Chapter 26 Sponges and Cnidarians

Matching  On the lines provided, write the letter of the definition that matches each term.

1. invertebrate
2. vertebrate
3. filter feeder
4. parasite
5. protostome
6. deuterostome
7. radial symmetry
8. bilateral symmetry
9. cephalization

   a. animal that has no backbone
   b. characterized by body parts that repeat around the center of a body
   c. the concentration of nerve cells and sense organs at the anterior end of the body
   d. animal with a backbone
   e. aquatic animal that strains tiny floating plants and animals from the water around it
   f. animal whose mouth is formed from a blastopore
   g. organism that lives and feeds on another organism, harming it
   h. body plan in which a single, imaginary line can divide the body into two equal halves
   i. animal whose anus is formed from a blastopore

Labeling Diagrams  On the lines provided, write the names of the structures that correspond to the numbers in the diagram.

Completion  On the lines provided, complete the following sentences.

14. The specialized cells of a sponge that produce its spike-shaped are called ____________________.

15. An immature stage of an organism that does not look like the adult form is called a(an) ____________________.

16. A group of archaeocytes surrounded by a tough layer of spicules is called a(an) ____________________.

17. Within each ____________________, or stinging cell, of a cnidarian, is a(an) ____________________, a poison-filled, stinging structure.
Multiple Choice  On the lines provided, write the letter of the answer that best answers each question.

18. Which form of a cnidarian is shown in the illustration below?
   a. polyp  c. medusa  
   b. archaeocyte  d. mesoglea

19. What is the inner lining of the gastrovascular cavity in a cnidarian called?
   a. the ectoderm  c. the mesoderm  
   b. the gastroderm  d. the mesoglea

20. What lies between the gastroderm and the epidermis?
   a. the gastrovascular cavity  c. the cnidocyte  
   b. the mesoglea  d. the mesoderm

21. The digestive chamber of a cnidarian is called the
   a. nematocyst.  c. gastroderm.  
   b. osculum.  d. gastrovascular cavity.

22. What grouping of nerve cells allows a cnidarian to detect the touch of a foreign object?
   a. statocysts  c. nerve nets  
   b. nematocysts  d. spicules

23. What is the name for a group of sensory cells that helps a cnidarian determine the direction of gravity?
   a. statocysts  c. a nerve net  
   b. blastulas  d. ocelli

24. What structure allows a cnidarian to detect the absence or presence of light?
   a. a statocyst  c. an ocellus  
   b. a nerve net  d. an osculum

25. What allows cnidarian polyps to expand, shrink, and move their tentacles?
   a. a hydrostatic skeleton  c. archaeocytes  
   b. choanocytes  d. internal fertilization
Chapter 26  Sponges and Cnidarians

Section 26–1  Introduction to the Animal Kingdom  (pages 657–663)

Key Concepts
• What characteristics do all animals share?
• What essential functions do animals carry out?
• What are the important trends in animal evolution?

What Is an Animal?  (page 657)
1. Is the following sentence true or false? The cells that make up animal bodies are eukaryotic. __________
2. What characteristics do all animals share? ________________________________

3. Complete the table about animals.

<table>
<thead>
<tr>
<th>CATEGORIES OF ANIMALS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Category</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>Animals without backbones</td>
</tr>
<tr>
<td>Animals with backbones</td>
</tr>
</tbody>
</table>

What Animals Do to Survive  (pages 658–659)
4. What are seven essential functions that animals carry out?
   a. _____________________  e. _____________________
   b. _____________________  f. _____________________
   c. _____________________  g. _____________________
   d. _____________________

5. Complete the table about types of feeders.

<table>
<thead>
<tr>
<th>TYPES OF FEEDERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Feeder</td>
</tr>
<tr>
<td>CARNIVORE</td>
</tr>
<tr>
<td>FILTER FEEDER</td>
</tr>
</tbody>
</table>
6. Explain the difference between a parasite and a host.

7. What does an animal do when it respires?

8. What does the excretory system of most animals do?

9. Animals respond to events in their environment using specialized cells called

10. What are receptors, and what is their function?

11. What does it mean that an animal is motile?

12. What enables motile animals to move around?

13. Circle the letter of the process that helps a species maintain genetic diversity.
   a. asexual reproduction
   b. movement
   c. response
   d. sexual reproduction

14. What does asexual reproduction allow animals to do?

15. What are four characteristics that complex animals tend to have?
   a.
   b.
   c.
   d.

16. How have the cells of animals changed as animals have evolved?
17. Groups of specialized cells form _______________, which form organs, which form _________________.

18. After a zygote undergoes a series of divisions, it becomes a(an) _________________.

19. What is a protostome? __________________________________________

20. What is a deuterostome? __________________________________________

21. Is the following sentence true or false? Most invertebrates are deuterostomes. ________________

22. In the development of a deuterostome, when is the mouth formed? ________________

23. Complete the table about germ layers.

<table>
<thead>
<tr>
<th>Germ Layer</th>
<th>Location</th>
<th>Develops Into These Body Structures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innermost layer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Middle layer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outermost layer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

24. Complete the table about body symmetry.

<table>
<thead>
<tr>
<th>Type of Symmetry</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body parts that repeat around the center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A single plane divides the body into two equal halves</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

25. In an animal with radial symmetry, how many imaginary planes can be drawn through the center of the animal that would divide the animal in half? ________________
Match the term with its meaning.

<table>
<thead>
<tr>
<th>Term</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.</td>
<td>anterior</td>
</tr>
<tr>
<td>27.</td>
<td>posterior</td>
</tr>
<tr>
<td>28.</td>
<td>dorsal</td>
</tr>
<tr>
<td>29.</td>
<td>ventral</td>
</tr>
<tr>
<td>a.</td>
<td>Upper side</td>
</tr>
<tr>
<td>b.</td>
<td>Back end</td>
</tr>
<tr>
<td>c.</td>
<td>Front end</td>
</tr>
<tr>
<td>d.</td>
<td>Lower side</td>
</tr>
</tbody>
</table>

30. A body that is constructed of many repeated and similar parts, or segments, exhibits ________________.

31. What is cephalization? ________________________________

32. How do animals with cephalization respond differently to the environment than animals without cephalization? ________________________________

33. What is a body cavity? ________________________________

34. Why is having a body cavity important? ________________________________

Reading Skill Practice

An outline can help you remember the main points of a section. Write an outline of Section 26–1. Use the section’s blue headings for the first level of your outline and the section’s green headings for the second level. Support your headings with details from the section. Do your work on a separate sheet of paper.
Section 26–2  Sponges  (pages 664–667)

Key Concepts
- Why are sponges classified as animals?
- How do sponges carry out essential functions?

What Is a Sponge?  (page 664)
1. Sponges are placed in the phylum ____________________________.

2. What are pores, and where are pores on a sponge’s body? ____________________________

3. What does it mean that sponges are sessile? ____________________________

4. Why are sponges classified as animals? ____________________________

Form and Function in Sponges  (pages 664–667)
5. Is the following sentence true or false? Sponges have no tissues. __________

6. What does the movement of water through a sponge provide? ____________________________

Match the body part with its description.

<table>
<thead>
<tr>
<th>Body Part</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Choanocyte</td>
<td>a. Cell that makes spicules</td>
</tr>
<tr>
<td>Spicule</td>
<td>b. Cell that uses flagella to move water through the sponge</td>
</tr>
<tr>
<td>Osculum</td>
<td>c. A large hole at the top of the sponge</td>
</tr>
<tr>
<td>Archaeocyte</td>
<td>d. A spike-shaped structure</td>
</tr>
</tbody>
</table>

11. Where does digestion take place in sponges? ____________________________

12. Circle the letter of each sentence that is true about sponges.
   a. Sponges are filter feeders.
   b. Sponges reproduce only asexually.
   c. Sponges rely on water movement to carry out body functions.
   d. Sponges do not have a nervous system.
13. How do many sponges protect themselves from predators?

14. An immature stage of an organism that looks different from the adult form is called a(an) ____________.

15. How is a sponge larva different from the adult form?

16. What are gemmules, and what is their role in sponge reproduction?

Ecology of Sponges (page 667)

17. Why do you think many sponges are colored green?

18. What adaptation may allow sponges to survive in a wide range of habitats?
Section 26–3 Cnidarians (pages 669–675)

Key Concepts
- What is a cnidarian?
- What two body plans exist in the cnidarian life cycle?
- What are the three groups of cnidarians?

What Is a Cnidarian? (page 669)
1. Cnidarians are members of the phylum ___________________.
2. What important features unite the cnidarians as a group? ____________________
3. What are cnidocytes? ____________________
4. A poison-filled, stinging structure within a cnidocyte that contains a tightly coiled dart is called a(an) ____________________.

Form and Function in Cnidarians (pages 670–672)
5. Is the following sentence true or false? Cnidarians have bilateral symmetry. ____________________
6. What are the two stages in the cnidarian life cycle?
   a. ____________________   b. ____________________
7. Write labels on each illustration below to name the different body parts.

Polyp Medusa
Match the cnidarian structure with its description.

<table>
<thead>
<tr>
<th>Structure</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Gastroderm</td>
<td>a. Digestive chamber with single opening</td>
</tr>
<tr>
<td>9. Mesoglea</td>
<td>b. Sensory cells that help determine direction of gravity</td>
</tr>
<tr>
<td>10. Gastrovascular cavity</td>
<td>c. Inner lining of the gastrovascular cavity</td>
</tr>
<tr>
<td>11. Nerve net</td>
<td>d. Loosely organized network of nerve cells</td>
</tr>
<tr>
<td>12. Statocysts</td>
<td>e. Layer that lies between gastroderm and epidermis</td>
</tr>
<tr>
<td>13. Ocelli</td>
<td>f. Eyespots that detect light</td>
</tr>
</tbody>
</table>

14. Circle the letter of each sentence that is true about form and function in cnidarians.
   a. In a polyp, the mouth points downward.
   b. Materials that cannot be digested are passed out of the body through the mouth.
   c. Cnidarians respire by diffusion through their body walls.
   d. Most cnidarians reproduce sexually and asexually.

15. What does a cnidarian’s hydrostatic skeleton consist of? ______________________

16. Cnidarian polyps can reproduce asexually by ______________________.

17. In the *Aurelia* life cycle, how are young medusas released? ______________________

Groups of Cnidarians (pages 672–674)

18. Complete the table about classes of cnidarians.

<table>
<thead>
<tr>
<th>CLASSES OF CNIDARIANS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Class</strong></td>
</tr>
<tr>
<td>------------</td>
</tr>
<tr>
<td></td>
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<tr>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

19. What is bioluminescence? ____________________________________________
20. How do hydrias differ from other cnidarians in the class Hydrozoa?

21. Circle the letter of each sentence that is true about corals.
   b. Corals are solitary polyps that live at all depths of the ocean.
   c. Coral colonies growing near one another produce coral reefs.
   d. Most corals are colonial.

22. Is the following sentence true or false? Sea anemones are solitary polyps.

23. How are coral reefs produced?

24. Ecology of Corals (page 675)
   a. What variables determine the worldwide distribution of corals?
      b. _____________
      c. _____________
      d. _____________

25. What do corals depend on to capture solar energy, recycle nutrients, and help lay down their skeletons?

26. Circle the letter of each way that coral reefs can be harmed.
   a. Sediments from logging can smother corals.
   b. Overfishing can upset the ecological balance of coral reefs.
   c. Algae can remove energy from corals.
   d. Industrial pollutants can poison corals.

27. What is coral bleaching?