Dynamic Earth Web Quest

Directions
- You may write your answers on this paper.
- Go to http://www.learner.org/interactives/dynamicearth/index.html
- Click on the link that says Earth's Structure - found along the green band running across the website.

1. Read the information found on the webpage to fill in the following blanks about the Earth's Structure:
   In the early part of the 20th century geologists studied the __________________________ (____________________) generated by earthquakes to learn more about the structure of the earth's interior.

2. Roll your mouse over the diagram to learn more about the interior of the Earth to fill in the following blanks:
   ________________: The plates of the lithosphere move (or float) on this hot, malleable semiliquid zone in the upper mantle, directly underneath the __________________________.

3. At the bottom of the screen click on the red link, Next Chapter: Plate Tectonics
   - Complete the challenge
   - Click on the button, “How Do We Know This?”
     A. The modern __________________________, which has become widely accepted since the 1960s, states that the earth's outer layer, or lithosphere, is broken into several large slabs called ________________.
     B. The movement of the plates not only supports our understanding that continents are not fixed and moved over time, but also explains how and why __________________________, __________________________, and other geologic events occur.

4. At the bottom of the screen click on the red link, Continents Over Time
   - Complete the challenge
   - Try the bonus question and fill in the following blanks:
     A. Since the plates are constantly in ________________, some scientists estimate that the continents will come together to form one large __________________________ again in the future.
     B. The name of this future arrangement of continents is ________________ (see image)

5. Click on the red link Plate Boundaries to move on to the next chapter
   - Read about “Plates & Boundaries” and answer the following questions:
     A. Which type of crust is thicker, oceanic or continental crust? __________________________
     B. What is the border between two tectonic plates called? __________________________

C. Draw a sketch of each of the three types of boundaries and fill in the missing information for examples:

<table>
<thead>
<tr>
<th>Convergent Boundary</th>
<th>Divergent Boundary</th>
<th>Transform Boundary</th>
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6. Click on Slip, Slide & Collide it is on the green banner at the top of the website.
   A. Each kind of plate __________________________ is associated with particular events, so if you know about the movements taking place at a plate boundary, you can often predict what's likely to occur there — volcanoes, earthquakes, __________________________, __________________________ — in the future!
7. Click on the red link see what happens at different plate boundaries

**Convergent Boundaries**

A. Oceanic crust tends to be denser and thinner than continental crust, so the denser oceanic crust gets bent and pulled under, or subducted, beneath the lighter and thicker continental crust. This forms what is called a ________________ ________________.

B. As the oceanic crust sinks, a deep oceanic ________________, or valley, is formed at the edge of the continent.

C. The crust continues to be forced deeper into the earth, where high ________________ and ________________ cause trapped water and other gases to be released from it. This, in turn, makes the base of the crust melt, forming ________________.

D. The magma formed at a subduction zone rises up toward the earth's surface and builds up in magma ________________, where it feeds and creates volcanoes on the overriding plate. When this magma finds its way to the surface through a ________________ in the crust, the volcano erupts, expelling lava and ash. An example of this is the band of active volcanoes that encircle the Pacific Ocean, often referred to as the ________________ ________________.

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

F. Earthquakes generated in a subduction zone can also give rise to ________________. A tsunami is a huge ocean ________________ caused by a sudden shift on the ocean floor, such as an undersea earthquake.

G. An example of this mountain-building process is the ________________ range in southern Asia... Since the Indian Plate is continuing in its northward movement into Asia, the Himalayas continue to ________________ higher each year by small amounts (5 to 20 mm or ___ inch per year).

8. Click on the red Next to move to continue

**Divergent Boundaries**

A. Divergent boundaries in the middle of the ocean contribute to ________________ ________________.

   As plates made of oceanic crust pull apart, a crack in the ocean floor appears.

B. ________________ then oozes up from the mantle to fill in the space between the plates, forming a raised ridge called a ____________-______________ ________________.

C. The magma also spreads outward, forming new ocean floor and new oceanic ________________.

D. Click on the green “Start” to watch the animation about rift valleys. Describe in words or draw a diagram of what a rift valley looks like.

**Transform Boundaries**

A. A ________________ is a crack or ________________ in the earth's crust that is associated with movement at transform boundaries.

B. Transform boundaries and the resulting faults produce many ________________ because edges of tectonic plates are ________________ rather than ________________.

C. The motion of plates at a transform boundary is referred to as a **strike-slip fault**. What is the name of the famous strike-strip fault in California? _____ ________________ ________________

9. Click on Plate Interactions Challenge

- Complete the challenge

   When finished, show Mrs. Feldmann your score on the computer screen and record the number here: ________

10. If you have time, go back to "Plates & Boundaries" green link at the top of the website and try the challenge at the bottom to practice naming tectonic plates!