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## Review Questions

1. How did the view of the ocean by early Mediterranean cultures influence the naming of planet "Earth"?
2. What is the difference between an ocean and a sea? Name the seven seas (both ancient and modern versions).
3. While the Arabs dominated the Mediterranean region during the Middle Ages, what were the most significant ocean-related events taking place in northern Europe?
4. Describe the important events in oceanography that occurred during the Age of Discovery in Europe.
5. List some of the major achievements of Captain James Cook.
6. Discuss the origin of the solar system using the nebular hypothesis.
7. How was Protoearth different from Earth today?
8. What is density stratification, and how did it change Protoearth?

9. Discuss how the chemical composition of Earth's interior affects its physical properties. Include specific examples.

10. What are some differences between the lithosphere and asthenosphere?

11. What is the origin of Earth's oceans, and how is it related to the composition of Earth's atmosphere?

12. Have the oceans always been salty? Why or why not?

13. How does the presence of oxygen in our atmosphere affect the amount of ultraviolet radiation that reaches Earth's surface?

14. What was Stanley Miller's experiment, and what did it help determine?

15. Earth has had three atmospheres (initial, early, and present). Describe the composition and origin of each one.

16. Describe how the half-life of radioactive materials can be used to determine the age of a rock through radiometric age dating.

## Critical Thinking Exercises

1. Describe the development of navigation techniques that have enabled sailors to navigate in the open ocean far from land.
2. Using a diagram, illustrate the method used by Pytheas to determine latitude in the Northern Hemisphere.
3. What is the difference between a fact and a theory? Can either (or both) be revised?

4. Briefly comment on the phrase "scientific certainty." Is it a combination of contradictory words, or are scientific theories considered to be the absolute truth?

5. Construct a representation of the geologic time scale, using an appropriate quantity of any substance (other than dollar bills or coins). Be sure to indicate some of the major changes that have occurred on Earth since its origin.

## Oceanography on the Web

Visit the *Essentials of Oceanography* Online Study Guide for Internet resources, including chapter-specific quizzes to test your understanding and Web links to further your exploration of the topics in this chapter.

The *Essentials of Oceanography* Online Study Guide is at <http://www.mygeoscienceplace.com/>.