for example, the San Andreas Valley is formed by 2 plates sliding past each other at a transform boundary. Earthquakes occur every time the plates shift (move). Plate movement can also create mountains. When continental plates collide, the edges push up to form mountains.

Career Connection:

Geology is the study of Earth's history, formation, and the forces that continuously shape Earth's surface. *Geologists* study a wide range of subjects including plate tectonics, rocks and minerals, floods, and landslides. Much like your graham cracker simulations, geologists use simulations to understand geologic movement in the past, present, and future. Geologic time is immense (covering more than 4 billion years!) and events happen very slowly. Geologists accumulate an enormous amount of data and it is helpful when they can put this data into a visual simulation.

Resource:

<http://evavarga.net/2014/09/18/modeling-plate-tectonics/>

31 Days of STEM Fun!

www.destember.org | [#deSTEMber](https://twitter.com/deSTEMber) | © 2016 by Girlstart www.girlstart.org

DeSTEMber is a trademark of Girlstart