

Chapter 33 Assessment

Reviewing Content

1. d 5. b 9. b
 2. a 6. c 10. b
 3. b 7. c
 4. b 8. a

Understanding Concepts

11. Notochord, dorsal hollow nerve cord, a postanal tail, and pharyngeal pouches
 12. Unrelated species from different evolutionary lines evolve similar adaptations when encountering similar ecological conditions.
 13. Endotherms do not need to rely on the environment for body heat, but they need to eat a lot of food to fuel a high metabolic rate. Ectotherms depend on the environment for body heat, but they eat relatively little compared to endotherms.
 14. Some scientists think that endothermy evolved once along the line of reptiles that led to birds and once along the line of reptiles that led to mammals. Some think that endothermy evolved long after the appearance of dinosaurs; others think that dinosaurs were endotherms.
 15. By removing small organisms from the water that passes through their pharynx
 16. As water flows over gill filaments, oxygen diffuses into blood in the capillaries and carbon dioxide leaves the blood.

17. Alveoli provide an enormous surface area for gas exchange.

18. Single-loop circulation is found in vertebrates with gills. Blood travels in one direction, from heart to gills to body to heart. Double-loop circulation is found in vertebrates with lungs. The first loop carries blood between the lungs and the heart. The second loop carries blood between the heart and the body.
 19. Frogs have two atria and one ventricle. Most reptiles have two atria and one ventricle with a partial partition. A bird has two atria and two ventricles.
 20. In tunicates, ammonia leaves the body through the outflow siphons.
 21. Gills and kidneys
 22. There is a concentration of sense organs and nerve cells at the front of the body.
 23. The cerebrum receives, interprets, and determines the response to sensory information and is also involved in learning, memory, and conscious thought; the cerebellum coordinates movement and controls balance; the medulla oblongata controls many internal organs; the optic lobes are involved in vision; and the olfactory bulbs are involved in smell.
 24. The backbone is made of individual bones called vertebrae. Since the backbone consists of many small bones rather than a single bone, it is flexible and therefore enables complex movements.
 25. Internal fertilization is characteristic of birds and mammals.

Critical Thinking

26. Birds and mammals (endotherms) control their body temperature internally and have structures and behaviors to retain and lose heat. Reptiles and amphibians (ectotherms) rely on the environment for heat. They are unable to generate enough body heat to live in cold biomes.
 27. a. B b. A c. C
 28. The similarities between fishes and whales are the result of convergent evolution; similar selective pressures result in similar body shape.
 29. The legs of mammals, unlike those of amphibians and most reptiles, are positioned directly under the body. This enables them to support the weight of the body more efficiently and move better.
 30. Terrestrial animals must conserve water because of the evaporative effects of air.
 31. These behaviors help the duck maintain a constant body temperature by conserving body heat (sitting in the sun with wings outspread) or getting rid of excess body heat (sitting in the shade with bill open).
 32. The brain is responsible for coordination of movement, so the problem may be caused by a brain injury.
 33. Sample experiment: Fill two identical containers with hot water at the same temperature. Cover one with a piece of fur or a down comforter; leave the other exposed to air. After a time, measure the water temperature in both containers.
 34. a. Bony fishes (amphibians acceptable if student refers to tadpoles)
 b. Reptiles (specifically crocodiles)
 c. Tunicates
 35. The respiratory system brings in oxygen from the air that travels through the circulatory system to body cells that use oxygen to produce energy. The waste product, carbon dioxide, is removed from the body in the opposite direction.

Standardized Test Prep

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