Contents

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8.1 Introduction to Animals

Read 8.1 (pp. 462–466).

Exercises

Circle the letter of the best answer.

1. What characteristic is shared by all animals?
   - **a.** symmetrical
   - **b.** multicellular
   - **c.** have muscles for motility
   - **d.** have tissues, organs, and systems
2. What is a difference between animals and plants?
   - **a.** Simple animals can be unicellular, while all plants are multicellular.
   - **b.** Animals only reproduce sexually, while plants only reproduce asexually.
   - **c.** Animal cells are organized into tissues and organs, while plant cells are not.
   - **d.** Animal cells are contained only by cell membranes, while plant cells have cell walls.
3. What type of body structure is exhibited by animals with body parts arranged evenly around a center point?
   - **a.** asymmetry
   - **b.** radial symmetry
   - **c.** bilateral symmetry
   - **d.** rotational symmetry
4. What type of body structure is exhibited by animals that cannot be divided into matching halves?
   - **a.** asymmetry
   - **b.** radial symmetry
   - **c.** bilateral symmetry
   - **d.** rotational symmetry
5. What is an advantage of radial symmetry?
   - **a.** It helps animals confuse predators.
   - **b.** It improves an animal's appearance.
   - **c.** It allows animals to seize food from any direction.
   - **d.** It lets animals quickly change their direction of movement.

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6. What animal does *not* exhibit bilateral symmetry?

a. cat
b. earthworm
c. goldfish
d. sponge

Match each example with the animal characteristic it relates to.

7. _____ A unicellular protist is not an animal.

8. _____ Sponges release sperm to fertilize sponge eggs.

9. _____ The cells of coral are bound by cell membranes.

10. _____ Giant pandas eat bamboo to gain needed nutrients.

11. _____ Bees hatch as larvae that metamorphose into adults.

12. _____ A frog can leap a distance many times its body length.

13. _____ Spiders have a brain and nerves that form a nervous system.

14. _____ Starfish can reproduce from a broken-off body part or from fertilized eggs.

15. _____ Sea anemones are attached to rocks, so they use their tentacles to move food toward their mouth.

a. develop in stages
b. heterotrophic
c. lack cell walls
d. motile or move environment
e. multicellular
f. sexual reproduction
g. tissues, organs, and organ systems

Circle *T* if the statement is true or *F* if it is false.

16. **T** **F** Some animals can be either autotrophic or heterotrophic.

17. **T** **F** Animal cells lack organelles.

18. **T** **F** In large animals, most cells interact with the circulatory system instead of the environment outside.

19. **T** **F** Regeneration is a form of sexual reproduction.

20. **T** **F** Animals begin life as fertilized eggs.

Complete these exercises.

21. What are three animal characteristics that relate to the cells and structure of animals?

_____

_____

_____

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22. What are two animal characteristics that relate to how animals obtain food?

23. What are two animal characteristics that relate to how young animals are produced and how they mature?

24. What are two ways in which animals differ from bacteria?

25. Based on the characteristics of animals, explain why each of the following organisms is or is not an animal.

a. Amoeba:

b. Housefly:

c. Slime mold:

d. Earthworm:

26. What are seven requirements for life that animals must be able to meet?

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27. What is the most common type of symmetry in animals? What are the names of the upper, lower, head, and tail regions of animals with this type of symmetry?

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8.2 Sponges

Read 8.2 (pp. 467–471).

Exercises

Circle the letter of the best answer.

1. Why are sponges, corals, and similar invertebrates sometimes called tissue animals?
   - **a.** Their cells or tissues do not form organs.
   - **b.** Their independent cells never form true tissues.
   - **c.** Each species consists of only one type of tissue.
   - **d.** They are the only marine invertebrates that contain tissues.
2. What is an accurate description of the structure of a sponge?
   - **a.** a mass of cells covered by two jellylike layers
   - **b.** a porous mass of cells with a single opening at the top
   - **c.** a sac-shaped structure made of supportive tissue covered by a layer of cells
   - **d.** a porous sac consisting of two cell layers with a jellylike layer between them
3. What is an important way in which sponges benefit their coral reef ecosystems?
   - **a.** They digest harmful algae and aquatic insects.
   - **b.** They filter bacteria and organic debris out of the water.
   - **c.** They provide a nutritious food source for many animals.
   - **d.** They break down organic matter so other organisms can use it.
4. What characteristic of complex sponges do simple sponges lack?
   - **a.** digestive cavity
   - **b.** simple nervous system
   - **c.** sac with one central cavity
   - **d.** many canals and chambers
5. How do sponges get rid of their wastes?
   - **a.** The excretory system collects and expels wastes.
   - **b.** Amoebocytes gather wastes and release them into the water.
   - **c.** Each individual cell releases its wastes directly into the environment.
   - **d.** Water washes wastes out of cells as it passes through the wall of a sponge.
6. What components of a sponge get oxygen from the environment for all the cells of the sponge?
   - **a.** collar cells
   - **b.** amoebocytes
   - **c.** each individual cell
   - **d.** spicules and spongin

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7. What is *not* a type of reproduction that sponges use?

- **a.** budding
- **b.** fragmentation
- **c.** spore formation
- **d.** sexual reproduction

Match each definition with the sponge component it defines.

8. _____ hard, sharp supportive structures in some sponges

9. _____ soft, flexible protein fibers supporting some sponges

10. _____ digestive cells that move through a sponge's inner layer

11. _____ inner sponge cells with flagella that produce a water current

- **a.** amoebocytes
- **b.** collar cells
- **c.** spicules
- **d.** spongin

Number the steps by which a sponge feeds in the order in which they occur.

12. _____ Amoebocytes digest organic matter.

13. _____ Collar cells capture bacteria and other organic matter.

14. _____ Water circulates through the sponge.

15. _____ Collar cells partially digest organic matter.

16. _____ Amoebocytes deliver food to sponge cells.

Complete these exercises.

17. How do vertebrates differ from invertebrates?

_____

_____

18. What layers make up a sponge's body?

_____

_____

19. A 1 × 10 cm sponge can pump 20 L (5 gal) of water per day. How does this ability make sponges important in their environment?

_____

_____

20. How does a sponge draw water through its body?

_____

_____

_____

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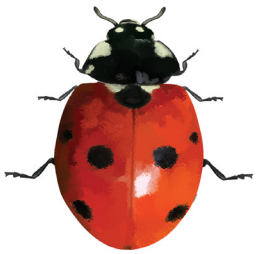
21. Briefly describe the methods of asexual reproduction that sponges use.

22. How are sponges fertilized in sexual reproduction?

23. What happens to sponge larvae after they hatch?

Review

Write the type of body symmetry that each organism illustrates. 8.1



24.

25.

26.

24. _____

25. _____

26. _____

Write a check mark (✓) beside each organism that is an animal. Explain why each organism is or is not an animal. 8.1

27. _____ Acoelomorpha are tiny bilaterally symmetric organisms that live in mud, sand, and marine environments, which they navigate with cilia. Acoelomorpha do not have a true gut, circulatory system, or respiratory system, but they do have a nervous system. Their cells have no cell walls.

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