Name: _____ Date: _____

Student Exploration: Plate Tectonics

Vocabulary: collisional boundary, convergent boundary, crust, divergent boundary, earthquake, lithosphere, mantle, plate, plate tectonics, transform boundary, volcano

Prior Knowledge Questions (Do these BEFORE using the Gizmo.)

1. **Volcanoes** are openings in Earth's **crust** where lava, gas, and ash can erupt. Where are active volcanoes located? _____

_____

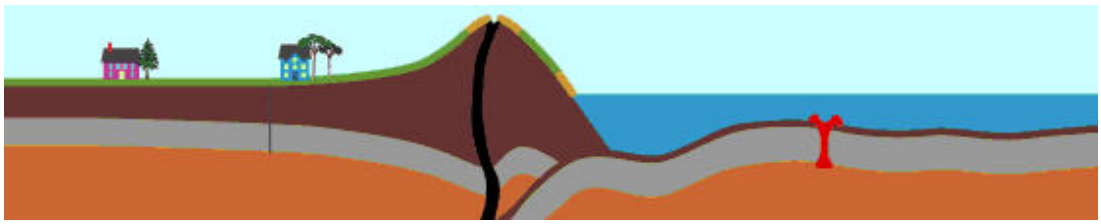
2. An **earthquake** is a violent shaking of Earth's surface. Where are earthquakes common?

_____

_____

Gizmo Warm-up

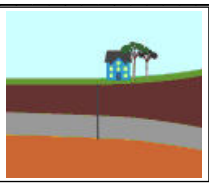
Volcanoes, earthquakes, mountains, and other features of Earth's surface owe their origin to the movements of **plates**: enormous, slowly-moving sections of Earth's crust. At plate boundaries, plates collide, move apart, move under or over each other, or slide past one another. The theory of **plate tectonics** describes how the plates move, interact, and change the physical landscape.



The *Plate Tectonics* Gizmo™ shows a cross-section, or side view, of Earth. (Not to scale.) Above the cross section is a bird's-eye view of the same location.

Turn on **Show labels**. What are the three layers of Earth that you can see? _____ _____ and _____

Turn on **Boundary name**, and click on each boundary. What four boundaries do you see? _____, _____, _____, and _____

Get the Gizmo ready: • Select BOUNDARY A.	**Activity A:** **Sliding plates**	

Question: What happens when plates slide past one another?

Observe: Boundary A is a **transform boundary**. The arrows below the BOUNDARY A label will move the plates. Click the left arrow once to see how the plate moves.

How would you describe the motion of plates in a transform boundary? _____

_____

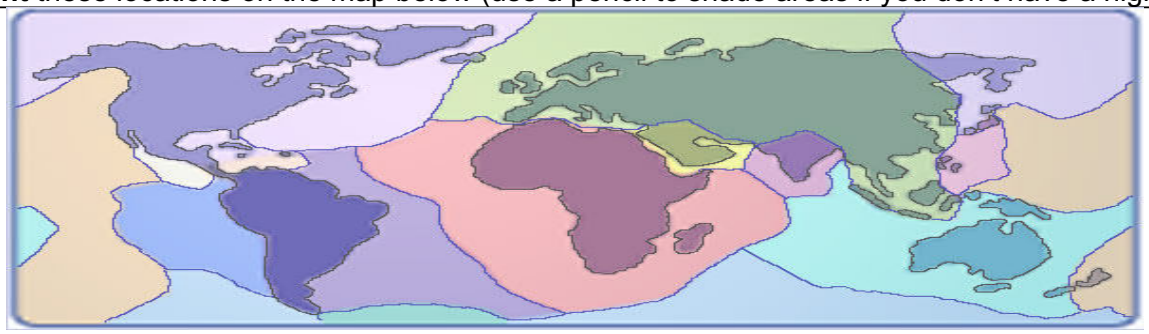
Sketch: Draw a **bird's-eye view** (as if you were above) of the plate boundary before and after the plate motion. **Draw an arrow** to show which way the plate moved.

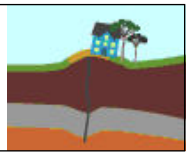
Before movement **After movement**

Locate: Turn on **Show location**. Where on Earth can you find this type of boundary? (Note: You can refer to a world map or atlas for location names.)

_____

Highlight these locations on the map below (use a pencil to shade areas if you don't have a highlighter)



Activity B: **Colliding continents**	Get the Gizmo ready: • Turn off **Boundary name** and **Show location**. • Select BOUNDARY B.	

Question: What happens when two continents collide?

Observe: Boundary B is a **collisional or convergence boundary** . Click the left arrow four times to see how the plate moves. How would you describe the motion of plates in a collisional boundary?

_____

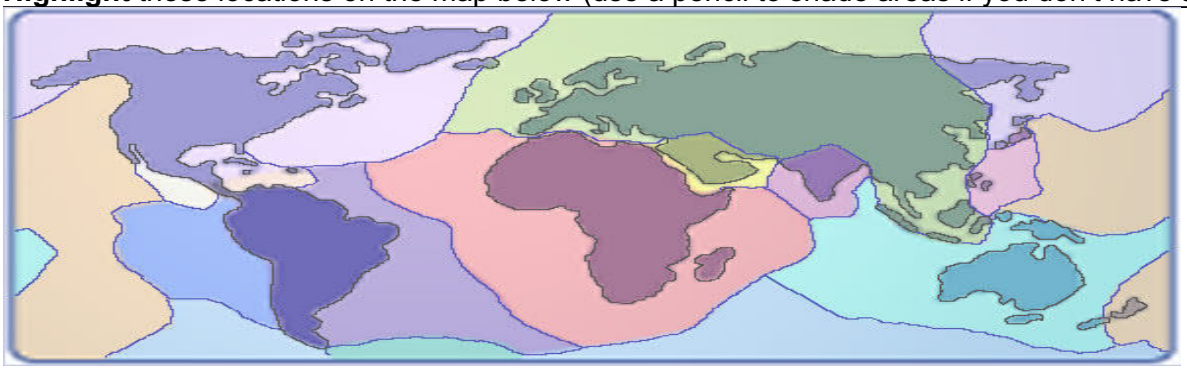
Sketch: Draw **a side view** (as if you were at ground level, or just below) of the plate boundary before and after the plate motion. **Draw an arrow** to show which way the plate moved.

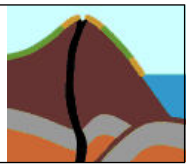
Before movement **After movement**

Locate: Turn on **Show location**. Where on Earth can you find this type of boundary? (Note: You can refer to a world map or atlas for location names.)

_____

Highlight these locations on the map below (use a pencil to shade areas if you don't have a highlighter)



Activity C: **Oceanic crust meets continental crust**	Get the Gizmo ready: • Turn off **Boundary name** and **Show location**. • Select BOUNDARY C.	

Question: What happens when ocean crust collides with continental crust? **(see next page)**

Observe: Boundary C is a **convergent boundary** or **subduction boundary.** Click the left arrow four times to see how the plate moves. How would you describe the motion of plates in this boundary?

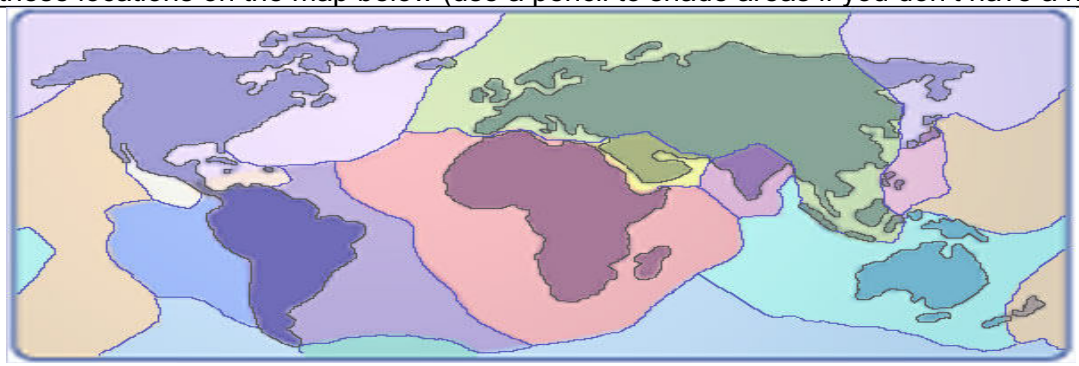
_____

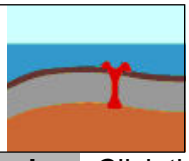
Sketch: Draw a **side view** of the plate boundary before and after the plate motion. Draw an arrow to show which way the plate moved.

Before movement **After movement**

Locate: Turn on **Show location**. Where on Earth can you find this type of boundary? (Note: You can refer to a world map or atlas for location names)._____

Highlight these locations on the map below (use a pencil to shade areas if you don't have a highlighter)



Activity D: **Spreading plates**	Get the Gizmo ready: • Turn off **Boundary name** and **Show location**. • Select BOUNDARY D.	

Question: How is new crust formed? Observe: Boundary D is a **divergent boundary**. Click the right arrow four times to see how the plate moves. How would you describe the motion of plates in a divergent boundary?_____

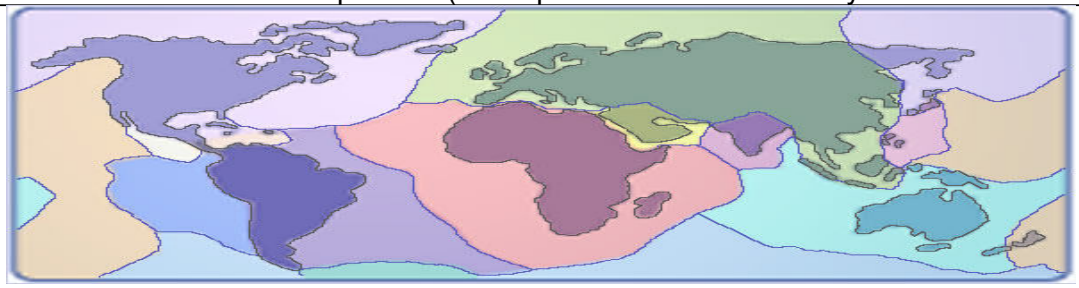
Sketch: Draw a **side view** of the plate boundary before and after the plate motion. Draw an arrow to show which way the plate moved.

Before movement **After movement**

Locate: Turn on **Show location**. Where on Earth can you find this type of boundary? (Note: You can refer to a world map or atlas for location names.)

_____

Highlight these locations on the map below (use a pencil to shade areas if you don't have a highlighter)



Conclusion; Write a summary of the **4 types of plate boundaries**, with descriptions, **on back. Describe** in at **least one sentence** what would happen if the **earth's plates stopped moving.**