Chapter 6

Answers to Section 1 Review

1. Scientists name biomes after their vegetation because the plants that grow in an area determine what other organisms can live there.
2. Plants are adapted to a particular range of temperature and can usually survive only in a climate with that particular range.
3. Plants are adapted to a particular level of precipitation. In general, the larger a plant is, the more water it needs.
4. Latitude is the distance north or south of the equator. Altitude is the height of an object above sea level. Both latitude and altitude determine the temperature and precipitation of a biome. Therefore, if an organism lives in a biome that is close to the equator and at a low altitude, the organism must be able to survive in a very warm, moist environment.
5. Sample answer: Part of the Andes Mountains is located in Ecuador. The resulting wide range of altitudes in Ecuador creates the wide range of climates.
6. Desert, chaparral, tropical savanna, temperate grassland, temperate forest, and tropical rain forest are the biomes that are located between the equator and 30° north latitude.

Answers to Section 2 Review

1. Tropical rain forests are typically humid and warm, receive 200 to 450 cm of rain per year, and have nutrient-poor soil.
2. The main layers of a tropical rain forest are the emergent layer, the upper and lower canopies, and the understory. The emergent layer consists of the tallest trees. The upper and lower canopies consist of tall trees and epiphytes. Trees and shrubs that are adapted to shade, grow in the understory.
3. Answers may vary, but should include two of the following: logging, farming, ranching, oil exploration, and trading.
4. Sample answer: In order to survive the change of seasons in the temperate deciduous forest, a plant loses its leaves during the fall and winter and remains dormant until spring.
5. Temperate deciduous forest: Organic matter decays slowly in the temperate forest, and forms a deep, rich soil that would be better suited for agriculture.
6. A snowshoe hare avoids predation by shedding its brown summer fur and growing white fur that camouflages it in the winter snow. Predators will have a difficult time finding a snowshoe hare during the winter.

Answers to Section 3 Review

1. Sample answer: Elf owls burrow in cactuses to avoid hot daytime temperatures. Sidewinders move so that only small areas of their bodies contact the hot sand at a given time.
2. Tropical grasslands are located in tropical and subtropical areas near the equator, and they are full of grasses, scattered trees, and shrubs. Temperate grasslands are located farther from the equator and are dominated by grasses. They have extremely fertile soil.
3. Plants that grow in deserts and plants native to tundra are adapted to low moisture and extreme temperatures. Both desert and tundra plants grow and flower quickly in the short growing season. Desert plants have special structures that allow them to trap and store water. Tundra plants grow low to the ground to stay out of the cold and dry wind.
4. Oil exploration is a threat to the tundra.
5. Moderate to warm temperatures, consistent rain during the growing season, and fertile soils make for productive farming regions.
6. Large herbivores migrate due to the cycles of rain and drought in temperate grasslands. Migratory herbivores follow the rains to find newly sprouted grass and water.

Chapter 6
Using Key Terms

1. Sample answer: A biome is a large region characterized by a specific type of climate and certain types of plant and animal communities.
2. Sample answer: Climate refers to weather conditions in an area over a long period of time.
3. Sample answer: Epiphytes grow on tall trees in the canopy for support.
4. Sample answer: Tundra is a biome dominated by grasses, lichens, and herbs and is primarily located north of the Arctic Circle.
5. Sample answer: Permafrost is a layer of soil beneath topsoil that is permanently frozen.
6. The canopy is the main layer of trees in a forest. The understory

is below the canopy and extends to shorter plants and shrubs on the ground.
7. Latitude is the distance from the equator. Altitude is the height above sea level.
8. Chaparral has moderately warm temperatures all year and is dry. The desert is drier and is hotter in the summer.
9. Tropical rain forests are located near the equator and maintain a relatively constant warm temperature year-round. Temperate deciduous forests are generally located between 30° and 50° north latitude and have extreme ranges of temperatures.

Understanding Key Ideas

10. d
11. b
12. c
13. c
14. d
15. c
16. b
17. b
18. c

Short Answer

19. The rain forest floor lacks vegetation because the soil is poor in nutrients and receives very little sunlight.
20. Large root systems hold soil in place and prevent erosion.
21. Biomes vary in climate, and the climate gets colder with increasing altitude. So, different biomes are located in different altitudes across a mountain.
22. Permafrost in the tundra can preserve organisms such as a mammoth because the cold temperatures and frozen ground prevent and slow bacterial activity. Therefore, a mammoth would not decompose quickly if buried in the tundra.
23. A decrease in the number of trees will cause less carbon to be absorbed and stored. This will lead to an increase in carbon dioxide, a greenhouse gas that can cause warmer temperatures. A decrease in the number of trees also leads to flooding because the trees are no longer there to absorb and store water.

Interpreting Graphics

24. Cold temperatures and limited precipitation exclude most trees from tundra.
25. The amount of vegetation decreases.
26. Temperate grasslands have moderate temperature and precipitation.

Concept Mapping

27. Answers to the concept mapping questions are on pp. 715–720.

Critical Thinking

28. Similar environments led to the evolution of similar organisms with similar characteristics and strategies, even though the species live in different locations.
29. Answers may vary. Two factors that are responsible for the biodiversity of this biome are constant warm temperatures and large amounts of annual rainfall. Deforestation caused by logging and agricultural operations contributes to the decline of tropical rain forests.
30. The squirrels are not adapted to the rain forest, so they may not be able to eat or compete for the food that is available. The displaced squirrels are also not adapted to constant high temperatures, high humidity, and high precipitation.
31. Frequent fires may have increased the evolutionary pressure for prairie grasses to evolve fire resistance.

Cross-Disciplinary Connection

32. Answers may vary.

Portfolio Project

33. Answers may vary.

Math Skills

34. 50,000 _ 1,800,000 _ 100% _ 2.8% in country A; 12,000 _ 530,000 _ 100% _ 2.3% in country D
35. The tropical rain forest in country C will be completely destroyed first. The tropical rain forest in country E will be completely destroyed last.

Writing Skills

36. Each biome represents a wealth of adaptations and biological variety. Losing any biome would

rob the world of that evolutionary history and diversity. Biomes can be conserved in part by the development of sustainable forestry and agriculture and by setting aside areas for preservation. Support of international conservation and human rights organizations can also help to preserve biomes.

37. Answers may vary.

Reading Skills

1. d

2. c

Standardized Test Prep Answers

1. C

2. I

3. B

4. F

5. Answers will vary. See Test Doctor for detailed scoring rubric.

6. Answers will vary. See Test Doctor for detailed scoring rubric.

7. C

8. Answers will vary. See Test Doctor for detailed scoring rubric.

9. The forest floor receives the least sunlight, because the other layers block most of it.

10. I

11. C

12. G

13. A