***Essentials of Oceanography, 13e* (Trujillo)**
Chapter 1 Introduction to Planet "Earth"

Section 1.1

1) The four principal ocean basins (plus an additional ocean) on Earth are the _____.
A) Atlantic, Arctic, Mediterranean, Southern, and Pacific Oceans
B) Atlantic, Pacific, Indian, Southern, and Arctic Oceans
C) Atlantic, Antarctic, Southern, Mediterranean, and Pacific Oceans
D) Antarctic, Caspian, Southern, Indian, and Pacific Oceans
E) Antarctic, Arctic, Indian, Pacific, and Southern Oceans
Answer: B
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

2) The largest of the ocean basins, which currently covers more than half of the ocean surface, is the _____.
A) Arctic Ocean
B) Atlantic Ocean
C) Indian Ocean
D) Pacific Ocean
E) Southern Ocean
Answer: D
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

3) The average depth of the world's oceans is approximately _____.
A) 11,022 meters (36,161 feet)
B) 840 meters (2,756 feet)
C) 3,682 meters (12,080 feet)
D) 2,172 meters (7,126 feet)
E) 5,280 meters (17,323 feet)
Answer: C
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
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4) Which of the following is TRUE concerning the deepest part of the ocean?
A) The bottom of this trench has never been reached by a submersible.
B) The deepest part of the ocean is located in a trench off the coast of Japan.
C) The depth of this trench exceeds the height of Mount Everest.
D) The depth of this trench is estimated at 15,000 meters.
E) This trench is called the Philippine Trench.
Answer: C
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
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5) Which ocean is the smallest and shallowest?
A) Atlantic
B) Arctic
C) Indian
D) Pacific
E) Southern
Answer: B
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

6) Which of the following is **not** a sea?
A) The Mediterranean Sea
B) The Adriatic Sea
C) The Red Sea
D) The Yellow Sea
E) The Black Sea
Answer: D
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

7) The oceans cover approximately _____ percent of the Earth's surface.
A) 50
B) 60
C) 70
D) 80
E) 90
Answer: C
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

8) Which ocean is the smallest?
A) Arctic Ocean
B) Atlantic Ocean
C) Indian Ocean
D) Pacific Ocean
E) Southern Ocean
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

9) Today, more than _____ seas, bays, and gulfs are recognized worldwide.
A) 50
B) 100
C) 150
D) 200
E) 250
Answer: B
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
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10) The deepest part of the ocean is the Mariana Trench; it has been visited by humans twice in which two years?
A) 1930 and 1998
B) 1940 and 2000
C) 1950 and 2010
D) 1960 and 2012
E) 1970 and 2014
Answer: D
Diff: 3
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

11) Examine the five words and/or phrases and determine the relationship among the majority of words/phrases. Choose the one option that does **not** fit the pattern.
A) Mediterranean
B) Arctic
C) Atlantic
D) Indian
E) Pacific
Answer: A
Diff: 4
Bloom's Taxonomy: Applying/Analyzing
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

12) Examine the five words and/or phrases and determine the relationship among the majority of words/phrases. Choose the one option that does **not** fit the pattern.
A) Adriatic
B) Black
C) Caspian
D) Indian
E) Mediterranean
Answer: D
Diff: 4
Bloom's Taxonomy: Applying/Analyzing
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
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13) Our world ocean can be divided into four principal oceans plus an additional ocean, based on the _____ of the ocean basins and the _____ of the continents.
A) shape; position
B) position; latitude
C) size; shape
D) depth; elevation
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
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14) Which of the following statements about the Pacific Ocean is TRUE?
A) The Pacific Ocean is about three times larger than the next largest ocean.
B) The Pacific Ocean covers more than two-thirds of the ocean surface area on Earth.
C) The Pacific Ocean is the second largest geographic feature on the planet.
D) The Pacific Ocean spans more than one-half of Earth's entire surface.
E) All of the continents could fit into the space occupied by the Pacific Ocean.
Answer: E
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

15) Which ocean covers more than half of the ocean surface area on Earth?
A) The Pacific Ocean
B) The Atlantic Ocean
C) The Indian Ocean
D) The Southern Ocean
E) The Antarctic Ocean
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

16) Which ocean is the single largest geographic feature on the planet?
A) The Pacific Ocean
B) The Atlantic Ocean
C) The Indian Ocean
D) The Southern Ocean
E) The Antarctic Ocean
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

17) Which ocean is the deepest ocean in the world?
A) The Pacific Ocean
B) The Atlantic Ocean
C) The Indian Ocean
D) The Southern Ocean
E) The Antarctic Ocean
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

18) Which ocean's name comes from a word meaning peace?
A) The Pacific Ocean
B) The Atlantic Ocean
C) The Indian Ocean
D) The Arctic Ocean
E) The Antarctic Ocean
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

19) Which ocean is similar in size and average depth to the Indian Ocean?
A) The Pacific Ocean
B) The Atlantic Ocean
C) The Indian Ocean
D) The Arctic Ocean
E) The Southern Ocean
Answer: B
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

20) Which ocean is mostly, but not entirely, in the southern hemisphere?
A) The Pacific Ocean
B) The Atlantic Ocean
C) The Indian Ocean
D) The Arctic Ocean
E) The Antarctic Ocean
Answer: C
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

21) Which ocean is the shallowest ocean in the world?
A) The Pacific Ocean
B) The Atlantic Ocean
C) The Indian Ocean
D) The Arctic Ocean
E) The Antarctic Ocean
Answer: D
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
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OSLP: 1 The Earth has one big ocean with many features.

22) Based on definition, it is more appropriate to consider which ocean as a sea?
A) The Pacific Ocean
B) The Atlantic Ocean
C) The Indian Ocean
D) The Arctic Ocean
E) The Antarctic Ocean
Answer: D
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
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23) Which ocean is actually a part of three other oceans?
A) The Pacific Ocean
B) The Atlantic Ocean
C) The Indian Ocean
D) The Arctic Ocean
E) The Southern Ocean
Answer: E
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

24) Which of the following modern seven seas was also recognized by pre-15th century Europeans as one of their seven seas?
A) The Red Sea
B) The Mediterranean Sea
C) The Black Sea
D) The Caspian Sea
E) The Indian Ocean
Answer: E
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

25) Which ocean was considered by 14th century Europeans to be one of the seven seas?
A) The Pacific Ocean
B) The Atlantic Ocean
C) The Indian Ocean
D) The Arctic Ocean
Answer: C
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

26) Describe the difference between an **ocean** and a **sea**.
Answer: The world ocean is the large body of salt water that covers the majority of the earth's surface (roughly 71%). The world ocean is customarily divided into smaller ocean basins that are bordered by continents or latitude lines. One example is the Atlantic Ocean, which is bordered on the west by North and South America, to the east by Europe and Africa, to the north by the Arctic Circle (60°N), and to the south by the Antarctic Circle (60°S). In contrast, a sea is a smaller subdivision of the ocean surrounded by land such as the Black Sea in Eastern Europe.
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.1 How Are Earth's Oceans Unique?
Essent'l Concept: 1.1 Compare the characteristics of Earth's oceans
OSLP: 1 The Earth has one big ocean with many features.

Section 1.2

1) The first humans from Western Hemisphere known to have developed the art of navigation were the _____.
A) Polynesians
B) Greeks
C) Vikings
D) Phoenicians
E) New Zealanders
Answer: D
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

2) The method of determining latitude in the Northern Hemisphere by measuring the angle between an observer's line of site to the North Star and line of site to the northern horizon was developed by _____.
A) Pytheas
B) Eratosthenes
C) Herodotus
D) Seneca
E) Ptolemy
Answer: A
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
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3) The first person we are aware of who determined the circumference of the Earth using trigonometry and the angle of sunlight at Alexandria, Egypt, was _____.
A) Pytheas
B) Eratosthenes
C) Herodotus
D) Seneca
E) Ptolemy
Answer: B
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
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4) Most of the explorations by northern and western Europeans during the Middle (Dark) Ages were undertaken by _____.
A) Italy
B) Portugal
C) Vikings of Scandinavia
D) France
E) Spain
Answer: C
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

5) The European "Age of Discovery" began with _____.
A) Christopher Columbus' discovery of the "New World"
B) Ferdinand Magellan's circumnavigation of the globe
C) Phoenician exploration of the Mediterranean
D) Polynesian colonization of Pacific Islands
E) Viking voyages to North America
Answer: A
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

6) The European "Age of Discovery" ended with _____.
A) Christopher Columbus' discovery of the "New World"
B) Ferdinand Magellan's circumnavigation of the globe
C) Phoenician exploration of the Mediterranean
D) Polynesian colonization of Pacific Islands
E) Viking voyages to North America
Answer: B
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
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7) Which of the following was **not** a ship of Captain James Cook's?
A) Adventure
B) Discovery
C) Endeavour
D) Resolution
Answer: B
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
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8) What is scurvy?
A) Vitamin A deficiency
B) Vitamin B deficiency
C) Vitamin C deficiency
D) Vitamin D deficiency
E) Vitamin E deficiency
Answer: C
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
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9) Captain James Cook's second voyage took place during which years?
A) 1750-1754
B) 1768-1771
C) 1772-1775
D) 1776-1780
E) 1780-1783
Answer: C
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

10) Which explorer was **not** known in the Age of the Discovery in Europe?
A) John Cabot
B) Christopher Columbus
C) Vasco da Gama
D) Leif Eriksson
E) Ferdinand Magellan
Answer: D
Diff: 3
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

11) Which European navigator was known for using a simple method for determining latitude in the Northern Hemisphere?
A) Phoenicians
B) Erathosthenes
C) Claudius Ptolemy
D) Pytheas
Answer: D
Diff: 3
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
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12) The Library of Alexandria was founded by Alexander the Great, where is it located?
A) Egypt
B) Turkey
C) Syria
D) Libya
E) Greece
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

13) Examine the five words and/or phrases and determine the relationship among the majority of words/phrases. Choose the one option that does **not** fit the pattern.
A) Eratosthenes
B) Herodotus
C) Ptolemy
D) Pytheas
E) Magellan
Answer: E
Diff: 4
Bloom's Taxonomy: Applying/Analyzing
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 1 The Earth has one big ocean with many features.

14) Examine the five words and/or phrases and determine the relationship among the majority of words/phrases. Choose the one option that does **not** fit the pattern.
A) Vasco de Gama
B) Ptolemy
C) Christopher Columbus
D) John Cabot
E) Ferdinand Magellan
Answer: B
Diff: 4
Bloom's Taxonomy: Applying/Analyzing
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 1 The Earth has one big ocean with many features.

15) Archeological evidence suggests that boat technology was developed about _____ years ago.
A) 50,000
B) 5,000
C) 500,000
D) 4,000,000
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

16) Which of the following parts of Polynesia was populated last?
A) Easter Island
B) Fiji, Tonga, and Samoa
C) Marquesas
D) Hawaiian Islands
E) New Zealand
Answer: A
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

17) Which of the following parts of Polynesia was populated first?
A) Easter Island
B) Fiji, Tonga, and Samoa
C) Marquesas
D) Hawaiian Islands
E) New Zealand
Answer: B
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

18) The first recorded circumnavigation of Africa was made by the _____.
A) Phoenicians
B) Greeks
C) Chinese
D) Polynesians
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

19) Who is credited with being the first person to accurately determine Earth's circumference?
A) Eratosthenes
B) Erik Thorvaldson
C) Claudius Ptolemy
D) Christopher Columbus
E) Pytheas
Answer: A
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

20) Which of the following Vikings is credited with discovering Greenland?
A) Erik Thorvaldson
B) Bjarni Herjolfsson
C) Leif Eriksson
D) Thor Heyerdahl
Answer: A
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

21) Who of the following is thought to be the first Viking to have seen what is now called Newfoundland?
A) Erik Thorvaldson
B) Bjarni Herjolfsson
C) Leif Eriksson
D) Thor Heyerdahl
E) Prince Henry the Navigator
Answer: B
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

22) Who sailed from Europe around the tip of Africa to India and established a new trade route?
A) Giovanni Caboto
B) Ferdinand Magellan
C) Juan Sebastian del Caño
D) Vasco Nunez de Balboa
E) Vasco da Gama
Answer: E
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

23) Who is credited with being the first European to see the Pacific Ocean?
A) Ferdinand Magellan
B) Juan Sebastian del Caño
C) Vasco Nunez de Balboa
D) James Cook
E) Vasco da Gama
Answer: C
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

24) Who was killed in Hawaii during his last sea voyage after a skirmish with local people?
A) Prince Henry the Navigator
B) Giovanni Caboto
C) Ferdinand Magellan
D) James Cook
E) Vasco da Gama
Answer: D
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

25) Who was killed in the Philippines during his last sea voyage after a skirmish with local people?
A) Prince Henry the Navigator
B) Giovanni Caboto
C) Ferdinand Magellan
D) James Cook
E) Vasco da Gama
Answer: C
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

26) Who left Spain in September 1519 and became the first person to complete a circumnavigation of the globe when he returned to Spain three years later?
A) Giovanni Caboto
B) Ferdinand Magellan
C) Juan Sebastian del Caño
D) Vasco Nunez de Balboa
E) Vasco da Gama
Answer: C
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

27) Prior to 1768, which of the following claimed the most human lives at sea?
A) Scurvy
B) Contagious disease
C) Gunfire
D) Shipwreck
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 7 The ocean is largely unexplored.

28) List some of the major achievements of Captain James Cook.
Answer: Captain James Cook (1728-1779) was a British navigator and explorer who undertook three voyages of scientific discovery from 1768-1779. Cook explored the Southern Ocean around Antarctica in an attempt to find the continent. He also extensively explored the Pacific Ocean and mapped previously unknown island groups, including Hawaii. Cook initiated systematic sampling of subsurface water temperatures, measured winds and currents, and took soundings of bottom depths. Cook also used John Harrison's chronometer as a means of determining longitude at sea.
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
OSLP: 1 The Earth has one big ocean with many features.

29) Discuss advances in oceanographic navigation occurring over the course of human history.
Answer: Early mariners used the Sun and Moon, the nighttime stars, the behavior of marine organisms, various ocean properties to navigate. Early Polynesian navigators sailed to small islands located at great distances across the Pacific Ocean with the help of an ingenious device called a stick chart, a map that depicts the dominant pattern of ocean waves. European sailors determined latitude at sea by measuring the position of the Sun and stars using a sextant. It wasn't until the 1730s that determining longitude as sea was possible when John Harrison created chronometers, accurate clocks that were not affected by the swaying of the boat. Today, navigating at sea relies on the Global Positioning System (GPS) satellites that send continuous radio signals to the surface.
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.2 How Was Early Exploration of the Oceans Achieved?
Essent'l Concept: 1.2 Discuss how early exploration of the oceans was achieved
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Section 1.3

1) What does NOAA stand for?
A) National Oceanic and Atmospheric Administration
B) National Oceanic and Atmospheric Association
C) National Oceanic and Atlas Association
D) National Oceanic and Atlas Administration
Answer: A
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.3 What Fields of Science Does Oceanography Include?
Essent'l Concept: 1.3 Explain why oceanography is considered an interdisciplinary science
OSLP: 6 The ocean and humans are inextricably interconnected.

2) When was the term "oceanography" first coined?
A) 1850s
B) 1870s
C) 1890s
D) 1900s
E) 2000s
Answer: B
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.3 What Fields of Science Does Oceanography Include?
Essent'l Concept: 1.3 Explain why oceanography is considered an interdisciplinary science
OSLP: 6 The ocean and humans are inextricably interconnected.

3) Oceanography is divided into four different academic disciplines or subfields of study. Which one is **not** mentioned in the textbook?
A) Biological oceanography
B) Chemical oceanography
C) Geological oceanography
D) Historical oceanography
E) Physical oceanography
Answer: D
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.3 What Fields of Science Does Oceanography Include?
Essent'l Concept: 1.3 Explain why oceanography is considered an interdisciplinary science
OSLP: 6 The ocean and humans are inextricably interconnected.

4) Oceanography is considered to be an interdisciplinary science with a chemistry component. Which of the following is **not** a part of chemistry?
A) Microbiology
B) Dissolved components
C) Temperature dependence
D) Stratification/density
E) Chemical tracers
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.3 What Fields of Science Does Oceanography Include?
Essent'l Concept: 1.3 Explain why oceanography is considered an interdisciplinary science
OSLP: 6 The ocean and humans are inextricably interconnected.

5) The study of the structure of the sea floor and how the sea floor has changed through time is an example of _____ oceanography.
A) archaeological
B) biological
C) chemical
D) geological
E) physical
Answer: D
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.3 What Fields of Science Does Oceanography Include?
Essent'l Concept: 1.3 Explain why oceanography is considered an interdisciplinary science
OSLP: 6 The ocean and humans are inextricably interconnected.

6) The study of the transmission of light and sound in the oceans is an example of _____ oceanography.
A) archaeological
B) biological
C) chemical
D) geological
E) physical
Answer: E
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.3 What Fields of Science Does Oceanography Include?
Essent'l Concept: 1.3 Explain why oceanography is considered an interdisciplinary science
OSLP: 6 The ocean and humans are inextricably interconnected.

Section 1.4

1) A tentative, testable statement about the general nature of a phenomenon is called a(n) _____.
A) guess
B) law
C) observation
D) hypothesis
E) theory
Answer: D
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.4 What Is the Process of Science and the Nature of Scientific Inquiry?
Essent'l Concept: 1.4 Describe the process of science and the nature of scientific inquiry
OSLP: 1 The Earth has one big ocean with many features.

2) Plate tectonics and evolution, which are held with a high degree of confidence because of rigorous testing and verification, are examples of _____.
A) guesses
B) laws
C) observations
D) hypotheses
E) theories
Answer: E
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.4 What Is the Process of Science and the Nature of Scientific Inquiry?
Essent'l Concept: 1.4 Describe the process of science and the nature of scientific inquiry
OSLP: 1 The Earth has one big ocean with many features.

3) _____ are events and phenomena that we can detect with our senses.
A) Guesses
B) Laws
C) Observations
D) Hypothesis
E) Theories
Answer: C
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.4 What Is the Process of Science and the Nature of Scientific Inquiry?
Essent'l Concept: 1.4 Describe the process of science and the nature of scientific inquiry
OSLP: 1 The Earth has one big ocean with many features.

4) Examine the five words and/or phrases and determine the relationship among the majority of words/phrases. Choose the one option that does **not** fit the pattern.
A) Observation
B) Hypothesis
C) Belief
D) Theory
E) Testing
Answer: C
Diff: 4
Bloom's Taxonomy: Applying/Analyzing
Section: 1.4 What Is the Process of Science and the Nature of Scientific Inquiry?
Essent'l Concept: 1.4 Describe the process of science and the nature of scientific inquiry
OSLP: 1 The Earth has one big ocean with many features.

5) Differentiate between a **hypothesis** and a **theory**.
Answer: A hypothesis is a stated relationship between observed phenomena that can be tested; in other words, it is a tentative explanation. A theory is a relationship between observed phenomena (variables) that has withstood repeated independent testing over time and has broad explanatory power for an observed pattern or process.
Diff: 2
Bloom's Taxonomy: Applying/Analyzing
Section: 1.4 What Is the Process of Science and the Nature of Scientific Inquiry?
Essent'l Concept: 1.4 Describe the process of science and the nature of scientific inquiry
OSLP: 1 The Earth has one big ocean with many features.

Section 1.5

1) The Sun and the rest of the solar system formed about 5 billion years ago from a huge cloud of dust and gas called a _____.
A) nebula
B) solar system
C) protoplanet
D) quasar
E) supernova
Answer: A
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

2) The nebular hypothesis suggests that _____.
A) all bodies in the solar system formed from an enormous gas cloud
B) Earth's moon is an asteroid captured by the Earth's gravity
C) galaxies such as the Milky Way form independent of one another
D) the Earth was formed by a cosmic explosion, a "big bang"
E) the Moon is derived from a protoplanet
Answer: A
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

3) The separation of the Earth into layers while it was molten was the result of the _____.
A) decrease in temperature downward toward the core
B) differing densities of the elements that make up the Earth
C) gravitational force created by the rotating Earth
D) initial collection of materials and their position in Earth
E) presence of water at Earth's surface
Answer: B
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

4) Oceanic crust is primarily _____.
A) basalt
B) carbonate sedimentary rocks
C) clay minerals
D) granite
E) siltstone
Answer: A
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

5) Which of the following statements regarding continental and oceanic crust is TRUE?
A) Continental crust and oceanic crust have equivalent densities.
B) Continental crust is thicker and denser than oceanic crust.
C) Continental crust is thinner and denser than oceanic crust.
D) Continental crust is thicker and less dense than oceanic crust.
E) Continental crust is thinner and less dense than oceanic crust.
Answer: D
Diff: 4
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

6) What is the main rock type of oceanic crust?
A) Granite
B) Diorite
C) Basalt
D) Quartzite
E) Andesite
Answer: C
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

7) What is the main rock type of continental crust?
A) Granite
B) Diorite
C) Basalt
D) Quartzite
E) Andesite
Answer: A
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

8) What is the density (grams per cubic centimeter) for oceanic crust?
A) 1.5
B) 2.0
C) 2.5
D) 3.0
E) 3.5
Answer: D
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

9) Which layer of the Earth behaves in a plastic manner?
A) Crust
B) Lithosphere
C) Asthenosphere
D) Inner core
E) Outer core
Answer: C
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

10) Which layer of the Earth is composed of a liquid?
A) Lithosphere
B) Asthenosphere
C) Mesosphere
D) Outer core
E) Inner core
Answer: D
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

11) The Earth's interior can be subdivided based on its _____.
A) physical composition
B) biological composition
C) chemical composition
D) ecological composition
Answer: C
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

12) Nearly _____ planets have been discovered outside our solar system.
A) 100
B) 500
C) 1,000
D) 3,000
E) 4,000
Answer: E
Diff: 3
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

13) Examine the five words and/or phrases and determine the relationship among the majority of words/phrases. Choose the one option that does **not** fit the pattern.
A) Atmosphere
B) Lithosphere
C) Asthenosphere
D) Mesosphere
E) Core
Answer: A
Diff: 4
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

14) Examine the five words and/or phrases and determine the relationship among the majority of words/phrases. Choose the one option that does **not** fit the pattern.
A) Granite
B) Asthenosphere
C) Continental crust
D) Basalt
E) Oceanic crust
Answer: B
Diff: 4
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

15) Evidence suggests that the Sun and the rest of the solar system formed about five _____ years ago.
A) billion
B) million
C) thousand
D) trillion
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

16) Which of the following was true about the Protoearth?
A) Protoearth's size was smaller than today's Earth.
B) Protoearth had one large ocean.
C) Protoearth had early primitive life forms.
D) Protoearth's deep structure was homogeneous.
Answer: D
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

17) How did the Moon form?
A) The Moon formed due to the impact of a Mars-sized body with the Earth.
B) The Moon was captured by the gravitational pull of the Earth.
C) The Moon erupted from the Earth leaving a scar at the Pacific Ocean.
D) The Moon formed at the same time as the Earth due to simultaneous accretion.
Answer: A
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

18) What happened to the nebular gas that remained from the formation of the planets and their satellites?
A) It was blown away by the solar wind.
B) It condensed to form Earth's ocean.
C) It is about 10% of the modern earth atmosphere.
D) It escaped into the vacuum of space.
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

19) Earth is a layered sphere with the _____-density material found near the center of Earth and the _____-density material located near the surface.
A) highest; lowest
B) highest; highest
C) lowest; lowest
D) lowest; highest
Answer: A
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

20) Based on chemical composition, Earth consists of _____ layers
A) three
B) two
C) four
D) five
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

21) Based on physical properties, Earth consists of _____ layers
A) three
B) two
C) four
D) five
Answer: D
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

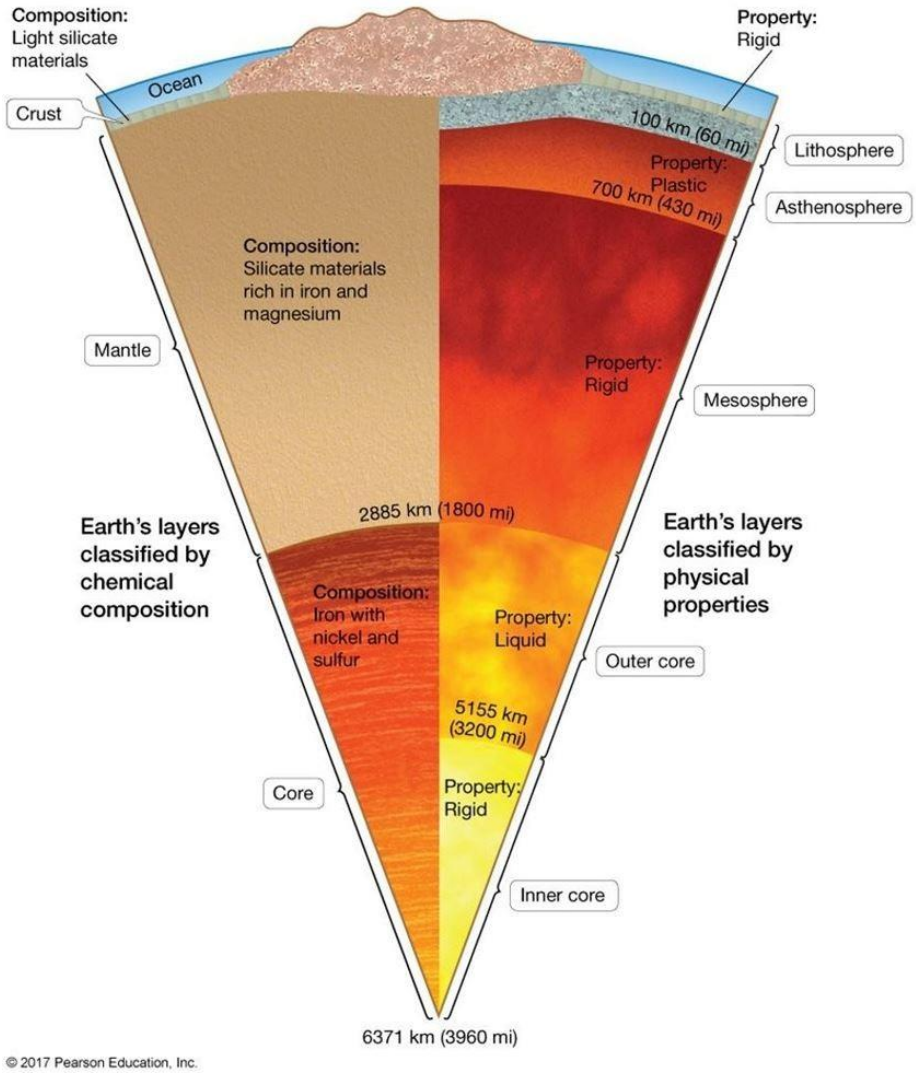
22) Oceanic crust is predominantly composed of the igneous rock called _____.
A) basalt
B) granite
C) anorthosite
D) peridotite
E) tonalite
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

23) Continental crust is predominantly composed of the igneous rock called _____.
A) basalt
B) granite
C) anorthosite
D) peridotite
E) tonalite
Answer: B
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

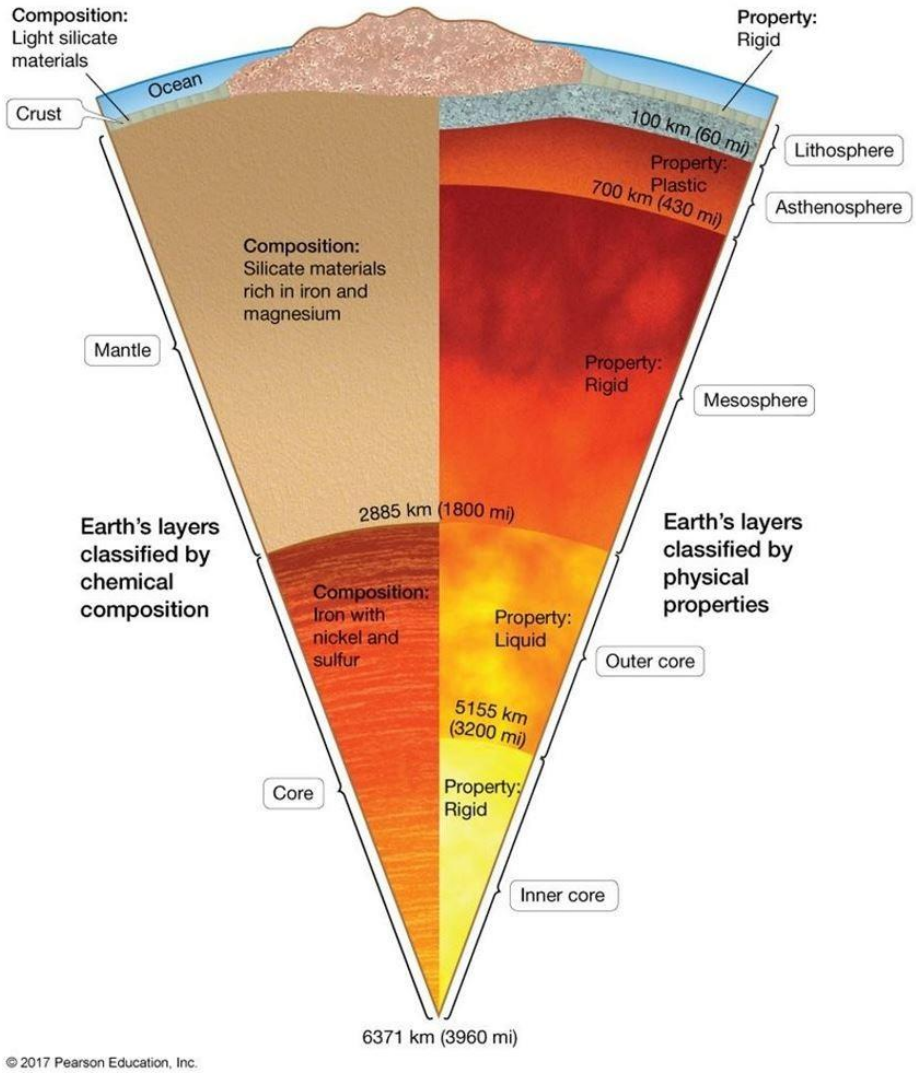
24) Isostatic adjustments are the result of the buoyancy of Earth's lithosphere as it floats on the _____ below which is denser and plastic like.
A) asthenosphere
B) mesosphere
C) outer core
D) inner core
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

25) Contrast oceanic and continental crust.
Answer: Oceanic crust is thinner, denser, and darker in color than continental crust and is composed of the igneous rock, basalt. Continental crust is thicker, less dense, and lighter in color than oceanic crust, and its average composition is the igneous rock granite.
Diff: 2
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

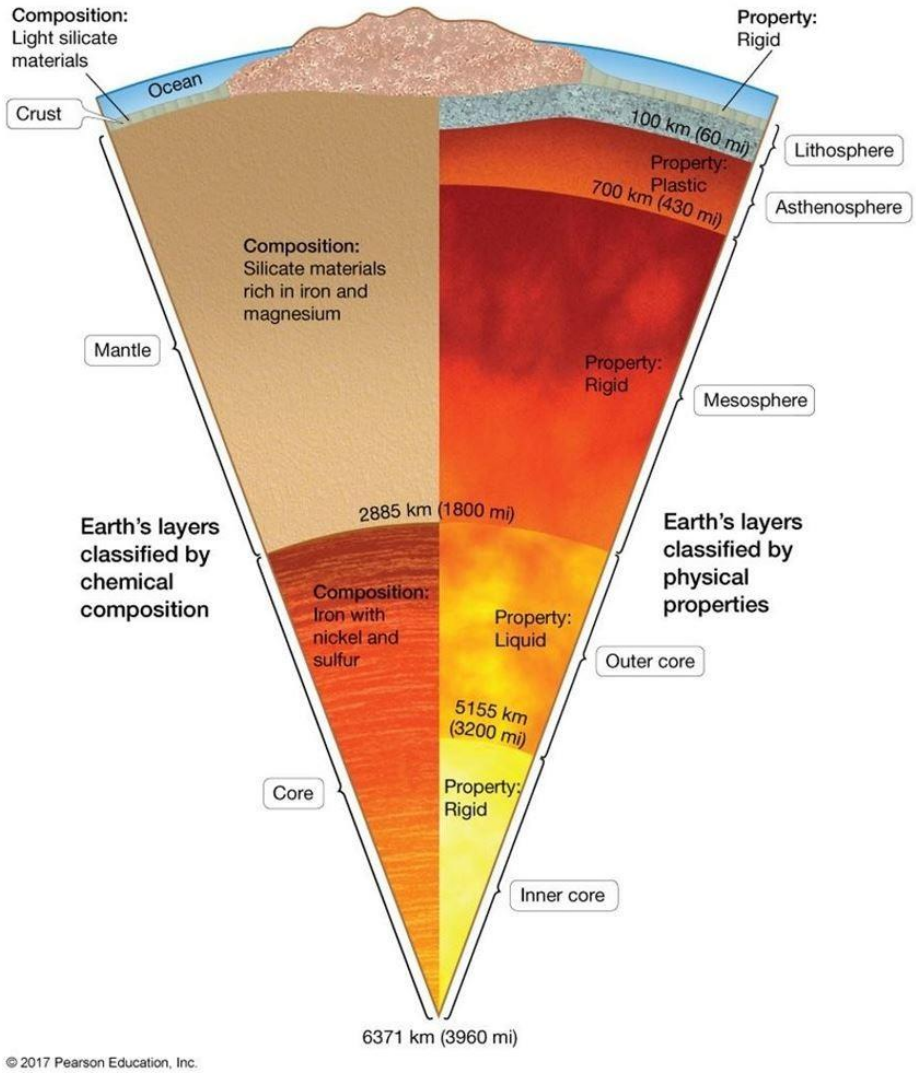
26) Discuss the origin of the Solar System using the nebular hypothesis.
Answer: All bodies in the solar system formed from an enormous cloud composed mostly of hydrogen and helium, with only a small percentage of heaver elements. When this huge accumulation of gas and dust revolved around its center, it began to contract under its own gravity, becoming hotter and denser, eventually forming the Sun. As the matter that formed the Sun contracted, small amounts of it were left behind in swirling eddies. The material in these eddies was the beginning of the protoplanets and their orbiting satellites, which later consolidated into the present planets and their moons.
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.



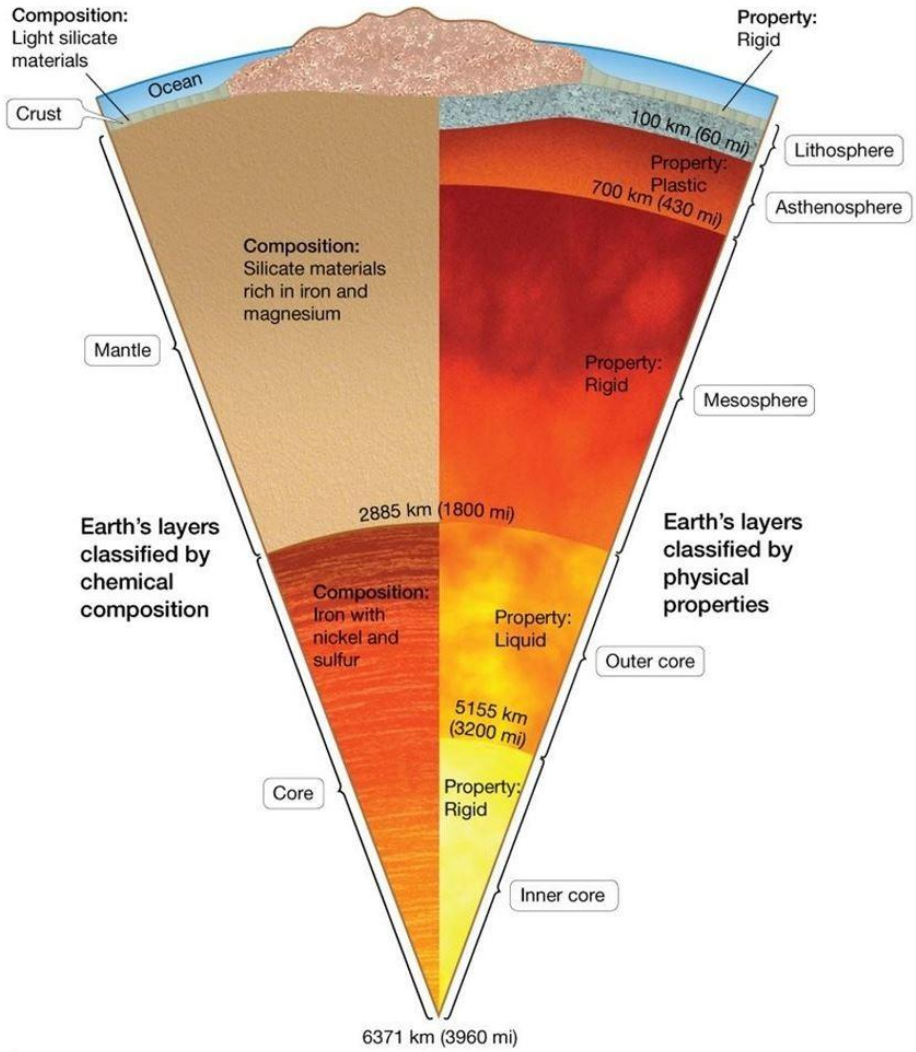
27) Which of the following is Earth's rigid layer that includes the crust plus the topmost portion of the mantle?
A) Asthenosphere
B) Inner core
C) Lithosphere
D) Mesosphere
E) Outer core
Answer: C
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.



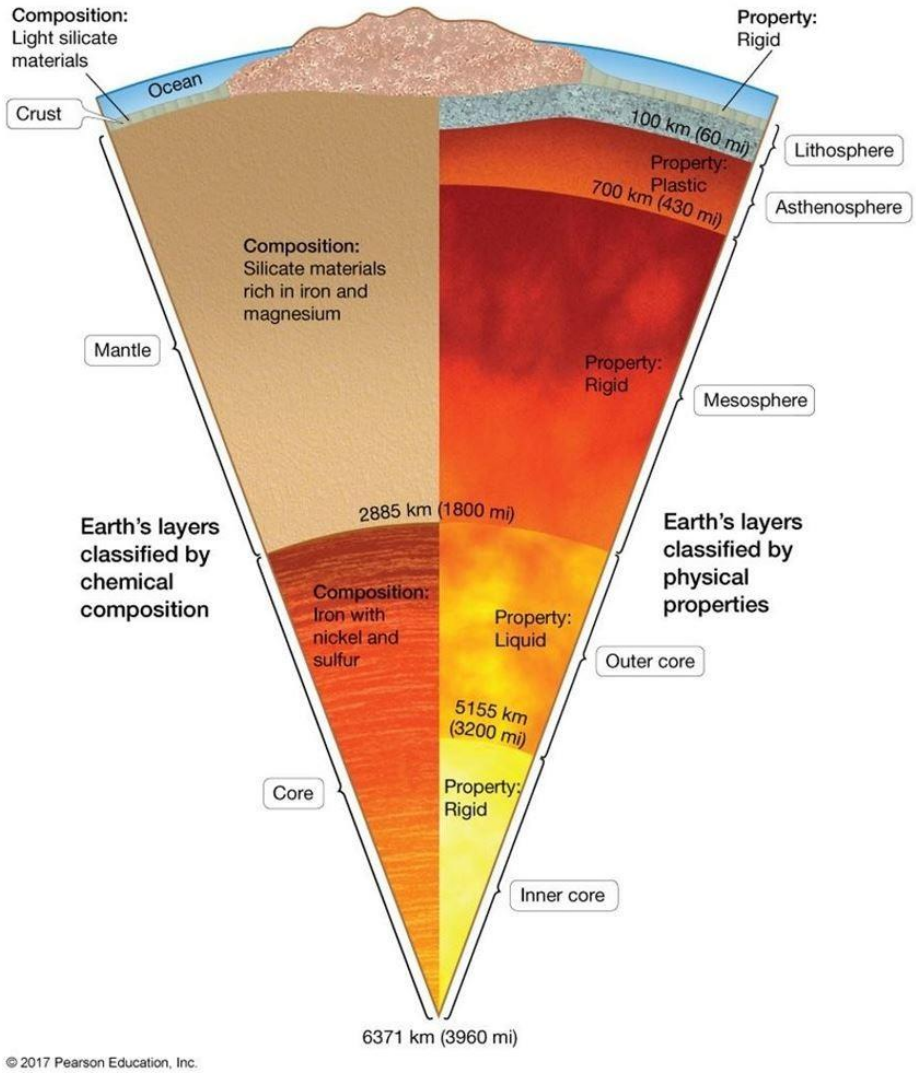
28) Which of the following represents Earth's plates that are involved in plate tectonic motion?
A) Asthenosphere
B) Inner core
C) Lithosphere
D) Mesosphere
E) Outer core
Answer: C
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.



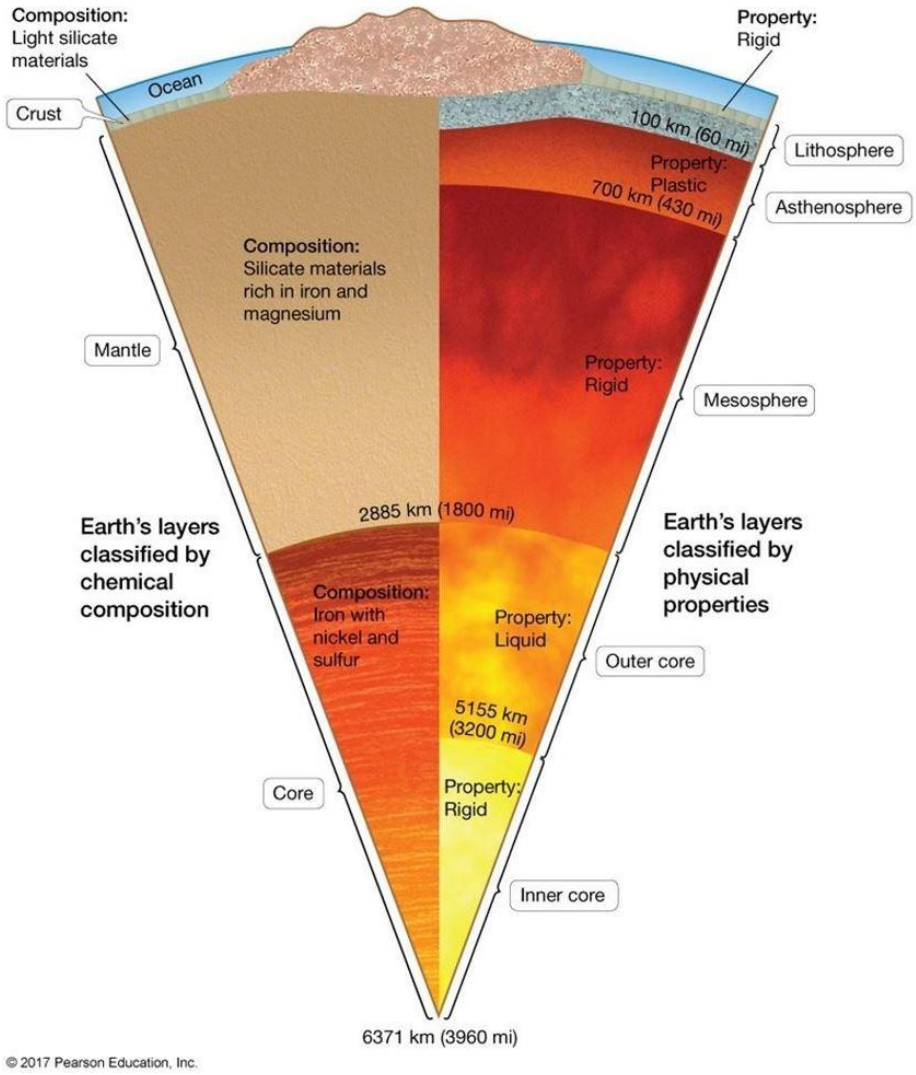
29) Which of the following is Earth's plastic layer, which flows when a gradual force is applied to it?
A) Asthenosphere
B) Inner core
C) Lithosphere
D) Mesosphere
E) Outer core
Answer: A
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.



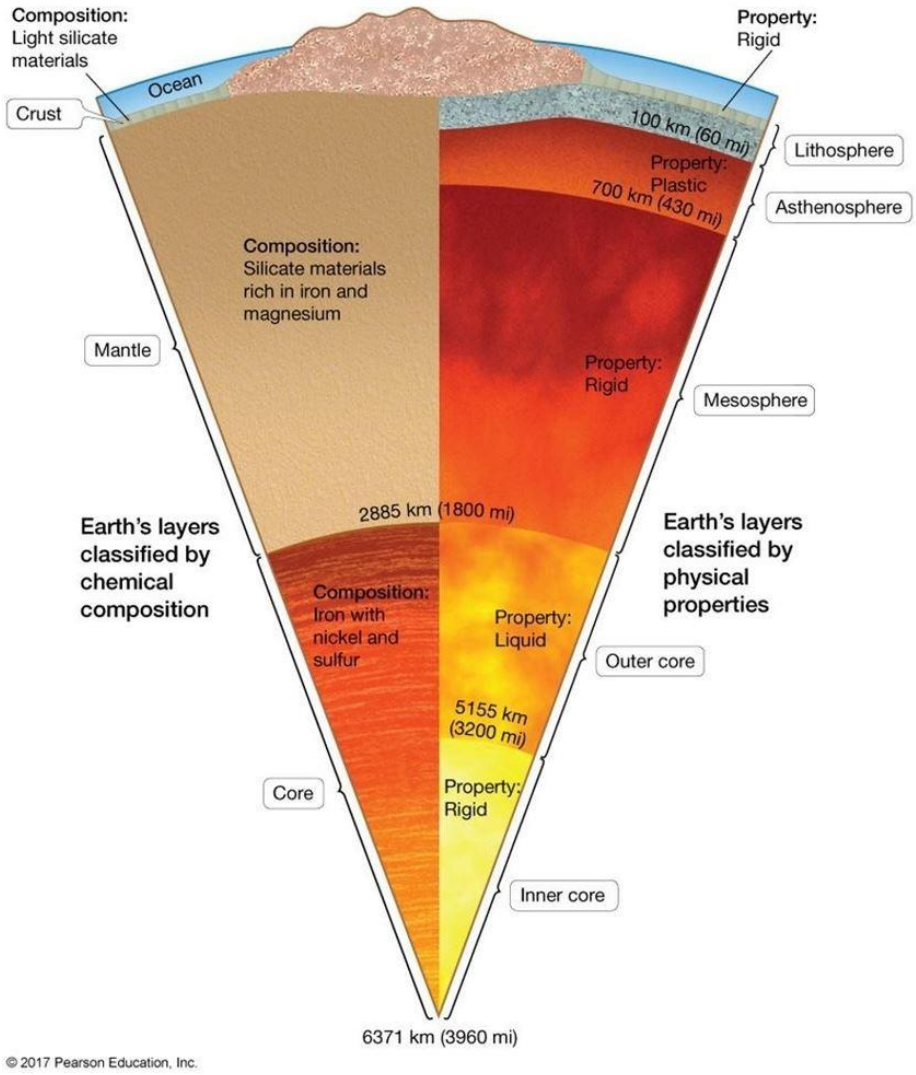
30) Which of the following is Earth's rigid layer that includes the middle and lower mantle?
A) Asthenosphere
B) Inner core
C) Lithosphere
D) Mesosphere
E) Outer core
Answer: D
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.



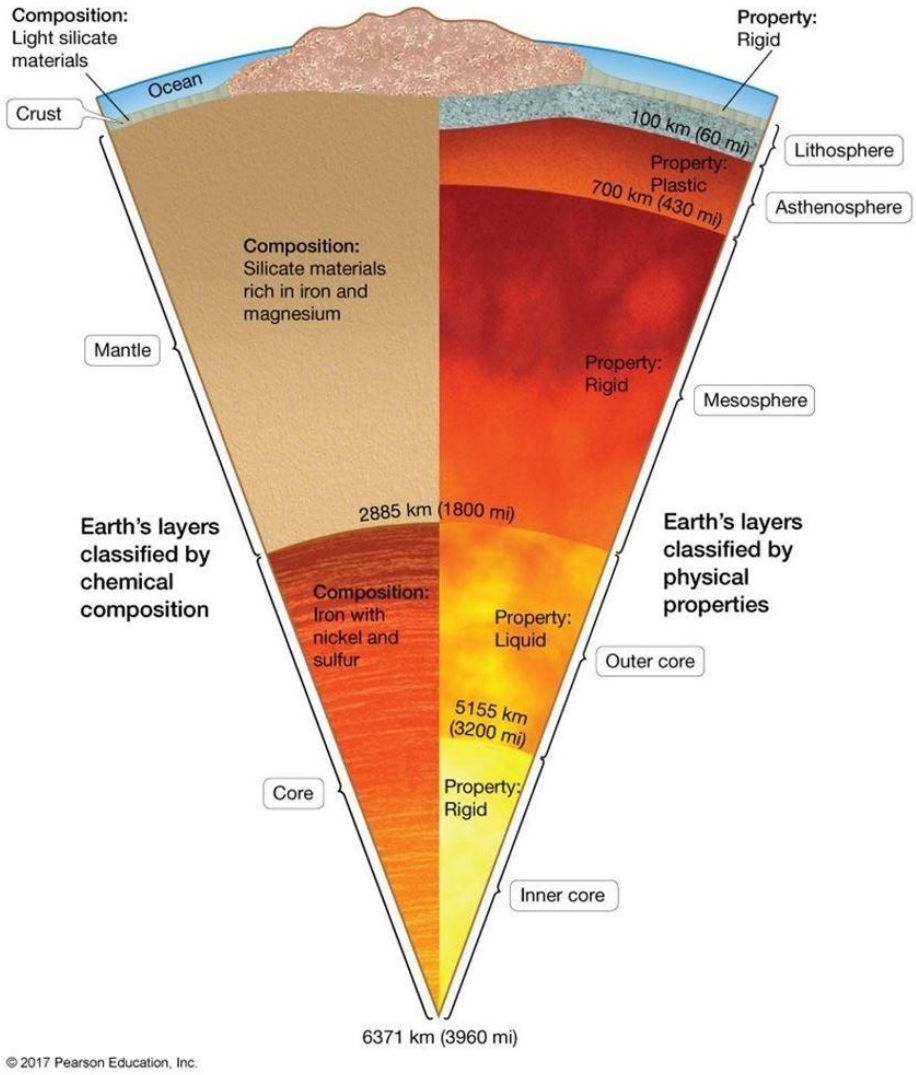
31) Which of the following is Earth's liquid iron-nickel layer?
A) Asthenosphere
B) Inner core
C) Lithosphere
D) Mesosphere
E) Outer core
Answer: E
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.



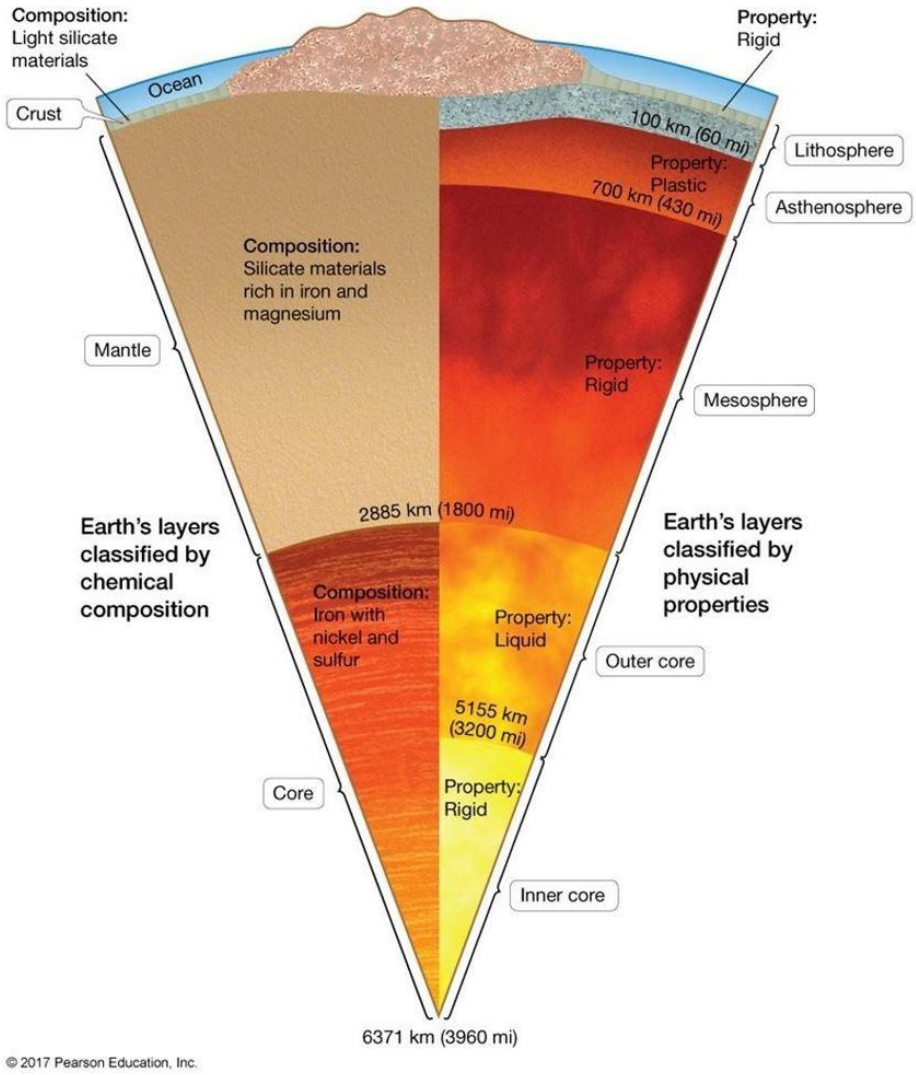
32) Which of the following is Earth's solid iron-nickel layer?
A) Asthenosphere
B) Inner core
C) Lithosphere
D) Mesosphere
E) Outer core
Answer: B
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.



33) Which of the following represents Earth's entire iron-nickel layer?
A) Asthenosphere
B) Core
C) Crust
D) Lithosphere
E) Mantle
Answer: B
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.



34) Which of the following represents Earth's low-density, mostly silicate layer?
A) Asthenosphere
B) Core
C) Crust
D) Lithosphere
E) Mantle
Answer: C
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.



35) Which of the following represents Earth's high-density, mostly iron-silicate layer?
A) Asthenosphere
B) Core
C) Crust
D) Lithosphere
E) Mantle
Answer: E
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.5 How Were Earth and the Solar System Formed?
Essent'l Concept: 1.5 Explain how Earth and the solar system were formed
OSLP: 4 The ocean made Earth habitable.

Section 1.6

1) Earth's primordial atmosphere most likely included _____.
A) ammonia, oxygen, carbon dioxide, and water vapor
B) carbon dioxide, water vapor, sulfur dioxide, and methane
C) hydrogen, helium, and oxygen
D) nitrogen, ozone, and sulfur dioxide
Answer: B
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.6 How Were Earth's Atmosphere and Oceans Formed?
Essent'l Concept: 1.6 Explain how Earth's atmosphere and ocean formed
OSLP: 4 The ocean made Earth habitable.

2) Current scientific knowledge indicates that the most likely origin of most of Earth's oceans was due to _____.
A) comets from outer space
B) release of liquid water from the core
C) water vapor released from volcanic outgassing
D) water-bearing minerals found in meteorites
Answer: C
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.6 How Were Earth's Atmosphere and Oceans Formed?
Essent'l Concept: 1.6 Explain how Earth's atmosphere and ocean formed
OSLP: 4 The ocean made Earth habitable.

3) Which comet was **not** analyzed for its chemical composition?
A) Hyakutake
B) Halley
C) Hale-Bopp
D) Helena
Answer: D
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.6 How Were Earth's Atmosphere and Oceans Formed?
Essent'l Concept: 1.6 Explain how Earth's atmosphere and ocean formed
OSLP: 4 The ocean made Earth habitable.

4) The Kuiper Belt is located beyond the orbit of which planet?
A) Mars
B) Neptune
C) Jupiter
D) Saturn
E) Pluto
Answer: B
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.6 How Were Earth's Atmosphere and Oceans Formed?
Essent'l Concept: 1.6 Explain how Earth's atmosphere and ocean formed
OSLP: 4 The ocean made Earth habitable.

5) Which of the following was **not** abundant in the early atmosphere?
A) Carbon dioxide
B) Oxygen
C) Hydrogen
D) Water vapor (steam)
Answer: B
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.6 How Were Earth's Atmosphere and Oceans Formed?
Essent'l Concept: 1.6 Explain how Earth's atmosphere and ocean formed
OSLP: 4 The ocean made Earth habitable.

6) Earth's initial atmosphere formed from _____.
A) leftover gases from the nebula
B) the Sun's solar wind
C) outgassing
D) comet vaporization
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.6 How Were Earth's Atmosphere and Oceans Formed?
Essent'l Concept: 1.6 Explain how Earth's atmosphere and ocean formed
OSLP: 4 The ocean made Earth habitable.

7) Most of Earth's water was derived from _____.
A) leftover gases from the nebula
B) the Sun's solar wind
C) outgassing
D) comet vaporization
Answer: C
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.6 How Were Earth's Atmosphere and Oceans Formed?
Essent'l Concept: 1.6 Explain how Earth's atmosphere and ocean formed
OSLP: 4 The ocean made Earth habitable.

8) Earth's second atmosphere formed from _____.
A) leftover gases from the nebula
B) the Sun's solar wind
C) outgassing
D) comet vaporization
Answer: C
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.6 How Were Earth's Atmosphere and Oceans Formed?
Essent'l Concept: 1.6 Explain how Earth's atmosphere and ocean formed
OSLP: 4 The ocean made Earth habitable.

9) A cometary model of the formation of Earth's ocean must include the chemical difference between the _____ in comet ice and that in Earth's water.
A) hydrogen
B) oxygen
C) nitrogen
D) carbon
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.6 How Were Earth's Atmosphere and Oceans Formed?
Essent'l Concept: 1.6 Explain how Earth's atmosphere and ocean formed
OSLP: 4 The ocean made Earth habitable.

10) Although Earth's oceans have existed since early in the formation of the planet, its _____ must have changed.
A) chemical composition
B) physical state
C) color distribution
D) textural makeup
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.6 How Were Earth's Atmosphere and Oceans Formed?
Essent'l Concept: 1.6 Explain how Earth's atmosphere and ocean formed
OSLP: 4 The ocean made Earth habitable.

11) Discuss the origin of Earth's oceans and how is it related to the origin of our atmosphere.
Answer: The origin of the ocean is linked directly to the origin of the atmosphere. Earth's initial atmosphere was blown out to space by the Sun's solar wind. A second atmosphere was created by outgassing of water vapor (steam), with small amounts of carbon dioxide, hydrogen, and other gases. This water vapor was the primary source of water on Earth, including supplying the oceans with water. Not all water came from inside Earth. Other sources of water, such as asteroids, may have contributed to Earth's oceans as well.
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.6 How Were Earth's Atmosphere and Oceans Formed?
Essent'l Concept: 1.6 Explain how Earth's atmosphere and ocean formed
OSLP: 4 The ocean made Earth habitable.

Section 1.7

1) The mechanism by which populations evolve and new species develop is called _____.
A) adaptation
B) evolution
C) descent with modification
D) intelligent design
E) natural selection
Answer: E
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 4 The ocean made Earth habitable.

2) One of the reasons that free oxygen in our atmosphere is important to the development and maintenance of life on Earth is because oxygen _____.
A) combines with iron in volcanic rocks
B) can form ozone and block some UV radiation
C) is necessary for photosynthesis to occur
D) reduces atmospheric temperature
E) was very abundant in Earth's early atmosphere
Answer: B
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

3) Earth's atmosphere became oxygen-rich about _____ years ago.
A) 2.0 billion
B) 2.45 billion
C) 3.0 billion
D) 3.45 billion
E) 4.0 billion
Answer: B
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 4 The ocean made Earth habitable.

4) How old were the microfossils of bacteria from the deep-water marine rocks that support the idea of life's origin on the deep-ocean floor?
A) 3.0 billion years
B) 3.1 billion years
C) 3.2 billion years
D) 3.3 billion years
E) 3.4 billion years
Answer: C
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 4 The ocean made Earth habitable.

5) An organism's response to environmental changes are called _____.
A) adaptations
B) natural selection
C) evolution
D) mutations
E) species
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 4 The ocean made Earth habitable.

6) Charles Darwin was famous for his work on evolution by natural selection processes. Which of the follow was **not** one of the animals that he observed?
A) Finches
B) Tortoises
C) Horses
D) Elephants
E) Cats
Answer: E
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 4 The ocean made Earth habitable.

7) When did Miller and Urey conduct their lab experiment that had major implications about the development of life on Earth?
A) 1940s
B) 1950s
C) 1960s
D) 1970s
E) 1980s
Answer: B
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 4 The ocean made Earth habitable.

8) Oxygen comprises about _____ percent of the Earth's present atmosphere.
A) 20
B) 30
C) 40
D) 50
E) 60
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 4 The ocean made Earth habitable.

9) Examine the five words and/or phrases and determine the relationship among the majority of words/phrases. Choose the one option that does **not** fit the pattern.
A) Oxygen
B) Water vapor
C) Carbon dioxide
D) Methane
E) Ammonia
Answer: A
Diff: 4
Bloom's Taxonomy: Applying/Analyzing
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

10) Examine the five words and/or phrases and determine the relationship among the majority of words/phrases. Choose the one option that does **not** fit the pattern.
A) Autotrophs
B) Chemosynthesis
C) Photosynthesis
D) Heterotrophs
E) Plants
Answer: D
Diff: 4
Bloom's Taxonomy: Applying/Analyzing
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

11) According to the fossil record on Earth, the earliest-known life-forms were primitive _____.
A) bacteria
B) plants
C) shells
D) reptiles
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

12) According to the fossil record on Earth, the earliest-known life-forms lived in sea floor rocks about 3.5 _____ years ago.
A) billion
B) million
C) trillion
D) thousand
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

13) The most likely place for the basic building blocks for the development of life to interact and produce life is in Earth's _____.
A) oceans
B) mantle
C) lithosphere
D) atmosphere
E) meteorites
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

14) Stanley Miller's 1952 experiment created _____ from the chemical ingredients thought to exist in Earth's early ocean.
A) simple organic compounds
B) complex organic molecules
C) Deoxyribonucleic acid (DNA)
D) primitive bacteria
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

15) The very earliest forms of life probably _____.
A) required an external food supply
B) manufactured their own food supply by photosynthesis
C) manufactured their own food supply by chemosynthesis
D) were similar to present-day anaerobic bacteria
Answer: A
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

16) The oldest fossilized remains of organisms are primitive _____ bacteria recovered from rocks formed on the sea floor about 3.5 billion years ago.
A) photosynthetic
B) chemosynthetic
C) heterotrophic
D) streptococcus
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

17) Earth's atmosphere became oxygen rich about 2.45 _____ years ago.
A) billion
B) million
C) trillion
D) thousand
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

18) The great oxidation event resulted in the massive die-off of which of the following?
A) Anaerobic bacteria
B) Blue-green algae
C) Dinosaurs
D) Land plants
Answer: A
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

19) Describe how the half-live of radioactive elements can be used to determine the age of rock through radiometric dating.
Answer: Most rocks on Earth contain small amounts of radioactive materials such as potassium, thorium, and uranium. Radioactive materials spontaneously decay into atoms of other elements. Each radioactive material has a characteristic half-life, which is the time required for one-half of the atoms in a sample to decay to atoms of other elements. The older a rock sample is the more radioactive material will have been converted to decay product(s). Instruments can accurately measure the amount of radioactive material and the amount of resulting decay product in a rock sample. By comparing the ratio of these two quantities, the age of a rock sample can be determined, which is referred to as radiometric age dating.
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

20) Describe Stanley Miller's landmark experiment. How did the results of this experiment change hypothesis regarding the evolution of life on Earth?
Answer: In 1952, Stanley Miller conducted a laboratory experiment where he exposed a mixture of carbon dioxide, methane, ammonia, hydrogen, and water (the components of the early atmosphere and ocean) to ultraviolet light (from the Sun) and an electrical spark (to imitate lightning) By the end of the first day, the mixture turned pink, and after a week it was a deep, muddy brown, indicating the formation of a large assortment of organic molecules, including amino acids–which are the basic components of life–and other biologically significant compounds. This demonstrated that organic molecules could have been produced in Earth's early oceans to become life's precursor molecules about 4 billion years ago.
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

21) Explain why the presence of free oxygen in our atmosphere marks an important step in the evolution of life on Earth.
Answer: Earth's atmosphere became oxygen rich about 2.5 billion years ago and fundamentally changed Earth's ability to support life. Increased atmospheric oxygen caused the ozone concentration in the upper atmosphere to build up, thereby shielding Earth's surface from ultraviolet radiation. This effectively eliminated the food supply for anaerobic bacteria. Oxygen is also highly reactive with organic matter. When anaerobic bacteria are exposed to oxygen and light, they are killed instantaneously. By 1.8 billion years ago, the atmosphere's oxygen content had increased to such a high level that it began causing the extinction of many anaerobic organisms. Because aerobic respiration releases nearly 20 times more energy than anaerobic respiration aerobic respiring organisms were able to thrive.
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.7 Did Life Begin in the Oceans?
Essent'l Concept: 1.7 Discuss why life is thought to have originated in the oceans
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

Section 1.8

1) Radioactive materials can sometimes be used to determine the _____.
A) origin of rocks
B) chemical composition of rocks
C) formation method
D) metamorphism
E) ages of rocks
Answer: E
Diff: 2
Bloom's Taxonomy: Remembering/Understanding
Section: 1.8 How Old Is Earth?
Essent'l Concept: 1.8 Demonstrate an understanding of how old Earth is
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

2) The Earth is approximately _____.
A) 6,000 years old
B) 4.6 billion years old
C) 4.6 million years old
D) 40 billion years old
E) 400,000 years old
Answer: B
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.8 How Old Is Earth?
Essent'l Concept: 1.8 Demonstrate an understanding of how old Earth is
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

3) The oldest known rocks on Earth are about _____ years old.
A) 4.0 billion
B) 4.1 billion
C) 4.2 billion
D) 4.3 billion
E) 4.5 billion
Answer: D
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.8 How Old Is Earth?
Essent'l Concept: 1.8 Demonstrate an understanding of how old Earth is
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

4) Uranium 235 decays into the daughter product _____.
A) lead 206
B) lead 207
C) argon 40
D) strontium 87
E) nitrogen 14
Answer: B
Diff: 3
Bloom's Taxonomy: Remembering/Understanding
Section: 1.8 How Old Is Earth?
Essent'l Concept: 1.8 Demonstrate an understanding of how old Earth is
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

5) Which period is **not** part of the Mesozoic?
A) Permian
B) Cretaceous
C) Jurassic
D) Triassic
Answer: A
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.8 How Old Is Earth?
Essent'l Concept: 1.8 Demonstrate an understanding of how old Earth is
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

6) Which epoch is **not** part of Paleogene?
A) Oligocene
B) Eocene
C) Paleocene
D) Miocene
Answer: D
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.8 How Old Is Earth?
Essent'l Concept: 1.8 Demonstrate an understanding of how old Earth is
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

7) In which period did the first fishes appear?
A) Cambrian
B) Ordovician
C) Silurian
D) Devonian
Answer: B
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.8 How Old Is Earth?
Essent'l Concept: 1.8 Demonstrate an understanding of how old Earth is
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

8) In which period did the dinosaurs dominate?
A) Permian
B) Cretaceous
C) Jurassic
D) Triassic
Answer: D
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.8 How Old Is Earth?
Essent'l Concept: 1.8 Demonstrate an understanding of how old Earth is
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

9) How many millions of years ago was the extinction of 90% of marine life?
A) 201
B) 252
C) 299
D) 318
E) 359
Answer: B
Diff: 1
Bloom's Taxonomy: Remembering/Understanding
Section: 1.8 How Old Is Earth?
Essent'l Concept: 1.8 Demonstrate an understanding of how old Earth is
OSLP: 5 The ocean supports a great diversity of life and ecosystems.

10) Trilobites were dominant during which geologic period?
A) Jurassic
B) Permian
C) Devonian
D) Ordovician
E) Cambrian
Answer: E
Diff: 3
Bloom's Taxonomy: Applying/Analyzing
Section: 1.8 How Old Is Earth?
Essent'l Concept: 1.8 Demonstrate an understanding of how old Earth is
OSLP: 5 The ocean supports a great diversity of life and ecosystems.