Name: _____ Date: _____ Per: _____ Page: _____

Student Exploration: Plate Tectonics

Vocabulary: collisional boundary, convergent boundary, crust, divergent boundary, earthquake, lithosphere, mantle, plate, plate tectonics, subduction zone, 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? _____

   _____

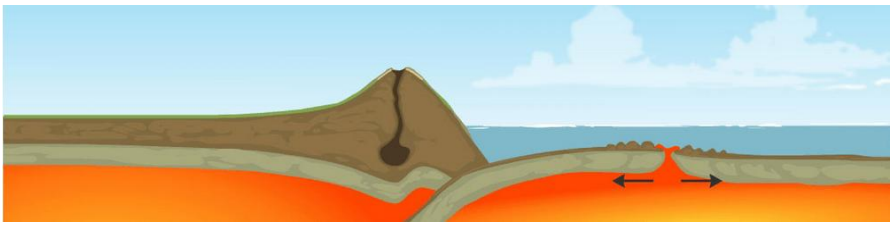
2. An **earthquake** is a violent shaking of Earth's surface. Where are earthquakes common?

   _____

   _____

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.



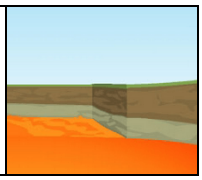
The *Plate Tectonics* Gizmo™ shows a cross-section, or side view, of Earth. (Not to scale.) Above the cross section is a bird's-eye view of the same location.

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

   _____

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

   _____

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

Question: What happens when plates slide past one another?

1. 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 plates move.

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

   _____

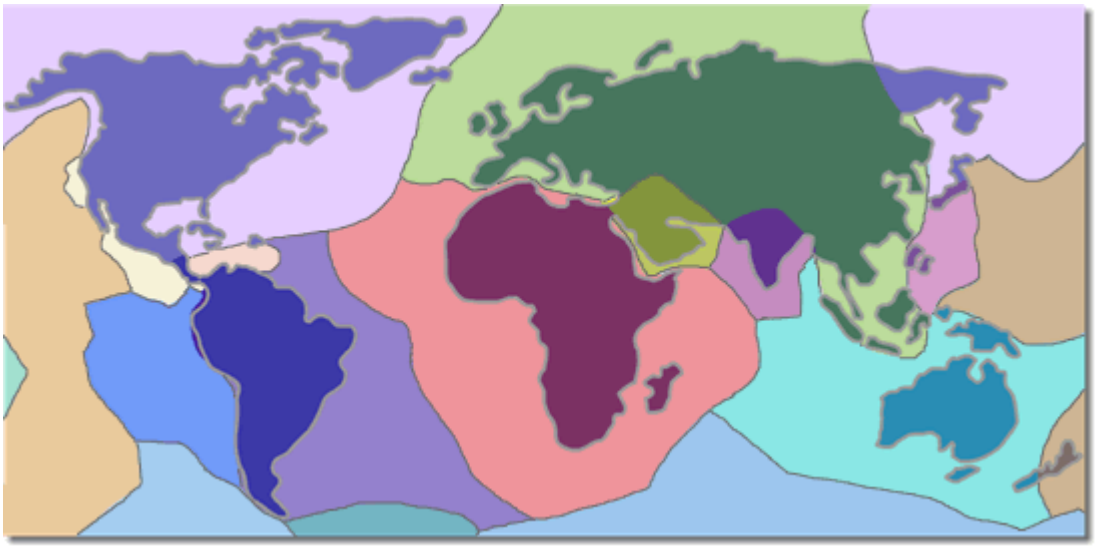
2. Sketch: Draw a bird's-eye view of the plate boundary before and after the plate motion. Draw an arrow to show which way the plate moved.

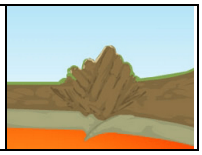
   Before movement After movement

3. 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 or circle in a different color these locations on the map below.



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?

1. Observe: Boundary B is an example of a **convergent boundary**, where two plates are moving toward one another. When the two plates both contain continental crust, it is called a **collisional boundary**. Click the left arrow four times to see how the plates move.

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

   _____

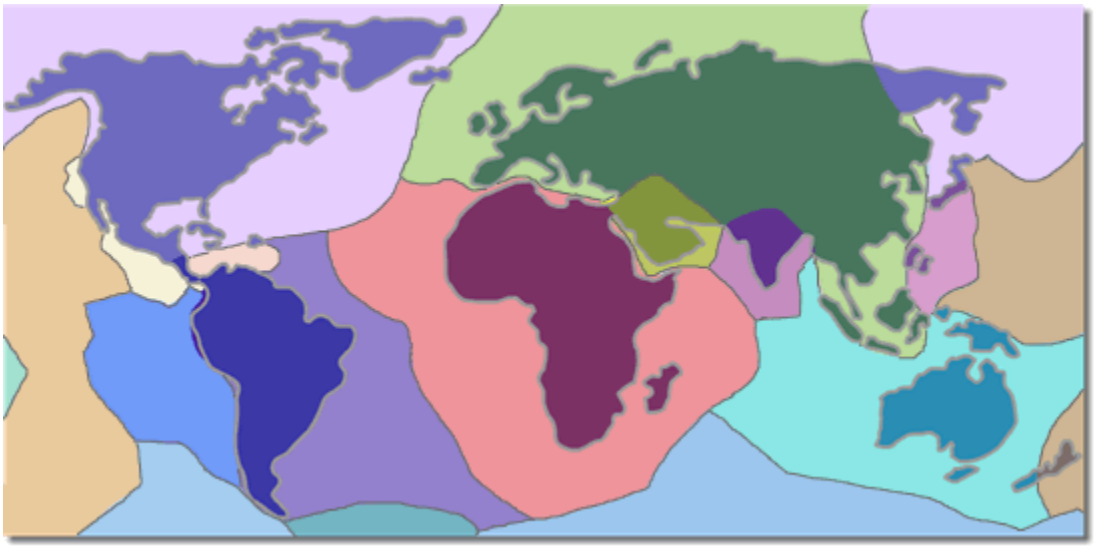
2. Sketch: Draw a side view of the plate boundary before and after the plate motion. Draw an arrow to show which way the plate moved.

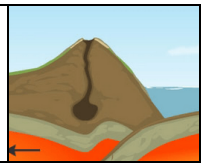
   Before movement After movement

3. 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 or circle in a different color these locations on the map below.



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?

1. Observe: Boundary C is another type of convergent boundary called a **subduction zone**. Click the left arrow four times to see how the plates move.

   How would you describe the motion of plates in a subduction zone? _____

   _____

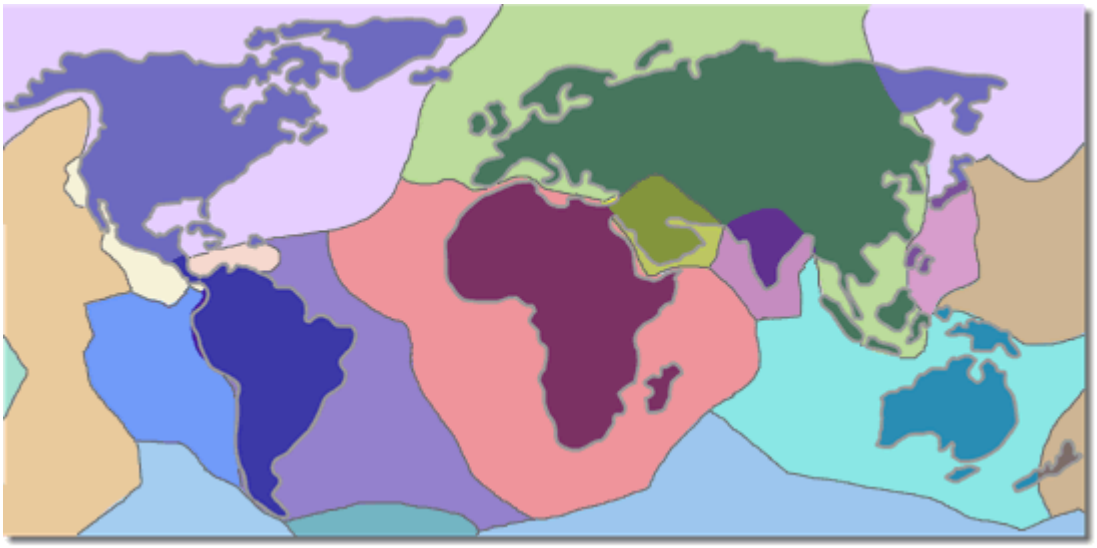
2. Sketch: Draw a side view of the plate boundary before and after the plate motion. Draw an arrow to show which way the plate moved.

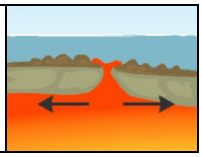
   Before movement After movement

3. 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 or circle in a different color these locations on the map below.



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

Question: How is new crust formed?

1. Observe: Boundary D is a **divergent boundary**. Click the right arrow four times to see how the plates move.

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

   _____

2. 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

3. 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 or circle in a different color these locations on the map below.