Growing and Shrinking Oceans

You are already familiar with the idea of divergent boundaries. Divergent boundaries are the result of two tectonic plates that are pulling apart. When this happens under the ocean, magma comes up to the surface, cools, hardens, and forms new rock along the ocean floor. Older rock gets pushed further and further away. This is called “seafloor spreading” and it causes oceans to get bigger, while continents get pushed further and further apart.

So if new crust is being formed, why doesn’t the Earth grow larger? Well, that’s because even while new rock is being created, older rock is being destroyed at about the same rate. You learned that subduction is when one tectonic plate (usually a thin oceanic plate) gets forced below another tectonic plate (such as a thicker continental plate). As the subducted crust gets pushed deeper and deeper below the Earth, it gets hotter and hotter and eventually melts back into magma.

Due to the processes of seafloor spreading and subduction, which happen at the same time in different parts of the Earth, rock is constantly being both created and destroyed. Because of this, the Atlantic Ocean is growing larger and wider every year, while the Pacific Ocean is sinking.

ASSIGNMENT:
Analyze the two diagrams on the next page, and make sure you understand what is happening that is making the Atlantic Ocean get bigger, while the Pacific Ocean gets smaller. Be sure that you can explain it using vocabulary about plate boundaries!

In your science notebook, sketch each diagram and label/explain what is happening.

FINAL REFLECTION: Write a paragraph (minimum 5 complete sentences) explaining:
- What causes seafloor spreading
- How you can identify the locations of newer crust and older crust along the ocean floor (which is closer to the divergent boundary, and which is further away)
- Why causes crust to get destroyed
- Why the Atlantic Ocean is getting bigger and the Pacific Ocean is getting smaller
- What you think the two oceans will look like in 100 million years
All around the edges of the Pacific Ocean, ocean crust is being subducted beneath continental crust. As the oceanic crust is pushed down, its temperature increases, until it melts back into hot, molten magma.