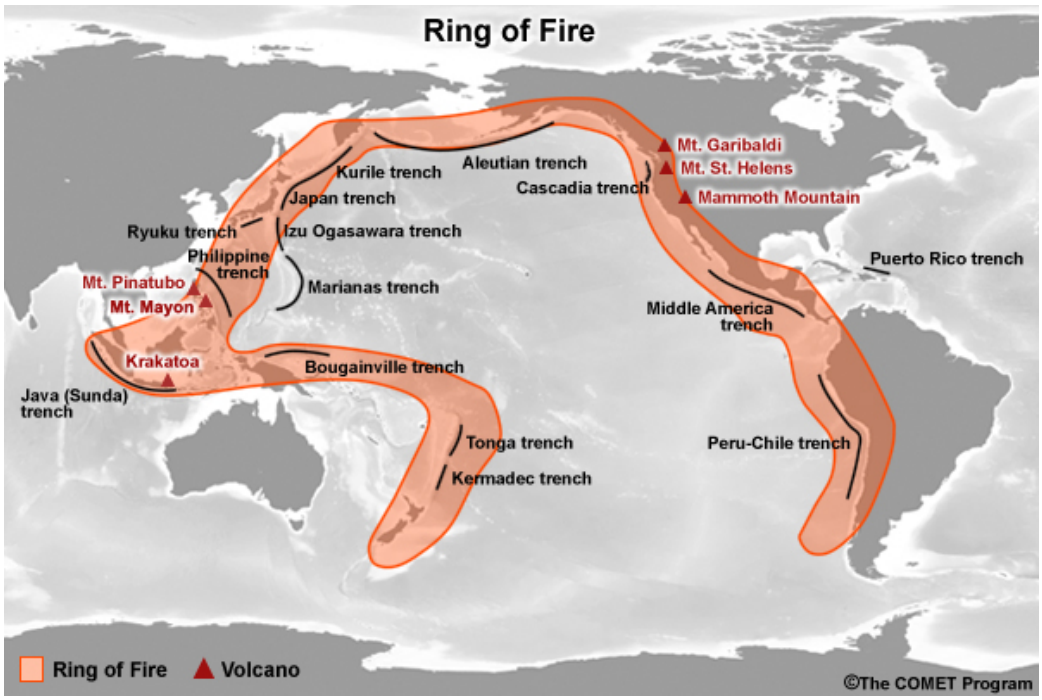
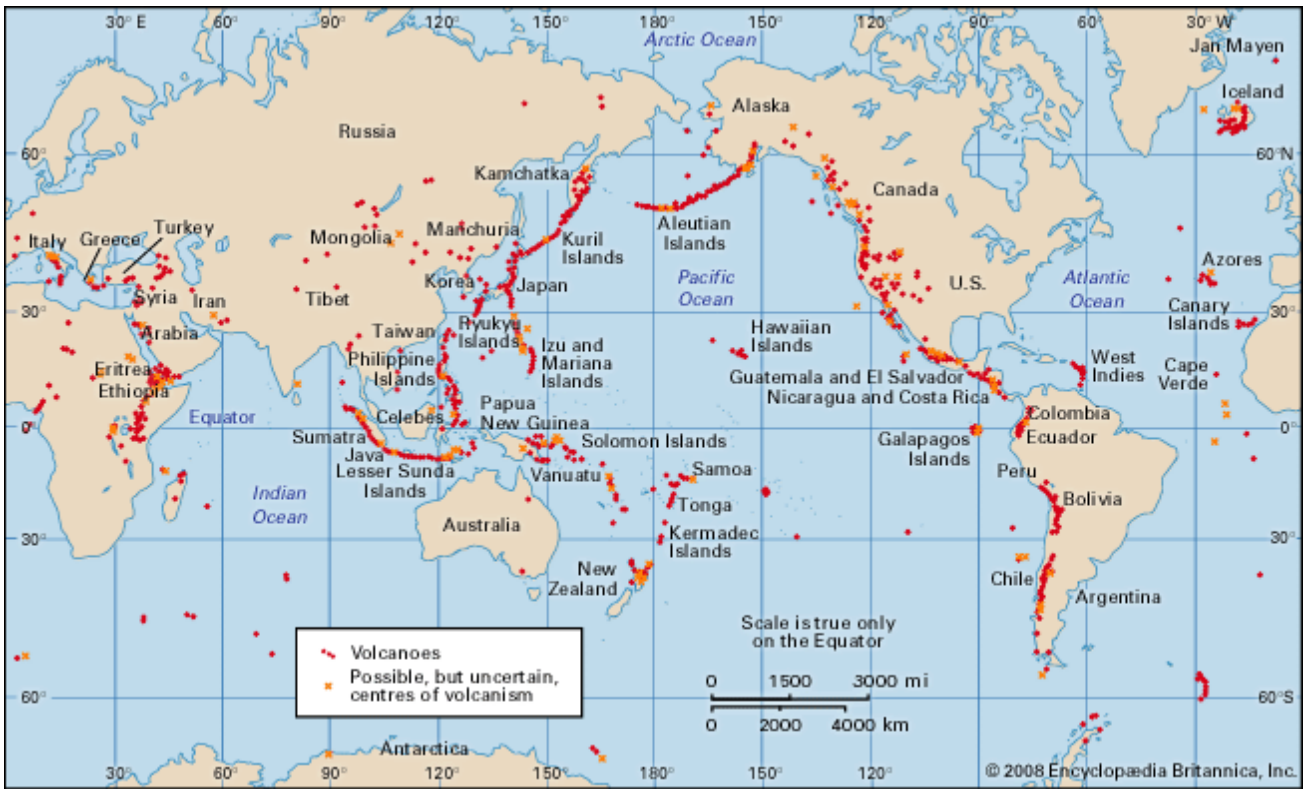
NAME _____ SCIENCE, Period _____ DATE _____

A. Use this map to help you add trenches to your Tectonic Plates Map. VVVVVVVVVV
Ocean trenches form at a special kind of convergent plate boundary known as a subduction zone.

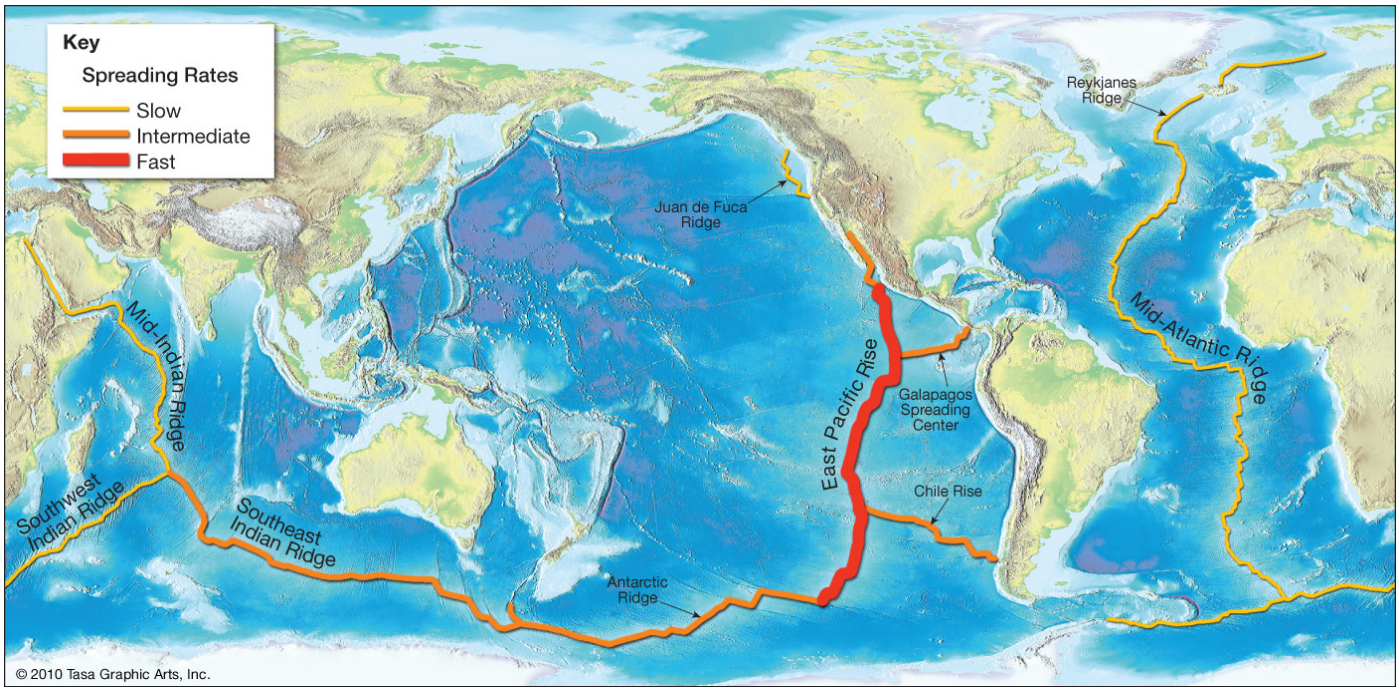


B Use this map to help you add volcanoes to the Tectonic Plates map. Just add the major chains of volcanoes. You don't have to draw in every single one! XXXXXXX
Volcanoes at the edge of tectonic plates form at a special kind of convergent plate boundary known as a subduction zone.



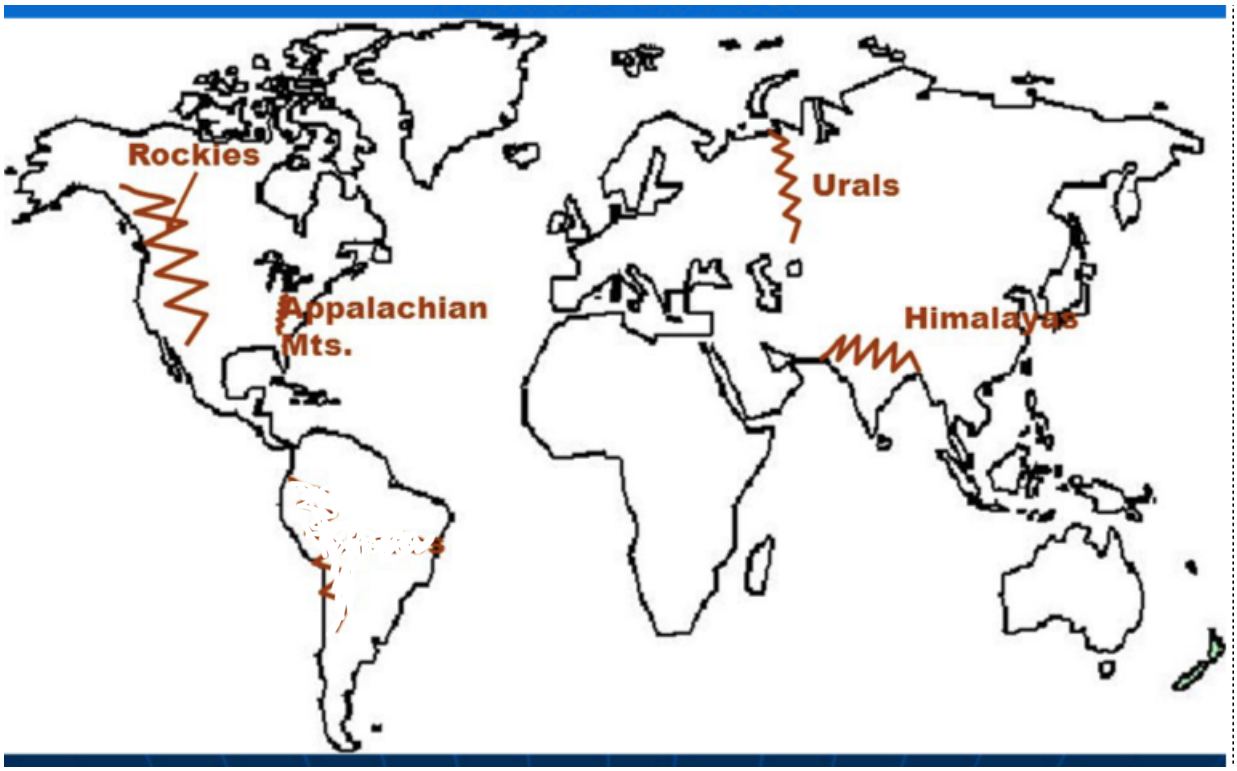
NAME _____ SCIENCE, Period _____ DATE _____

C. Use this map to help you add mid-ocean ridges to your map.
Mid-ocean ridges form when two plates separate at a divergent plate boundary.



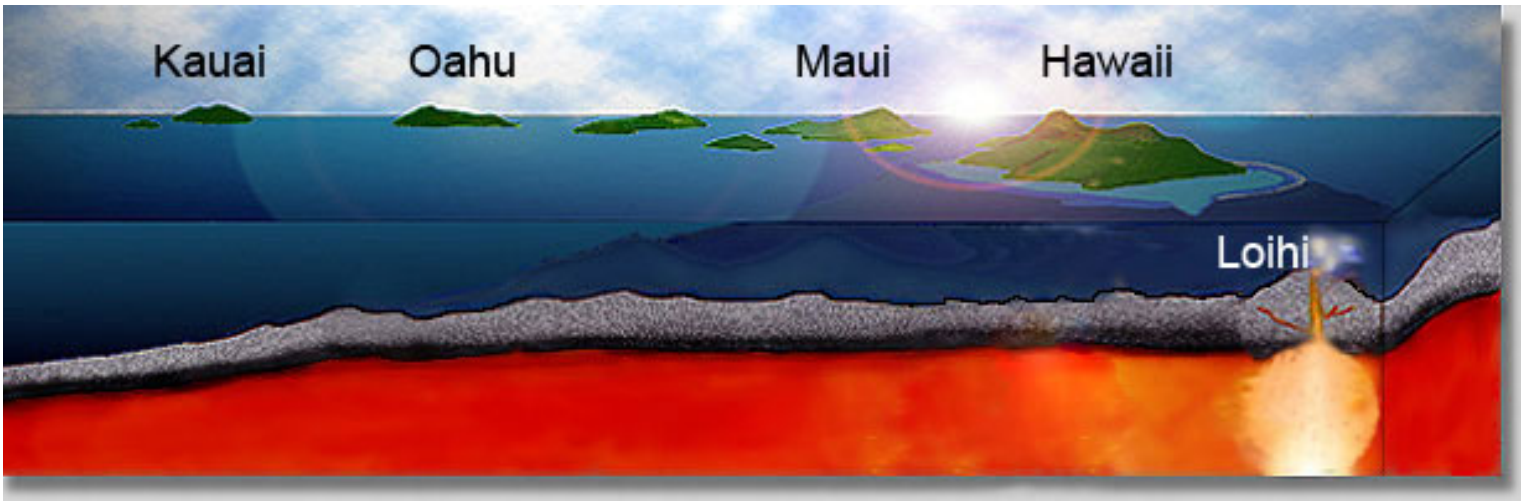
D. Use this map to help you add non-volcanic mountains to your map. ^^^^^^^^^^^^

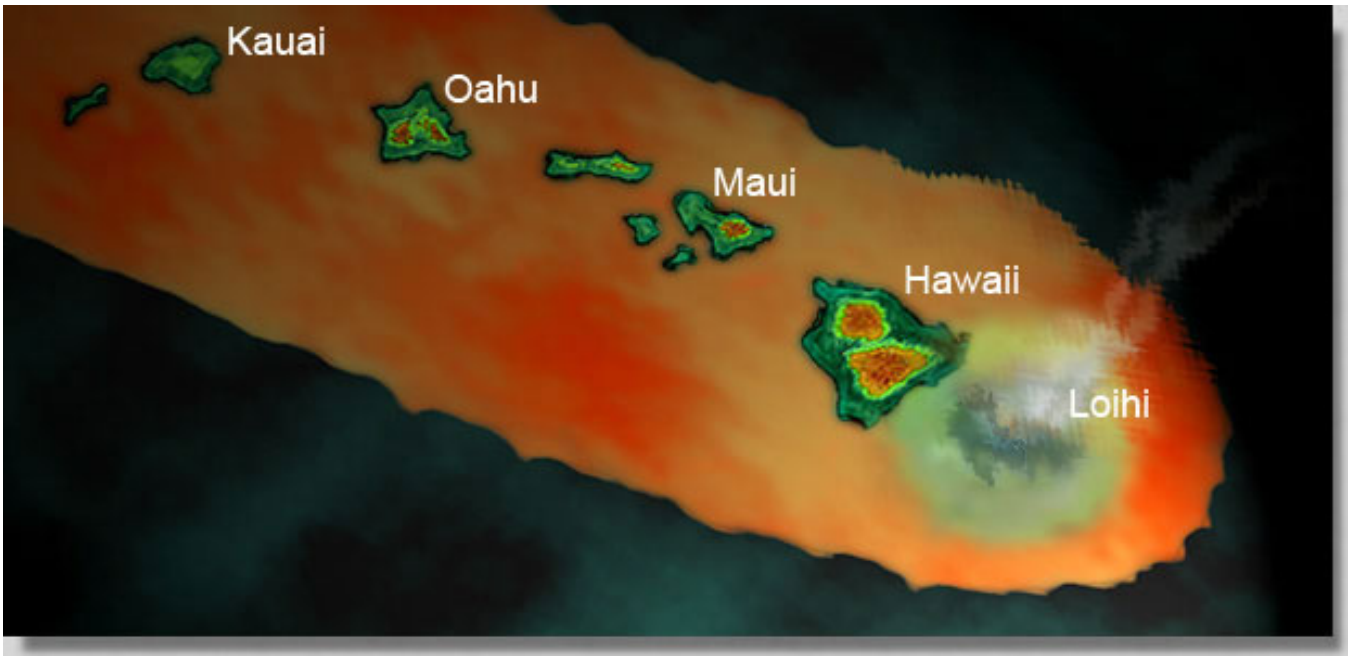
Non-volcanic mountains can form when two continents collide at a C-C convergent plate boundary.



NAME _____ SCIENCE, Period _____ DATE _____

E. It's time to figure out which way the plates are moving. Let's start with the Pacific Plate. Find Hawaii in the middle of the plate. Read about the Hawaiian Islands, and then use an arrow to show the direction of movement of the Pacific Plate over the hot spot.





Hawaii is geologically a unique place *on Earth because it is caused by a 'hot spot.' Most islands are found at tectonic plate boundaries either from spreading centers (like Iceland) or from subduction zones (like the Aleutian Islands). There are few 'hot spots' on Earth and the one under Hawaii is right in the middle of one of the largest crustal plates on Earth - the Pacific Plate. A geologic 'hot spot' is an area in the middle of a crustal plate where volcanism occurs. It is easy to geologically explain the volcanism at plate spreading centers and subduction zones but not as easy to explain a 'hot spot.' The molten magma breaks through the crustal plate (theories describe this as either from a weak/thin part of the plate or a particularly hot part of the molten magma). A hot spot under the American plate is why Yellowstone National Park has geysers and other*

thermal features. If the hot spot is under the seafloor (as it is in Hawaii) it produces undersea volcanoes. Some of these volcanoes build up to the surface of the ocean and become islands. Over millions of years the plate may move across the 'hot spot' and the original volcano become extinct but a new volcano will begin to form in the area of the 'hot spot.'

The northwest moving Pacific Plate *has moved across the 'hot spot' that created the Hawaiian Islands for millions of years. This movement has left the northwest trending island chain (of over 20 islands and atolls) we call Hawaii. As islands move northwest, away from the 'hot spot,' they begin to erode and become volcanically inactive. Over time the island may erode so much it is no longer an island but an underwater seamount. Kauai is the oldest of the main Hawaiian Islands now, having formed some 5 million years ago, with its volcano considered to be extinct and fully in the process of erosion. Oahu is next, its volcanism is considered to be inactive. Then Maui with its Haleakala crater that could still come to life one more time. And the youngest island is the 'Big Island' of Hawaii itself, with surface lavas all less than one million years old. It still has active volcanism. On the seafloor 20 miles to the southeast of Hawaii is an active volcanic area with periodic eruptions. This area is called Loihi and will be the site of the next Hawaiian Island if geologic processes continue as they have for millions of years but it may be over 10,000 years before this happens.*