Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_ Pd: \_\_\_\_\_\_

**Unit 2 Formative Assessment – Plate Tectonics**

1. Label the diagram of the Earth’s layers with the terms *asthenosphere, lithosphere, continental crust, oceanic crust, inner core, &* *outer core*

1. Which layer(s) is/are . . .
	1. Solid?
	2. Semi-Solid?
	3. Liquid?
2. Describe lithospheric plates including components, types of crust, and density.
3. A fault is \_\_\_\_\_\_\_\_\_\_\_.

A. A place on Earth where earthquakes cannot occur.

B. A fracture in the Earth where movement has occurred.

C. The place on Earth’s surface where structures move during an earthquake.

D. Another name for an earthquake.

1. Complete the chart below about the 3 types of seismic waves:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Wave Type** | **Relative Speed** | **Order of Arrival** | **Relative Destructiveness** | **Type of Motion** | **Layer(s) of Earth Travelled Through** |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  |  |

1. How many seismic stations MUST record an earthquake in order to locate its epicenter? \_\_\_\_\_\_\_
2. When an earthquake occurs, energy radiates in all directions from its source, called the \_\_\_\_\_\_\_\_.

A. Epicenter C. Fault

B. Focus D. Seismic center



1. Using the figure to the right . . .

a. What is the distance between the seismic station and an earthquake epicenter, if the first S wave arrives 5.0 minutes after the first P wave?

b. If an earthquake is recorded at a seismic station 1500 miles away from the epicenter, how long did it take the P-wave to arrive?

c. What is the difference in arrival time of an earthquake’s P wave and S wave if they are recorded 2000 miles from the epicenter?

1. Who proposed the Continental Drift hypothesis **AND** what does it say?
2. List evidence supporting continental drift:

|  |  |
| --- | --- |
| **1912: Wegner** | **Currently (in addition to Wegner’s)** |
|  |  |
|  |  |
|  |  |
|  |  |

1. Wegner’s Continental Drift Hypothesis
	1. What was the response of the scientific community to this hypothesis?
	2. Why was that the response?
2. What is the weaker, hotter zone beneath the lithosphere that causes motion of Earth’s rigid outer shell?

A. Crust C. Asthenosphere

B. Outer Core D. Inner Core

1. Most of Earth’s earthquakes, volcanoes, and mountain building occur \_\_\_\_\_\_.

A. in the center of the continents. C. in the Himalayas.

B. at plate boundaries. D. at volcanic island arcs.

1. Match the left column with the right column by drawing arrows:

Convergent Boundary Grinding past each other

Divergent Boundary Moving together

Transform Boundary Moving apart

1. Match the left column with the right column by drawing arrows:

Rift Valleys Divergent Oceanic-Oceanic

Continental Volcanic Arcs Convergent Oceanic-Oceanic

Mountains Convergent Oceanic-Continental

Volcanic Island Arcs Convergent Continental-Continental

(Ocean) Trenches Divergent Continental-Continental

Mid-Ocean Ridges Convergent Oceanic-Continental & Oceanic-Oceanic

1. Convection currents in the \_\_\_\_\_ are the driving force for plate movement.

A. lithosphere C. asthenosphere

B. outer core D. inner core

1. The volcanic Hawaiian islands have formed at

A. the subduction of an oceanic plate underneath another oceanic plate

B. a hot spot pushing magma up through the middle of the Pacific plate

C. a convergent oceanic-oceanic boundary

 D. the Pacific Mid-Ocean Ridge

1. Match the left column with the right column by drawing arrows:

Destructive Plate Margins Divergent Boundaries

Constructive Plate Margins Transform Boundaries

Neither Destructive nor Constructive Convergent Boundaries

1. The main source of heat in the Earth’s interior is due to the \_\_\_\_\_.

A. warm troposphere of our atmosphere C. convection currents in the core

B. eruption of volcanoes D. radioactive decay of elements

1. \_\_\_\_\_\_\_\_\_ causes oceanic lithosphere to slide down the sides of the oceanic ridge due to gravity.

A. Mantle plume C. Ridge-push

B. Convective flow D. Slab-pull

1. \_\_\_\_\_\_\_\_\_\_ is thought to be the primary downward arm of convective flow in the mantle.

A. Mantle plume C. Ridge-push

B. Convective flow D. Slab-pull

1. The \_\_\_ is a rigid outer layer of Earth that rests on top of a weak plastic layer of the mantle called the \_\_\_.

A. asthenosphere, inner core C. lithosphere, asthenosphere

B. asthenosphere, lithosphere D. lithosphere, inner core

1. For the image to the right, identify each of the following:
	1. Fault Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Stress Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Associated Plate Boundary \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. For the image to the right, **ADD ARROWS TO SHOW STRESS** and identify each of the following:
	1. Fault Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Stress Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Associated Plate Boundary \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. For the image to the right, **ADD ARROWS TO SHOW STRESS** and identify each of the following:
	1. Fault Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Stress Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Associated Plate Boundary \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Compare lava and magma. Be sure to include similarities and differences.

1. In what geographical region of the world are most volcanoes found? Why is this true?
2. Which of the following is NOT a type of pyroclastic material?

A. Lahar flow C. Lapilli

B. Cinders D. Volcanic blocks

1. What is the fall line in NC? Where is it found?
2. Which of the following indicate that a volcano is likely to erupt soon? *You may choose more than one!*

A. Increase in gases escaping from vents

B. Increase in tremors (small earthquakes)

C. Release of pyroclastic material

1. Label each type of volcano on diagram below.



1. Why does a convergent continental-continental boundary NOT produce subduction?
2. Label the age of the rock moving away from the mid-ocean ridge shown below. Use 1s for the youngest and 6s for the oldest.
3. Mark each of the following as describing the **f**ocus or **e**picenter of an earthquake:
	1. \_\_\_\_\_ Deep underground
	2. \_\_\_\_\_ On the fault line
	3. \_\_\_\_\_\_ Location of initial movement of rock
	4. \_\_\_\_\_ Directly below epicenter
	5. \_\_\_\_\_ On the surface
4. Identify which lettered location in the image below represents each of the following:
5. Trench
6. Continental Volcano
7. Transform
8. Asthenosphere
9. Slab/Gravity Pull
10. Subduction Zone
11. Divergent
12. Ridge Push
13. Lithosphere
14. Convergent
15. Volcanic Island Arc
16. Draw the 4 convection cells power the plate movement shown below.
17. Order the 6 steps of Appalachian Mountain formation **AND** label when each occurred:
	1. \_\_\_\_\_\_\_years ago: N. America & Africa collide & push continental crust up into mountain form
	2. \_\_\_\_\_\_\_years ago: Individual pieces of supercontinent move away from each other
	3. \_\_\_\_\_\_\_years ago: Crust forms with a supercontinent on it
	4. \_\_\_\_\_\_\_years ago: Individual continents move back towards each other
	5. \_\_\_\_\_\_\_years ago: Supercontinent breaks into pieces
	6. \_\_\_\_\_\_\_years ago: North America and Africa separate due to sea floor spreading along a mid-ocean ridge; pile of crust remains on North America