

## Chapter 1

### Introduction to Planet “Earth”

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**Matching.** Match the term or person with the appropriate phrase. You may use each answer once, more than once or not at all.

- |                       |   |
|-----------------------|---|
| _____ 1. Balboa       | A. made important observations about drift of sea ice               |
| _____ 2. Eratosthenes | B. used ecological approach to solve fisheries problem              |
| _____ 3. Magellan     | C. established temporary settlement in North America                |
| _____ 4. Ptolemy      | D. incorrectly concluded that no life exists in deep ocean          |
| _____ 5. Vikings      | E. first European explorer to Pacific Ocean                         |
|                       | F. mapped the Mediterranean Sea for the Greeks                      |
|                       | G. important observations on ocean chemistry                        |
|                       | H. led voyage that first circumnavigated the globe                  |
|                       | I. first determination of Earth’s circumference                     |
|                       | J. mapped world with Roman knowledge showing latitude and longitude |
|                       | K. led voyage that first used the marine chronometer                |

Answers: 1-E, 2-I, 3-H, 4-J, 5-C

Key Questions: 4 & 5

Skill: knowledge

Difficulty: Level 1

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**Matching.** Match the term or person with the appropriate phrase. You may use each answer once, more than once or not at all.

- |                  |  |
|------------------|--|
| _____ 6. core    | A. Big Bang  |
| _____ 7. crust   | B. composed of iron and nickel, liquid outer layer and solid inner layer |
| _____ 8. galaxy  | C. gaseous and dusty space cloud   |
| _____ 9. mantle  | D. Milky Way   |
| _____ 10. nebula | E. outermost portion of the Earth, basalt and granite                    |
|                  | F. rich in ferromagnesian minerals, between crust and core               |
|                  | G. solar winds   |

Answers: 6-B, 7-E, 8-D, 9-F, 10-C

Key Questions: 9, 11 & 12

Skill: knowledge

Difficulty: Level 1

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**True-False Questions.** Read each question carefully, write “T” if the statement is true, and write “F” if the statement is false.

11. Early Polynesians only traveled within sight of land.

Answer: False

Key Question: 3  
Skill: knowledge  
Difficulty: Level 1

12. Vikings led by Thor Heyerdahl established temporary colonies in North America.

Answer: False  
Key Question: 4  
Skill: knowledge  
Difficulty: Level 1

13. Significant oceanographic knowledge was acquired during the Middle Ages.

Answer: F  
Key Question: 5  
Skill: knowledge  
Difficulty: Level 1

14. The Ming Dynasty ships used magnetic compasses similar to those used today.

Answer: T  
Key Question: 4  
Skill: knowledge  
Difficulty: Level 1

15. Christopher Columbus established trade routes from Europe around Africa to India.

Answer: False  
Key Question: 5  
Skill: knowledge  
Difficulty: Level 1

16. The Earth's crust solidified around 4.5 billion years ago.

Answer: True  
Key Question: 10  
Skill: knowledge  
Difficulty: Level 1

17. When the Earth cooled, the layers of the earth separated based on density differences.

Answer: True  
Key Question: 10 & 11  
Skill: knowledge  
Difficulty: Level 1

18. Earth developed the first ocean by about 4 million years ago.

Answer: True  
Key Question: 16  
Skill: knowledge  
Difficulty: Level 1

19. In general, the chemical composition of ocean water has remained constant through geologic time.

Answer: True  
Key Question: 16  
Skill: knowledge  
Difficulty: Level 1

20. The mantle could not have produced enough water to fill the oceans.

Answer: False

Key Question: 16  
Skill: knowledge  
Difficulty: Level 1

21. The salinity of the oceans has been steadily increasing.

Answer: False

Key Question: 16  
Skill: knowledge  
Difficulty: Level 1

22. Free oxygen was present in the Earth's primordial atmosphere.

Answer: False

Key Question: 15  
Skill: knowledge  
Difficulty: Level 1

23. Production of the first free oxygen in the atmosphere caused organisms living at that time to flourish.

Answer: False

Key Question: 15  
Skill: knowledge  
Difficulty: Level 1

24. Carbon dating is used to determine the absolute age of a rock or fossil.

Answer: True

Key Question: 21  
Skill: knowledge  
Difficulty: Level 1

25. Heterotrophic organisms can make their own food from inorganic carbon sources.

Answer: False

Key Question: 19  
Skill: knowledge  
Difficulty: Level 1

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**Multiple Choice.** Choose the one **best** answer from the choices provided.

26. The four principle oceans of the Earth are the:

- a. Atlantic, Arctic, Mediterranean, and Pacific Oceans.
- b. Atlantic, Arctic, Indian, and Pacific Oceans.
- c. Atlantic, Antarctic, Mediterranean, and Pacific Oceans.
- d. Antarctic, Caspian, Indian, and Pacific Oceans.
- e. Antarctic, Arctic, Indian, and Pacific Oceans.

Answer: B

Key Question: 1  
Skill: knowledge  
Difficulty: Level 1

27. One distinction between an "ocean" and a "sea" is that a sea:

- a. Contains more shallow water.
- b. Is composed of salt water.
- c. Is smaller than an ocean.
- d. May be enclosed by either land or ocean currents.
- e. All of the above are correct.

Answer: E

Key Question: 1

Skill: comprehension

Difficulty: Level 2

28. All of the following are **TRUE** concerning the deepest part of the ocean *except*:
- a. The bottom of the trench was visited by Piccard and Walsh in the *Trieste* in 1960.
  - b. The deepest part of the ocean is located in a trench off the coast of Japan.
  - c. The depth of the trench exceeds the height of Mount Everest.
  - d. The depth of the trench is estimated at 12,500 meters.
  - e. The trench is called the Mariana Trench.

Answer: D

Key Question: 2

Skill: knowledge

Difficulty: Level 1

29. The correct arrangement of astronomical bodies from **oldest** to **youngest** is:
- a. galaxy, solar system, planet.
  - b. planet, galaxy, solar system.
  - c. planet, solar system, galaxy.
  - d. solar system, galaxy, planet.
  - e. solar system, planet, galaxy.

Answer: A

Key Question 9

Skill: application

Difficulty: Level 3

30. The **nebular hypothesis** suggest 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 a cosmic explosion, a "big bang".
  - e. the moon is derived from a protoplanet.

Answer: A

Key Question 9

Skill: knowledge

Difficulty: Level 1

31. . The separation of the Earth into layers was the result of the:
- a. decrease in temperature downward toward the core.
  - b. differing densities of the rock and mineral materials.
  - 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

Key Question 11

Skill: knowledge

Difficulty: Level 1

32. Oceanic crust is primarily:
- a. basalt.
  - b. carbonate sedimentary rocks.
  - c. clay minerals.

- d. granite.
- e. siltstone.

Answer: A

Key Question 13

Skill: knowledge

Difficulty: Level 1

33. 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

Key Question 13

Skill: comprehension

Difficulty: Level 2

34. Earth's primordial atmosphere most likely included:
- a. ammonia, 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.
  - e. all of the above.

Answer: B

Key Question 15

Skill: knowledge

Difficulty: Level 1

35. Free oxygen in our atmosphere is important to the development and maintenance of life on Earth 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 our early atmosphere.

Answer: C

Key Question 20

Skill: comprehension

Difficulty: Level 2

36. Organisms that breakdown organic molecules to release energy are called:
- a. autotrophic organisms.
  - b. bacteria.
  - c. biotic organisms.
  - d. fungi.
  - e. heterotrophic organisms.

Answer: E

Key Question 19

Skill: knowledge

Difficulty: Level 1

37. Radioactive isotopes can sometimes be used to determine the:
- a. absolute age of the rock.

- b. chemical composition of the rock.
- c. formation method.
- d. metamorphism.
- e. relative age of the rock.

Answer: A

Key Question 21

Skill: comprehension

Difficulty: Level 2

**Word Analysis.** 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.

38. a. Baltic    b. Black    c. Caspian    d. Indian    e. Mediterranean.

Answer: D

Key Question: 1

Skill: analysis

Difficulty: Level 4

39. a. Erastosthenes    b. Herodotus    c. Ptolemy    d. Pytheas    e. Strabo

Answer: E

Key Question: 3

Skill: analysis

Difficulty: Level 4

40. a. Cook    b. Cosmas    c. Darwin    d. Herodotus    e. Mercator

Answer: C

Key Question: 4, 5, & 6

Skill: analysis

Difficulty: Level 4

41. autotrophic    b. chemosynthesizers    c. cyanobacteria    d. heterotrophs    e. sulfur bacteria

Answer: D

Key Question: 19

Skill: analysis

Difficulty: Level 4