4. Sample answer: Materials settle to the bottom of the lake. Bacteria decompose these materials and use oxygen in the water. The loss of oxygen affects the survival of animals in the water. Many fishes die because of the loss of oxygen. As the pond fills in, plants grow in the filled areas. Over time, the pond becomes a swamp or marsh. Eventually, the swamp or marsh becomes a forest.
5. 82.5m (15m × 5.5 = 82.5m)
6. Sample answer: If the fishes die, the bodies of the fishes will contribute to the material on the bottom of the pond. Also, while the fishes were alive, they may have eaten plankton, algae, or water plants. Without fishes, these plankton, algae, and plants may multiply, adding to the material in the pond.
7. Answers may vary. Students should mention adaptations to moving water, such as attaching to rocks, using suction disks, and living under rocks.

Chapter Review

1. Sample answer: A biome is a large area characterized by climate and the plants and animals that live in the area. Tundra is a biome with cold temperatures, little rainfall, and no trees.
2. Sample answer: Organisms that live in the intertidal zone are exposed to the air for part of the day. In the neritic zone, water is warm and receives a lot of sunlight. The oceanic zone includes the deep areas of the ocean.
3. Sample answer: A savanna is a biome characterized by grasses and seasonal rains. A desert is a biome that is very dry and often very hot.
4. Sample answer: The open-water zone receives sunlight, while the deep-water zone does not receive sunlight.
5. Sample answer: Marshes do not have trees, while swamps do have trees.
6. C
7. A
8. D
9. A
10. temperate deciduous forests, coniferous forests, tropical rain forests, temperate grasslands, savannas, deserts, and tundras
11. Sample answer: Materials that are washed into the lake build up. To decompose these materials, bacteria use oxygen in the water, which affects the animals that live in the lake. The shallow areas fill in, and plants begin to grow. The lake becomes a marsh or swamp. Eventually, the marsh or swamp becomes a forest.
12. Sample answer: climate and the plants and animals that live in an area
13. Sample answer: The littoral zone is the area of a lake closest to shore, where sunlight reaches the bottom of the lake. The open-water zone extends from the littoral zone and is as deep as sunlight can reach. The deep-water zone lies beneath the open-water zone.
14. Sample answer: Water in rivers may come from springs or melting snow. Each stream of water joins another stream. As more water is added, the stream eventually becomes a river.
15. climate, water, and rocks; water temperature, water depth, and the amount of sunlight that passes through the water; the speed at which water moves
16. An answer to this exercise can be found at the end of the Teacher Edition.
17. Sample answer: Plankton can live in the intertidal zone, the neritic zone, and the oceanic zone. All of these areas receive sunlight, which is necessary for photosynthesis.
18. Sample answer: The area may be more likely to flood if the wetland dries out. Also, because wetlands store water, there may be a shortage of water in the area.
19. Sample answer: The hypothesis is incorrect. Savannas and deserts have different climates. Savannas get more rain than deserts do. Also, the plants and animals in each area are different. Savannas have grasses and scattered trees, while the plants in the desert grow far apart and are adapted to a very dry climate.
20. Sample answer: The biome is likely a deciduous forest. I would see deciduous trees, bears, deer, and woodpeckers. Winters are likely cold, so I will need warm clothing and shelter.

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21. Sample answer: The biome is likely a desert because the region receives less than 25cm of rain during the year and is warm.
22. about 19 cm
23. August; January
24. 0 cm

Reinforcement

KNOW YOUR BIOMES

Type of Biome (from top to bottom) desert, savanna, tropical rain forest, temperate deciduous forest, tundra, coniferous forest, and temperate grassland Examples & Characteristics: desert: animals are active at night, plants spaced far apart; savanna: giraffe, home to many large herbivores; tropical rain forest: most animals live in the canopy, most nutrients in plants; temperate deciduous forest: woodpecker, trees lose leaves in fall; tundra: caribou, permafrost; coniferous forest: porcupine, trees produce seeds; in cones; temperate grassland: bison, very few trees

Critical Thinking

1. a. Answers may vary. Sample answer: Building the shopping center will bring a new variety of shops to the area and create new jobs.
1. b. Answers may vary. Sample answer: Destroying the swamp may cause the endangerment or extinction of certain plants and animals. It may also cause flooding or drought because the swamp is a storage area for water.
2. Answers may vary. Sample answer: I would want to know which species of plants and animals live in the swamp, the water level of the swamp at different times of the year, and how much water from the swamp drains into the city's water supply. I would want to know what type of shops would be built. I would find out if there are other possible sites for the shopping center.
3. Answers may vary. Sample answer in support of the swamp: I think the swamp should be saved because the survival of animals and plants is more important than having a new shopping center. Sample answer in support of the shopping center: I think the shopping center should be built because it could bring new jobs and stores to Frikshon.
4. Answers may vary. Sample answer in support of the swamp: I would explain the importance of the swamp to the water supply and talk about the possible extinction or endangerment of certain species. I would talk about the natural cycle of ecosystems and the importance of saving the environment for future generations. Sample answer in support of the shopping center: I would talk about the advantages of a shopping center. I would present other methods that could protect against drought and flooding. Students should include appropriate diagrams or graphs to support their opinion.

Section Quizzes

SECTION: LAND BIOMES

1. C
2. D
3. G
4. D
5. A
6. E
7. F
8. C
9. B

SECTION: MARINE ECOSYSTEMS

1. C
2. D
3. A
4. D
5. C
6. B
7. B
8. D
9. A
10. C

SECTION: FRESHWATER ECOSYSTEMS

1. C
2. A
3. C
4. D
5. A
6. B
7. D

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