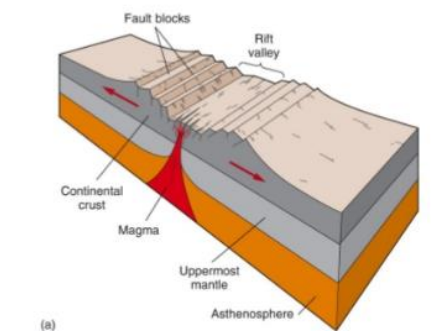


## Topic 5 Review Questions

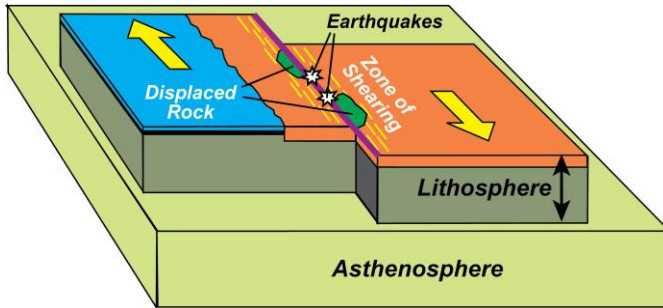
1. Copy the chart below, and complete the missing information comparing the Oceanic Crust with the Continental Crust.

	Ocean Crust	Continental Crust
Composition	basalt	Granite
Density	3.0 g/ml	2.7 g/ml
Thickness	Thin	thick
Relative Age (younger or older)	younger	Older

2. What gave Alfred Wegner the idea that the continents have moved?  
*He saw fossils that matched across continents*
3. List the 3 types of evidences that Wegner used to show that the continents were once together and they have moved.  
*Puzzle-like fit of continents. Matching rock types. Matching mountain ranges.*
4. Why was Wegner's hypothesis of continental drift rejected by scientists of his time?  
*He couldn't explain how the continents moved.*
5. What was discovered in the oceans in 1947? What technology was used to study them?  
*Mid-Ocean ridges were discovered using SONAR*
6. What was discovered about the sediments around the Mid-ocean ridges? How did this give the scientists an idea about the age of the rocks?  
*Mid-ocean ridges are volcanoes making new crust. The sediments are thinner there, meaning the crust is younger (it hasn't had as long to build up).*
7. Describe the process of sea-floor spreading?  
*New sea floor is made at the ridges, then pushed away (divergent boundaries) until it eventually subducts and is destroyed at the ridges.*
8. What was the evidence that proved the sea floor was spreading apart at the mid-ocean ridges?  
*Paleomagnetic data (mirror image pattern), young age of the sea-floor, depth of sediments increases away from the ridge, shallow earthquakes near the ridge*
9. Describe the basic concept behind the theory of plate tectonics?  
*Pieces of the lithosphere (crust and ridged mantle) are moving /shifting/changing*
10. The great Pyramid of Giza in Egypt was built more than 40 centuries ago. The pyramid faces slightly east of true north. Did the ancient Egyptians builders make a mistake in laying out the foundation for the pyramid or is there some other explanation for this ***error***?  
*They used to face east, but the continent of Africa has shifted.*
11. The eastern part of California is on the North American Plate, whereas the western part of California is on the Pacific Plate. The North American Plate is moving toward the northwest at about 2 cm/year, while the Pacific Plate moves in the same direction, but at 10 cm/year. What might eventually happen to southern California if these two plates continue to move as they do now?  
*The state of California will shift in two. It will not break into the ocean and sink away.*
12. What will happen to the Atlantic Ocean if the tectonic plates keep moving the way they are now? (Use your Reference Table)  
*The Atlantic ocean will get bigger (meaning the pacific is getting smaller)*
13. Draw a block diagram and label the features present at a **divergent boundary**. Show the plates, relative plate directions, earthquake depths & volcanic mountains. Using your ESRT page 5, give coordinates where this plate boundary can be found on Earth.

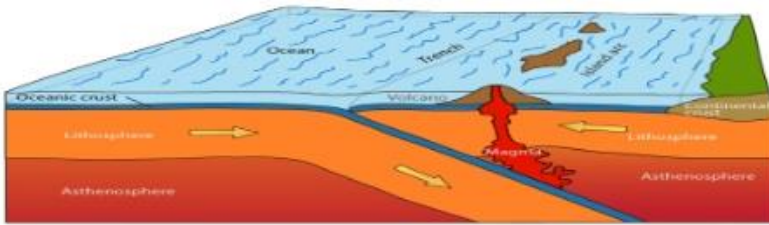


14. Draw a block diagram and label the features present at a **transform boundary**. Show the plates, relative plate directions & earthquake depths. Using your ESRT page 5, give coordinates where this plate boundary can be found on Earth.

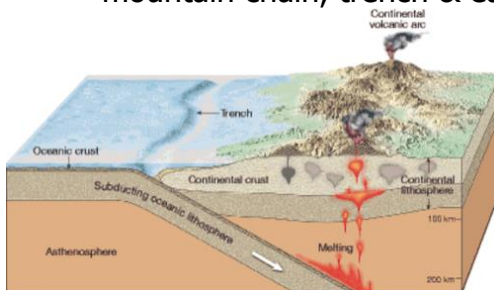


15. Draw a block diagram of the crust and label the features present at the following **convergent boundaries**. Using your ESRT page 5, give coordinates where each plate boundary can be found on Earth.

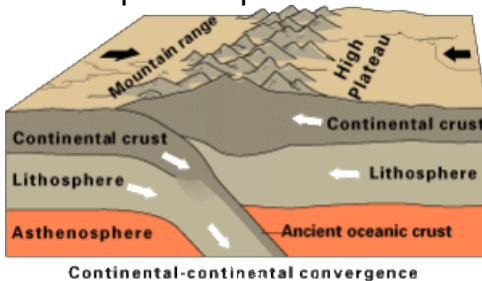
a. **Ocean meets Ocean** – Label plates, relative motions, subduction, volcanic island arc, trench & earthquake depths.



b. **Ocean meets Continent** – Label plates, relative motions, subduction, volcanic mountain chain, trench & earthquake depths.



c. **Continent meets Continent** – Label plates, relative motions, show mountain features & earthquake depths.

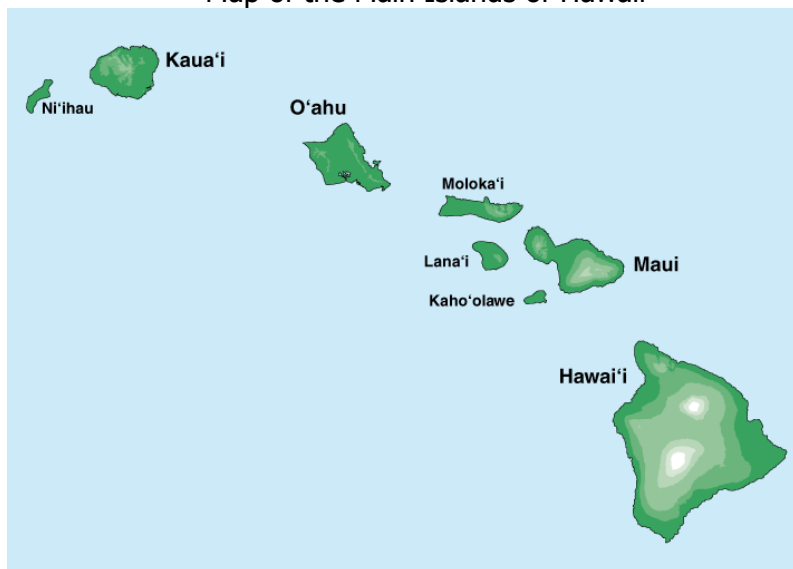


16. Describe the term hot spot as it relates to plate tectonics.

An area of the mantle that is hot and causes volcanoes to form away from a plate boundary.

## Answer Questions 17-22 based on the maps and graph of the Hawaiian Islands Hotspot:

Map of the Main Islands of Hawaii



Graph comparing Average Ages of Rock vs. Distance from the island of Hawaii

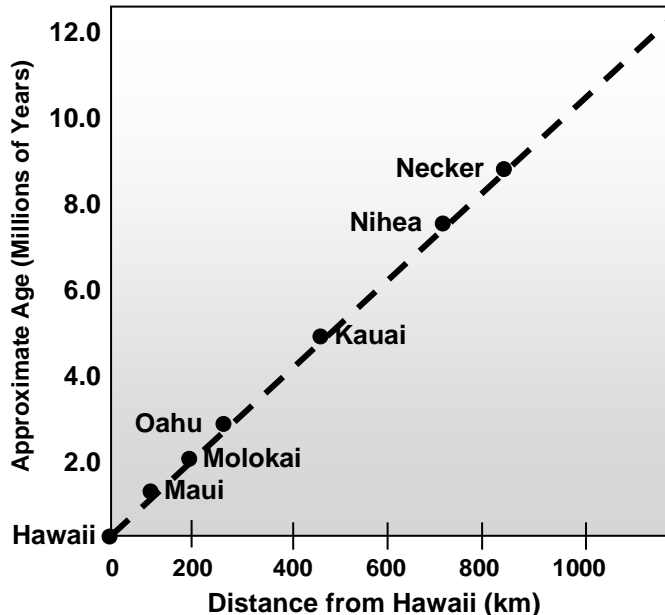
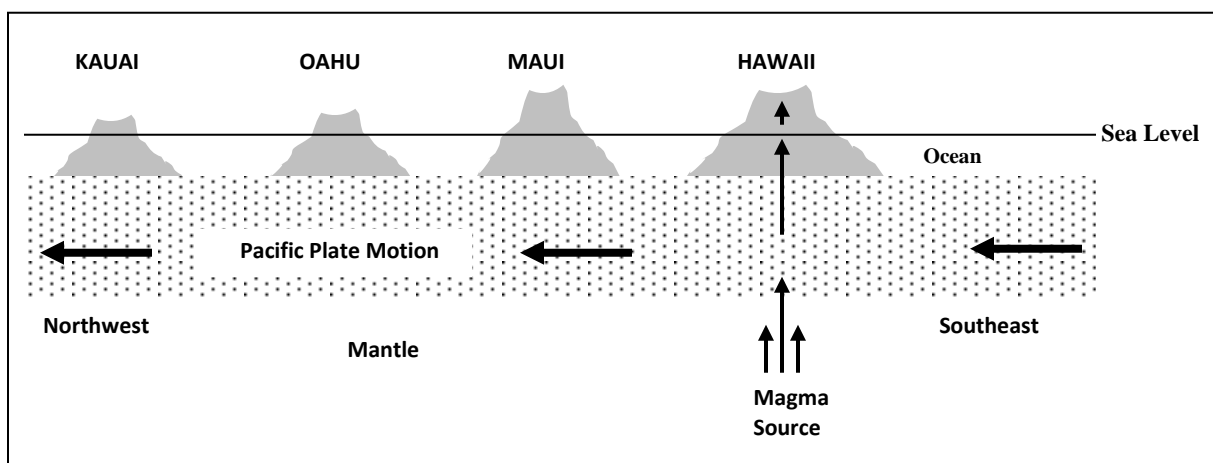


Plate Cross Section



Not to Scale

17. If an island were located 700 km from Hawaii, what would be the expected age of the rocks on the island?  
~ 7 million yrs old
18. How far away from Hawaii would an island be if the rocks on the island were dated at 4.0 million years?  
~ 400 – 500 km
19. What evidence is there on the graph that Hawaii is currently over the hot spot?  
The rocks are new and currently forming.
20. Which island was over the hot spot 5.0 million years ago?  
Kauai
21. According to the graph, which island is the oldest?  
Necker
22. In the future...due to the current plate motion, in which compass direction will the next island of Hawaii form?  
To the Southeast of Hawaii

23. Other than Hawaii, give three other examples of hot spots that can be found on Earth.

Iceland, Bouvet, Canary island, Yellowstone, Tasman, Galapagos, St. Helena, Easter Island

24. Discuss how the theory of Plate Tectonics can explain the line of Caldera craters at the Yellowstone Hotspot.

The plate has moved over the hot spot, leaving a trail of volcanoes (calderas) behind

25. What is thought to be the driving force that moves the lithospheric plates?

Convection currents in the mantle

26. On the diagram below use a series of curved arrows to show the correct motion of the mantle convection currents at the divergent and convergent boundaries.

