**Essential Questions: Theory of Plate Tectonics**

How does the Theory of Plate Tectonics explain why the Earth’s surface looks the way that it does? Answer the essential questions listed below using the four resources from Unit 5 of the class website (they are titled “Plate Tectonics Resource”).

**Theory of Plate Tectonics:**

*What does the word “tectonic” mean?*

*Does Plate Tectonics theory support the idea of a static Earth, or a dynamic Earth?*

*How does the Plate Tectonics theory explain the locations of mountain ranges? Of seas and oceans?*

*How many tectonic plates currently make up the Earth’s outer layer?*

*Where does the energy needed to move the tectonic plates come from?*

*How is continental crust different from oceanic crust?*

**Subduction Zones/Convergent Boundaries:**

*What is a subduction zone?*

*What is tectonic “boundary”?*

*What is a Convergent boundary?*

*What happens to tectonic plates at subduction zones?*

*What happens to continental crust at subduction zones?*

*What happens to oceanic crust at subduction zones?*

*What kinds of geological surface features exist near subduction zones?*

*Are earthquakes and tsunamis created by subduction zones?*

*What is a location on the Earth where an active Convergent Boundary/Subduction Zone exists? What geological features exist at this location?*

**Rift Valleys/Sea-Floor Spreading/Divergent Boundaries:**

*What happens at a Divergent boundary?*

*Describe the process of sea-floor spreading, in terms of plate tectonics.*

*How is a rift valley created?*

*What does a rift valley look like? Why?*

*What is created at divergent boundaries?*

*Why are rift valleys usually at the bottom of the ocean?*

*What is a location on the Earth where an active Divergent Boundary exists? What geological features exist at this location?*

**Transform Boundaries:**

*What is happening (in terms of movement/direction) to plates at a transform boundary?*

*What is happening to the plates that form a transform boundary when they create an earthquake?*

*What kinds of land features are usually found along a transform boundary?*

*What are two examples of transform boundaries found on Earth today?*

*What kinds of plate boundaries tend to produce earthquakes? Why?*

**Volcanoes and Volcanism:**

*What kinds of plate boundaries tend to produce volcanoes? Why?*

*What is a batholith?*

*How is a batholith different from a volcano?*

*What kind of rock generally forms batholiths? Volcanic lava?*

*Where does the rock found in volcanoes and batholiths come from (what is melted to make the rock)?*

*Where is there currently volcanic activity in the US?*

*Identify one location in the US where a large batholith has formed a mountain range.*

**Hotspots/Island Chains:**

*What is a geologic hotspot?*

*How close is Hawaii to the edges of the Pacific plate?*

*How is the island chain of Hawaii being formed?*

*The White Mountains in New Hampshire (and western Maine) were formed from a hot spot. Research and describe when/how this happened.*

**Mantle Plumes:**

*What is a Mantle Plume?*

*What layer of the Earth’s Interior do mantle plumes form in?*

*What is a caldera?*

*Where is the Yellowstone Caldera? Describe the geologic history of the Yellowstone Caldera.*

*What cool geologic features found in Yellowstone National Park are a result of the Yellowstone Caldera?*