

Part A – Ocean Basin Topography

Understanding the topography of the ocean basins has been critical to developing the theory of plate tectonics. In the mid-20th century oceanographic research vessels mapped the sea floor and by the 1960s research concerning rock magnetism, the cause and distribution of earthquakes, and the age of ocean sediments lead to the development of the theory of plate tectonics.

Various features are located along the continental margins and ocean basin floor. Study the World Ocean Floor maps of the Pacific Ocean and the Atlantic Ocean, and The World: Physical map to answer the following questions. (Refer to your textbook as needed.)

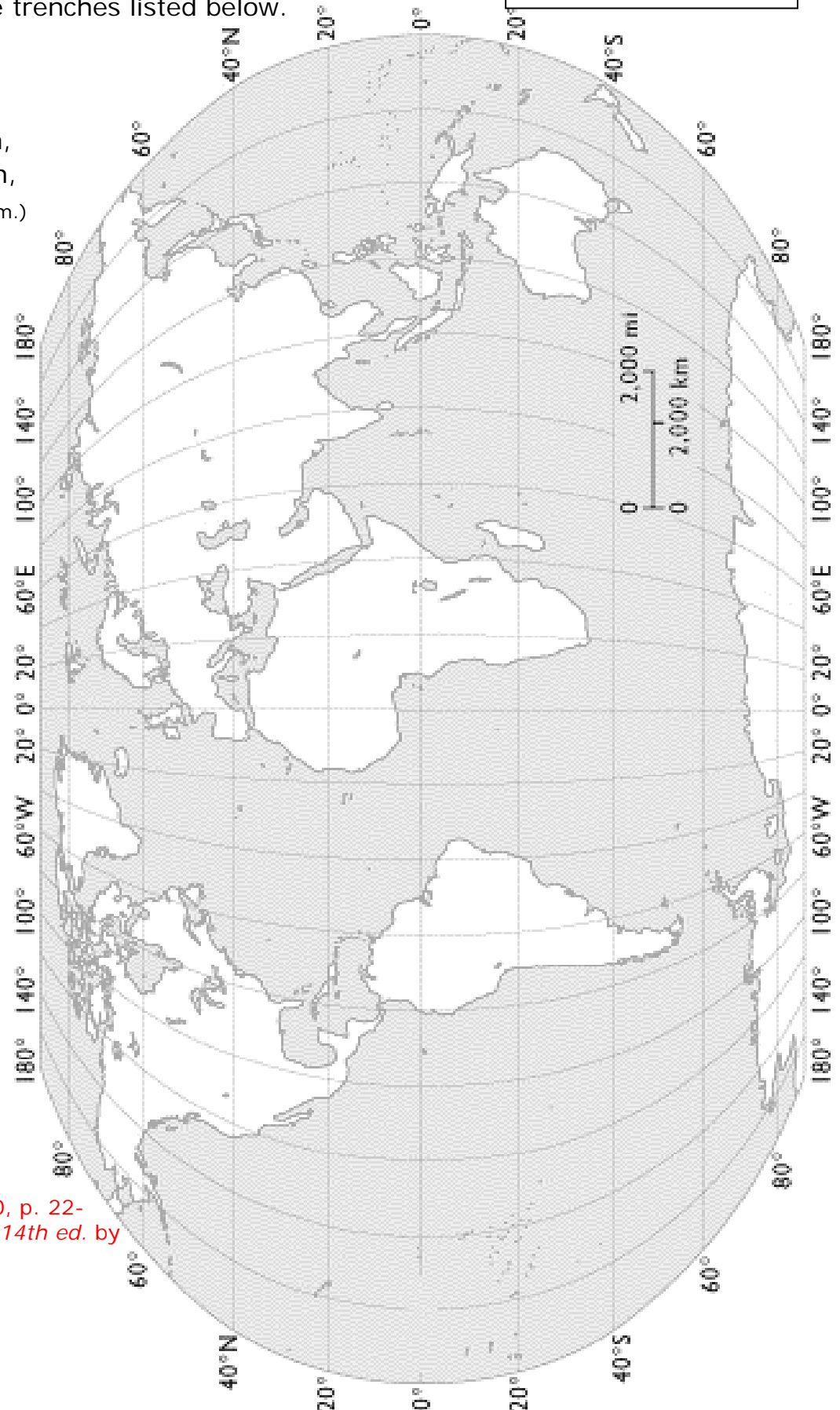
1. From the Atlantic Ocean map, what is the approximate average ocean depth along the continental shelves bordering North America?
2. Approximately how high above the adjacent ocean floor does the Mid-Atlantic Ridge rise? (Hint: You have to subtract to get this answer.)
3. Give an average depth for a sampling of trenches from the Pacific Ocean map, to approximate how deep most of the deep-ocean trenches are.
4. Write a brief statement comparing the width of the continental shelf along the east coast, west coast, and gulf coast of North America, as viewed on The World: Physical map, or comparing the Atlantic Ocean map and the Pacific Ocean map.
5. How would you describe the general topography of the abyssal plains? What do you suppose is the composition of the abyssal plains?
6. What do seamounts represent? What is the generally accepted explanation for the numerous seamounts that dot the Pacific Ocean deep-ocean basin floor?

On the world map below, **draw the global ocean ridge system in red.**

Locate on the map and **draw a blue line** to represent the trenches listed below.

Label each trench with its name.

Puerto Rico,
South Sandwich,
Middle American,
(same as Central Am.)
Peru-Chile,
Aleutian,
Kuril,
Japan,
Mariana,
Tonga,
Kermadec,
Java
Ryukyu



(Hint: see Fig. 1.20, p. 22-23, *Earth Science, 14th ed.* by Tarbuck, et al.)