

## Section 29–2 Form and Function in Invertebrates (pages 751–758)



### Key Concept

- How do different invertebrate phyla carry out life functions?

### Introduction (page 751)

1. What are seven essential tasks all animals perform to survive? The seven are feeding and digestion, respiration, circulation, excretion, response, movement, and reproduction.
2. Why aren't more complicated systems in living animals necessarily better than simpler systems in other living animals? The fact that any system is found in living animals testifies to its success in performing functions.

### Feeding and Digestion (pages 751–752)

3. How is the digestion of food different in simple animals compared to that in more complex animals? Simple animals break down food primarily through intracellular digestion, but more complex animals use extracellular digestion.
4. Complete the table about types of digestion.

**TYPES OF DIGESTION**

Type	Definition
Intracellular digestion	Digestion of food inside cells
Extracellular digestion	Digestion of food outside the cells in a digestive tract

5. More-complex animals digest food in a tube called a(an) digestive tract.

### Respiration (pages 752–753)

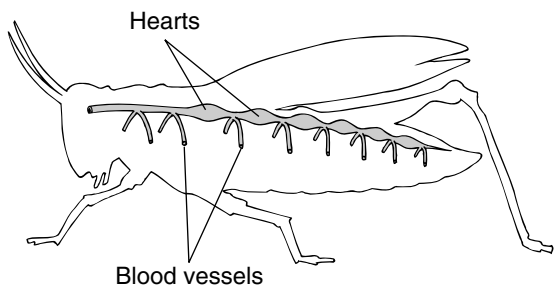
6. Why do respiratory organs have large surface areas? The more surface area that is exposed to the environment, the greater the amount of gas exchange that can occur.
7. Why are respiratory surfaces kept moist? Gases diffuse most efficiently across a moist membrane.
8. What are gills? They are feathery structures that expose a large surface area to the environment.
9. What are book lungs made of? They are made of parallel, sheetlike layers of thin tissues that contain blood vessels.

**Circulation (page 754)**

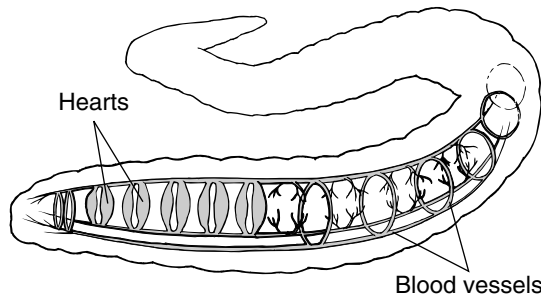
10. How do the smallest and thinnest animals meet the requirement of supplying oxygen and nutrients to cells and removing metabolic wastes? They meet the requirement by simple diffusion between their body surface and the environment.

11. Complex animals move fluid through their bodies using one or more hearts.

12. Label each of the organisms below according to which has a closed circulatory system and which has an open circulatory system.



Open circulatory system



Closed circulatory system

13. Closed circulatory systems are characteristic of what kinds of animals? They are characteristic of larger, more active animals.

**Excretion (pages 754–755)**

14. What does the excretory system of most animals do? It rids the body of metabolic wastes and controls the amount of water in their tissues.

15. How do aquatic invertebrates rid their bodies of ammonia? Ammonia diffuses from their body tissues into the surrounding water.

16. Circle the letter of each way that terrestrial invertebrates eliminate nitrogenous wastes from their bodies.

- a. Ammonia diffuses from body tissues into the surrounding water.
- b.** They convert ammonia into urea.
- c.** They convert ammonia into uric acid.
- d.** They form a thick paste that leaves the body through the rectum.

**Response (page 756)**

17. What three trends do invertebrates show in the evolution of the nervous system?

- a. Centralization
- b. Cephalization
- c. Specialization

18. Number the following groups of invertebrates according to how centralized their nervous system is. Number the group with the simplest nervous system 1.

- 2 a. Flatworms
- 1 b. Cnidarians
- 3 c. Arthropods

19. What is cephalization? It is the concentration of nerve tissue and organs in one end of the body.

20. Is the following sentence true or false? The more complex an animal’s nervous system, the more developed its sense organs are. true

**Movement and Support (pages 756–757)**

21. What are the three main kinds of skeletal systems among invertebrates?

- a. Hydrostatic skeletons
- b. Exoskeletons
- c. Endoskeletons

22. What invertebrates have endoskeletons? Echinoderms

**Sexual and Asexual Reproduction (pages 757–758)**

23. What is the difference between external and internal fertilization? In external fertilization, eggs are fertilized outside the female’s body. In internal fertilization, eggs are fertilized inside the female’s body.

24. Circle the letter of each sentence that is true about invertebrate reproduction.

- a. Most invertebrates reproduce sexually in one part of their life cycle.
- b. Asexual reproduction maintains genetic diversity in a population.
- c. Asexual reproduction includes budding and division in two.
- d. Most invertebrates have separate sexes.