

EDIBLE PLATE TECTONICS SCIENCE ACTIVITY

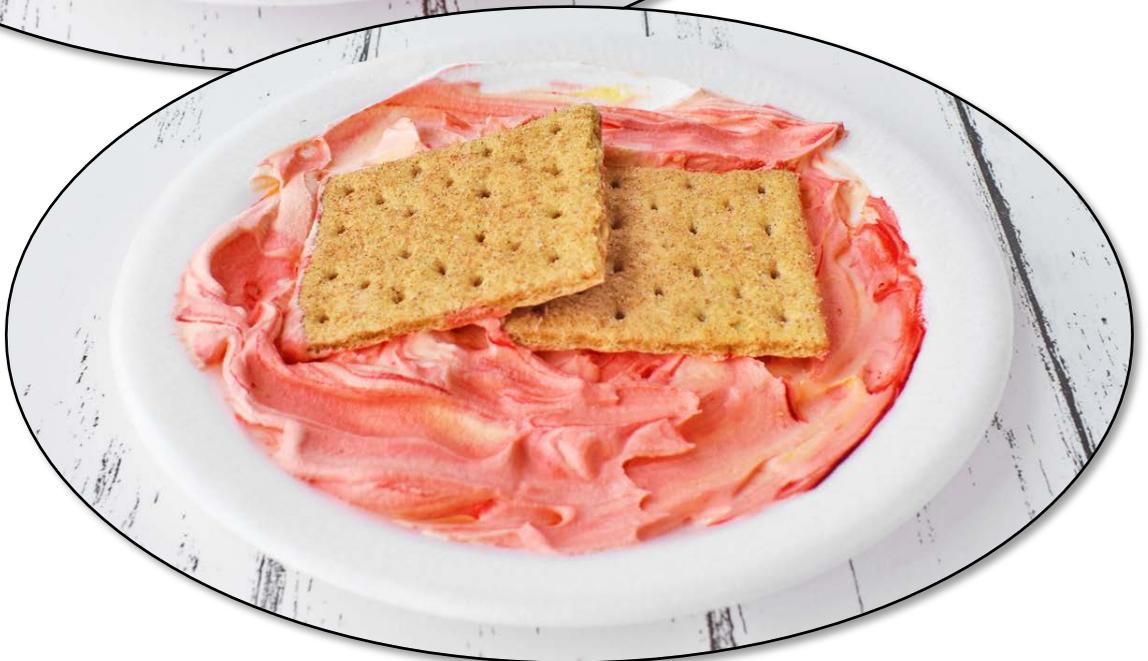
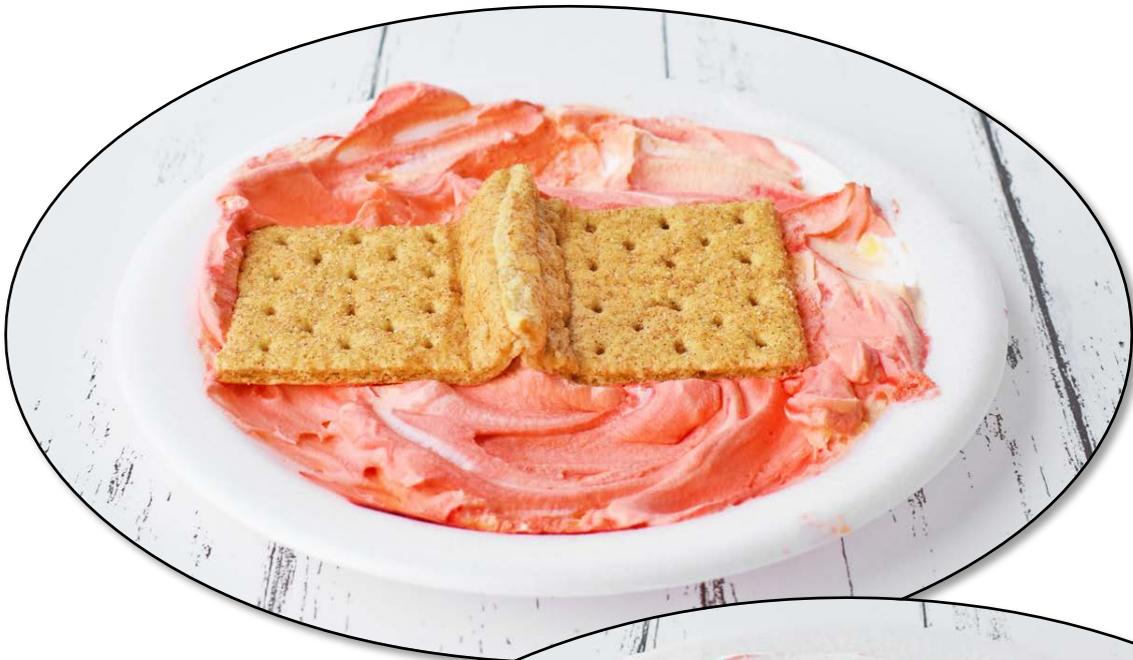


PLATE TECTONICS SCIENCE ACTIVITY

Name: _____ Date: _____

The earth might seem like a big solid rock, especially from the surface. However, the solid earth you're standing on is actually in motion. Ever so slightly, that surface is moving several inches a year. The theory behind this movement is known as plate tectonics.

Plate tectonics is based on two things: structure and motion. The earth is made up of many unique layers. At the top is the crust. Beneath the crust is the mantle. The upper part of the mantle, where the crust and the mantle meet, is called the lithosphere. The lithosphere (and the crust atop it) is not made up of a single unbroken layer. It's made of many different plates. Some plates are large and contain entire continents. These seven major plates – the African, Antarctic, Eurasian, North American, South American, India-Australian, and Pacific Plates – cover most of the earth's surface. There are many smaller plates, as well.

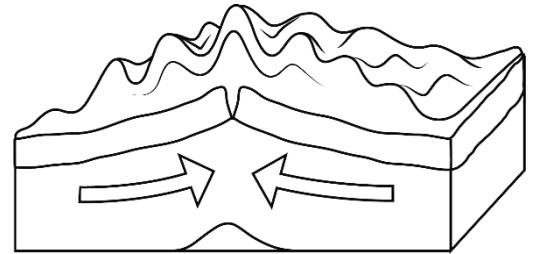
The middle layer of the mantle is where the motion comes in. Beneath the lithosphere is the asthenosphere. This layer is hot and semi-liquid. Its heat pushes to the surface and causes motion and sometimes even releases between the plates. Because the asthenosphere is partially liquid, the layer above it can slide across it. If the asthenosphere was totally liquid, the plates might be zipping about like crazy. The thick composition of the asthenosphere means that motion is possible but happens very, very slowly.

Of course, collisions do happen. Even though they happen slowly, they happen with tremendous force. This force is because of the power of the earth and the massive size of the plates that are moving. These factors also mean that there's a major effect when plates pull apart. These kinds of tectonic motion and their effects – including mountain ranges and earthquakes – are what you'll be exploring in the following activity.

PLATE TECTONICS SCIENCE ACTIVITY

Name: _____ Date: _____

1. What two things affect plate tectonics?



2. Explain how the asthenosphere affects the movement of tectonic plates.

3. Because there are plates that are constantly moving on the earth, what are two results of that movement?

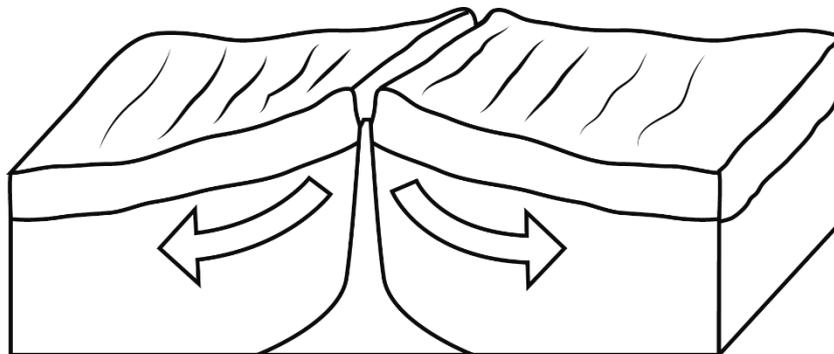
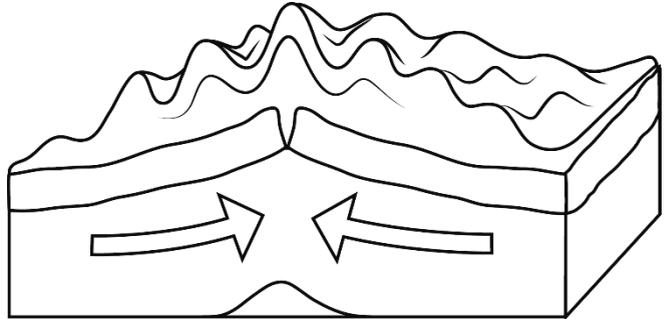


PLATE TECTONICS SCIENCE ACTIVITY

ANSWERS

1. What two things affect plate tectonics?

Plate tectonics are influenced by structure and motion.

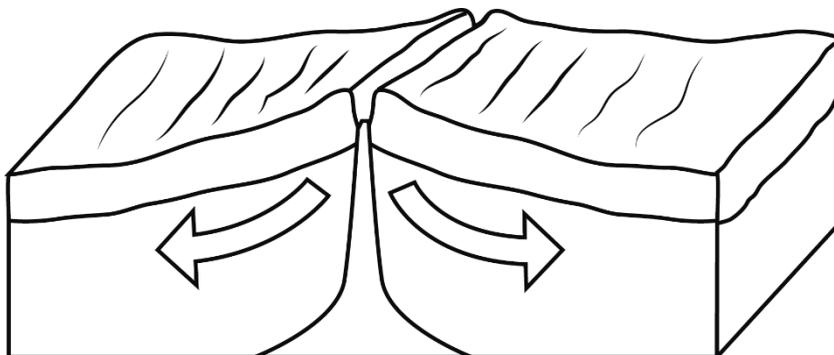


2. Explain how the asthenosphere affects the movement of tectonic plates.

The asthenosphere is partially liquid. Plates can move across it, but they move more slowly than if the asthenosphere were completely liquid.

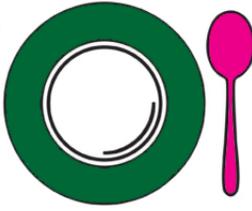
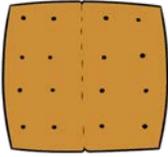
3. Because there are plates that are constantly moving on the earth, what are two results of that movement?

Mountain ranges are formed and earthquakes are caused by tectonic motion when tectonic plates move or shift.



Earth Science : Plate Tectonics

WHAT YOU NEED

 WHIPPED CREAM	 RED FOOD DYE	 YELLOW FOOD DYE
 WATER	 PLATE & SPOON	 GRAHAM CRACKERS

1

Earth Science : Plate Tectonics



Place a nice dollop of whipped cream on the plate.

Add a couple of drops of red and yellow food coloring to the whipped cream and swirl it around. This whipped cream represents the Earth's mantle.

2



Earth Science : Plate Tectonics



Carefully break apart several graham crackers. These show the Earth's plates.

(Resist the urge to eat them; whipped cream and graham crackers are a delectable combination.)



Earth Science : Plate Tectonics



Start with a transform plate boundary. A transform boundary occurs when two plates *slide past* each other without causing any damage.

Slide the graham crackers past one another in the whipped cream.



Earth Science : Plate Tectonics



Introduce a convergent plate boundary. A convergent plate boundary occurs when two plates *move toward* each other.

When one plate moves underneath another plate, it creates a subduction zone. Slide one graham cracker underneath the other in the whipped cream.



Earth Science : Plate Tectonics



When they collide, they can form mountains or ocean trenches. Quickly dip the ends of two graham crackers into water, and place them back into the whipped cream.

Pushing the soggy ends together will allow a "mountain" to form.



Earth Science : Plate Tectonics



Introduce a divergent plate boundary. A divergent plate boundary occurs when two plates *move away from* each other. Most of these are located on the ocean floor.

The separation allows magma to come through the plates. To demonstrate this, slide the graham crackers apart while gently pushing down on them.

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