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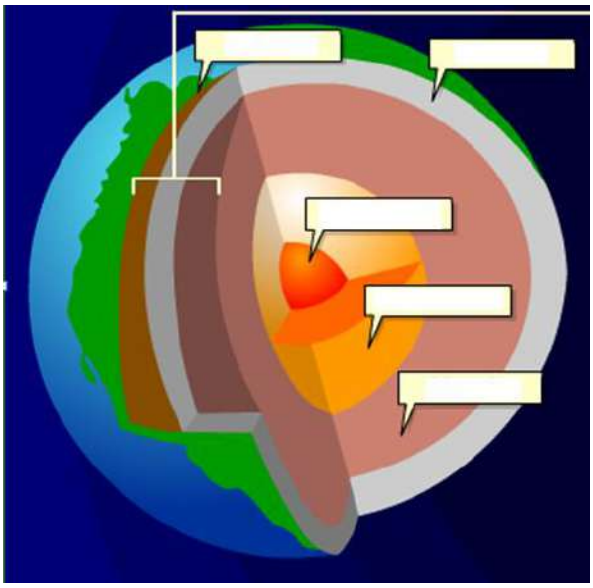
Plate Tectonics Web-Quest

Part I: Earth's Structure. Use the following link to find these answers:
http://www.learner.org/interactives/dynamicearth/structure.html

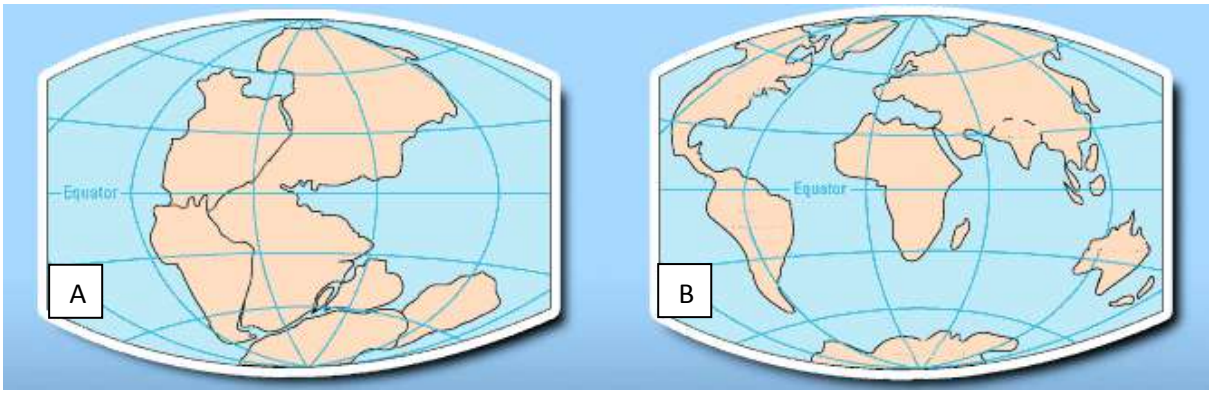
1. Label the layers of Earth in the diagram below.



2. The lithosphere is made up of the _____ and a tiny bit of the _____ _____.
3. The plates of the lithosphere move (or float) on this hot, malleable _____ _____ zone in the upper mantle, directly underneath the lithosphere. This is known as the _____.
4. The layer of Earth that is the only liquid layer is the _____ _____.

Part II. Plate Tectonics. Use the following link to find these answers:

http://www.learner.org/interactives/dynamicearth/drift.html



1. True or False? Image A depicts what Earth looks like today. (circle the correct answer)

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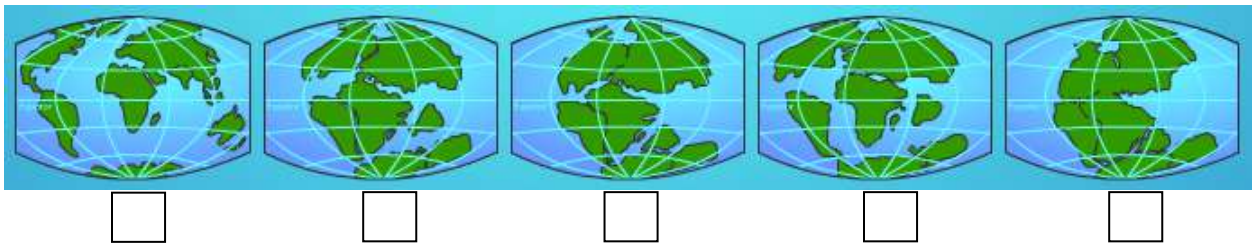
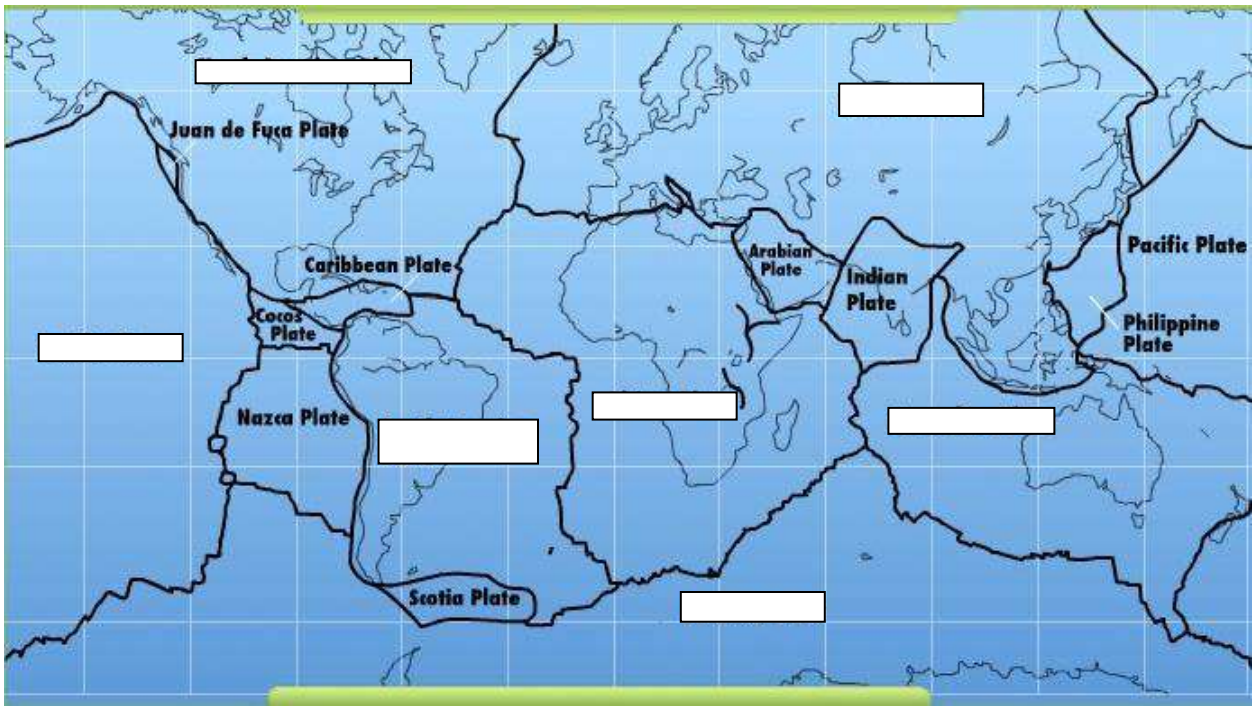
2. What did Earth look like 250 million years ago? The continents of Earth were clustered together in formation that a scientist named _____. The scientist that named "Pangaea" was a German scientist by the name of _____ _____ . He theorized that "Pangaea" split apart and the different landmasses, or continents, drifted to their current locations on the globe. Wegener's theories of plate movement became the basis for the development of the theory of _____ _____.

3. Order the images of Earth's plates in order from oldest or earliest (1) to most recent (5).



Part III. Plates and Boundaries. Use the following link to find these answers:
http://www.learner.org/interactives/dynamicearth/plate.html

1. Name the missing tectonic plates in the blanks on the image below.



2. The place where the two plates meet is called a _____. Boundaries have different names depending on how the two plates are moving in relationship to each other.
   A. If two plates are pushing towards each other it is called a _____.
   B. If two plates are moving apart from each other it is called a _____.

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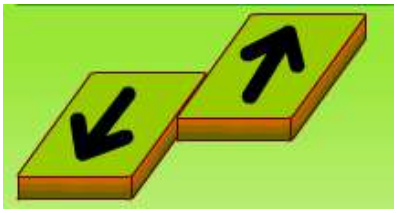
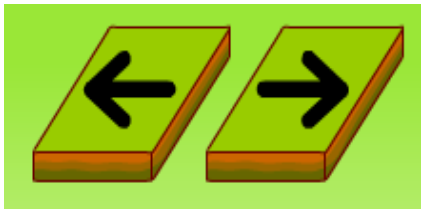
C. If two plates are sliding past each other it is a called a _____.

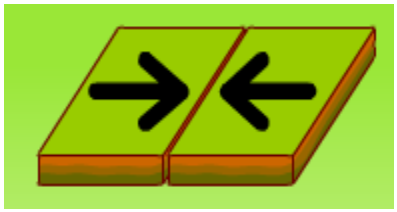
3. Label the type of boundary depicted in each image below.



_____



_____



_____

4. Plates and Boundaries Challenge. Follow directions for the challenge. Record your results below:

Part I. Number of correctly placed plates = _____

Part II. Number of boundary types correctly labeled = _____

Part IV. Slip, Slide, and Collide. Use the following link to find these answers:
http://www.learner.org/interactives/dynamicearth/slip.html

1. At **convergent boundaries**, tectonic plates _____ with each other. The events that occur at these boundaries are linked to the types of plates (oceanic or _____) that are interacting.

Subduction Zones and Volcanoes

At some convergent boundaries, an oceanic plate collides with a continental plate. Oceanic crust tends to be _____ and _____ than continental crust, so the denser oceanic crust gets bent and pulled under, or _____, beneath the lighter and thicker continental crust. This forms what is called a **subduction zone**. As the oceanic crust sinks, a deep oceanic _____, or valley, is formed at the edge of the continent. The crust continues to be forced deeper into the earth, where high heat and pressure cause trapped water and other gasses to be released from it. This, in turn, makes the base of the crust melt, forming _____. The magma formed at a subduction zone rises up toward the earth's surface and builds up in magma chambers, where it feeds and creates _____ on the overriding plate. When this magma finds its way to

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the surface through a vent in the crust, the volcano erupts, expelling _____ and _____. An example of this is the band of active volcanoes that encircle the Pacific Ocean, often referred to as the Ring of Fire.

Roll your mouse over the image to find the definitions of the words below:

Subduction Zone – _____

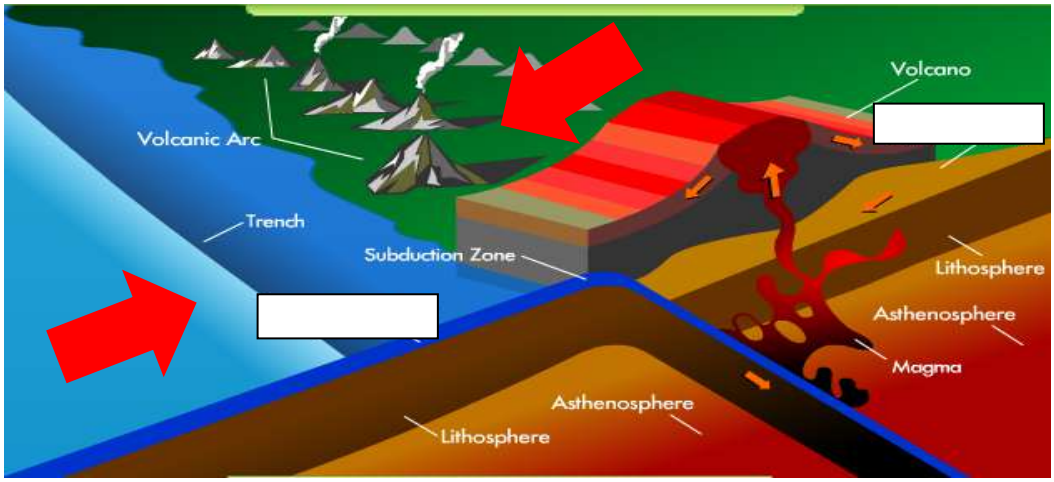
Magma - _____

Trench - _____

Volcano - _____

Volcanic Arc - _____

Fill in the type of crust converging in the image below.



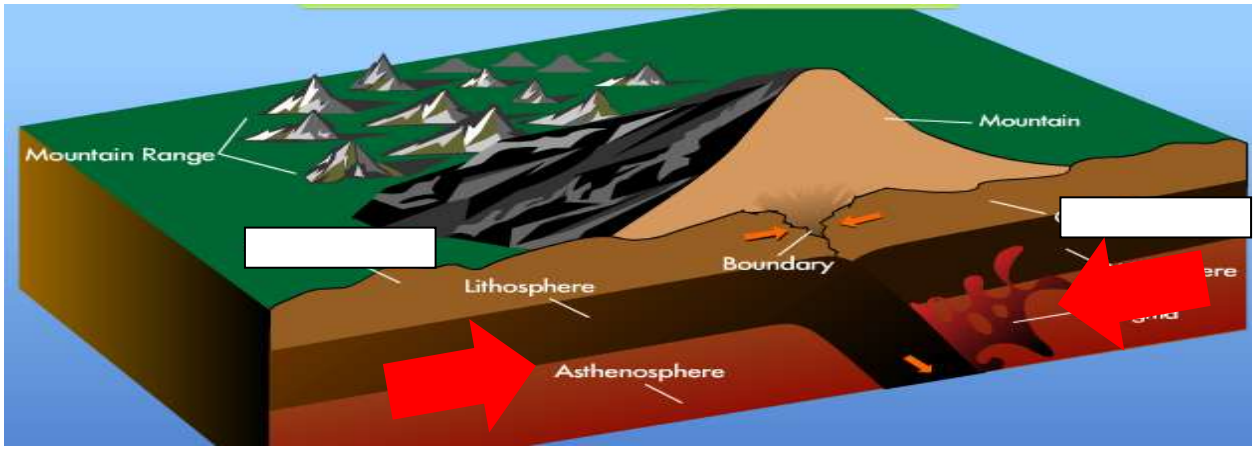
A subduction zone is also generated when two oceanic plates collide — the older plate is forced under the _____ one, and it leads to the formation of chains of volcanic islands known as _____ _____.

Collision Zones and Mountains

What happens when two continental plates collide? Because the rock making up continental plates is generally lighter and less dense than oceanic rock, it is too light to get pulled under the earth and turned into magma. Instead, a collision between two continental plates crunches and folds the rock at the boundary, lifting it up and leading to the formation of _____ .

Name _____ Date _____ Period ____

Fill in the type of crust converging in the image below.



Roll your mouse over the image to find the definitions of the words below:

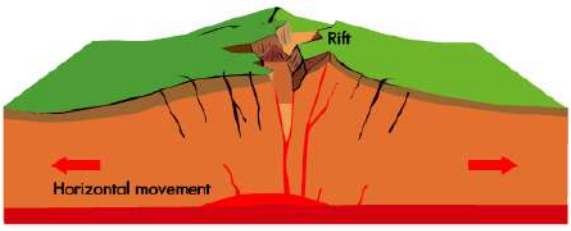
Continental Crust - _____

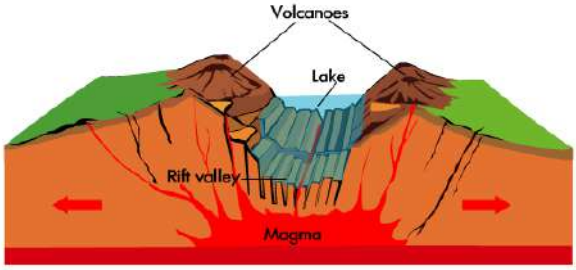
Mountain - _____

_____

2. At **divergent boundaries**, tectonic plates are moving _____ from each other. One result of huge masses of crust moving apart is _____ spreading. This occurs when two plates made of oceanic crust pull apart. A crack in the ocean floor appears and then magma oozes up from the mantle to fill in the space between the plates, forming a raised ridge called a _____ _____. The magma also spreads outward, forming _____ ocean floor and _____ oceanic crust.

When two _____ plates diverge, a valley-like rift develops. This _____ is a dropped zone where the plates are pulling apart. As the crust widens and thins, valleys form in and around the area, as do _____, which may become increasingly active. Early in the rift formation, streams and rivers flow into the low valleys and long, narrow lakes can be created. Eventually, the widening crust along the divergent boundary may become thin enough that a piece of the continent breaks off, forming a new tectonic plate.





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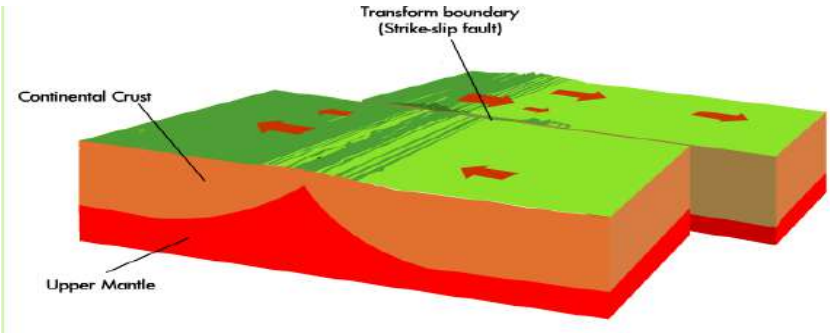
3. At **transform boundaries**, tectonic plates are not moving directly toward or directly away from each other. Instead, two tectonic plates _____ past each other in a horizontal direction. This kind of boundary results in a _____. A fault is a crack or _____ in the earth's crust that is associated with this movement.

   Transform boundaries and the resulting faults produce many _____ because edges of tectonic plates are jagged rather than _____. As the plates grind past each other, the jagged edges strike each other, catch, and stick, "locking" the plates in place for a time. Because the plates are locked together without moving, a lot of _____ builds up at the fault line. This stress is released in quick bursts when the plates suddenly slip into new positions. The sudden movement is what we feel as the shaking and trembling of an earthquake.

   The motion of the plates at a transform boundary has given this type of fault another name, a _____ _____. The best-studied strike-slip fault is the San Andreas Fault in _____.



4. Complete the Plate Interactions Challenge and Test Skills questions.

   My score for Plate Interactions Challenge = _____

   My score for Test Skills questions = _____ out of 30 or _____ %

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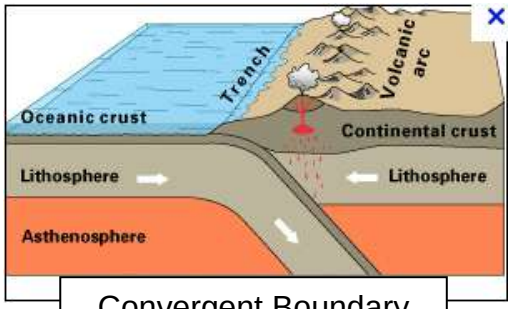
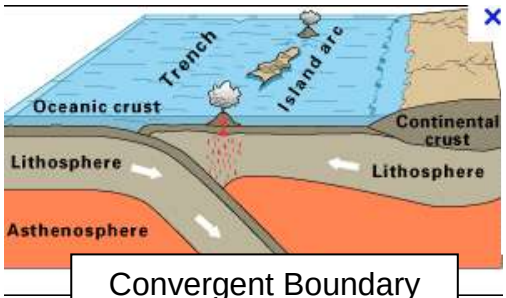
Part V. Questions you should be able to answer now that you completed this webquest.

Note - you may go back to the website and review to assist in answering the following questions.



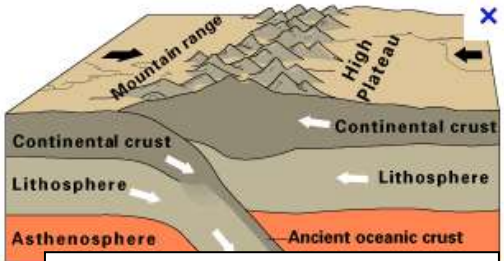
Convergent Boundary (ocean – continental)

1. Deep-ocean _____ and _____ are created by convergent boundaries of ocean and continental crust.



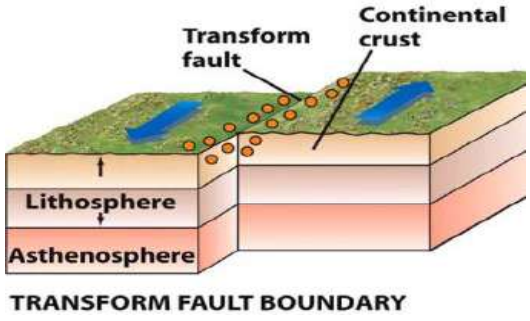
Convergent Boundary (ocean – ocean)

2. Deep-ocean _____ , _____, and _____ are created by convergent boundaries of ocean and ocean crust.



Convergent Boundary (continental – continental)

3. _____ are created by convergent boundaries of continental and continental crust.



TRANSFORM FAULT BOUNDARY

4. Another type of boundary neither creates nor consumes crust. This type of boundary is called a _____ boundary because two plates move against each other, building up tension, then release the tension is a sudden jerk of land called an _____.

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4. Circle the correct type of boundary for each description below:

A. The boundary where two plates meet and trenches are formed.

Divergent **Convergent** **Transform**

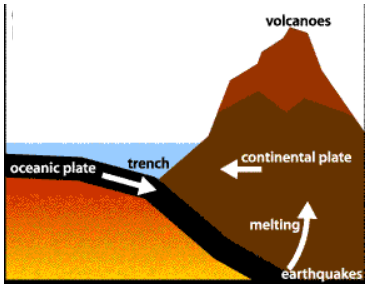
B. The plates move away from each other allowing magma to create new ocean crust.

Divergent **Convergent** **Transform**

C. The plates move in opposite directions building up tension until they slip causing earthquakes.

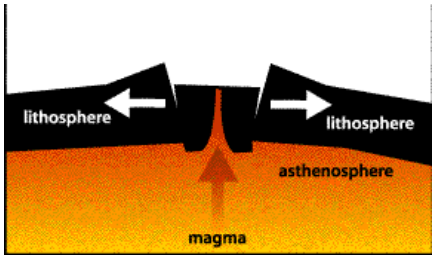
Divergent **Convergent** **Transform**

5. Label each type of boundary as either: **Divergent, Convergent, or Transform Boundary**:



A. _____

B. _____



C. _____

The end. Please take a minute and look over your web-quest to make sure you answered all questions and completed all tasks. Make sure your name is on the front and turn it in.