

Chapter 28 Arthropods and Echinoderms

Section 28-1 Introduction to the Arthropods
(pages 715-719)

Key Concepts

- What are the main features of arthropods?
- What are the important trends in arthropod evolution?
- What happens when an arthropod outgrows its exoskeleton?

What Is an Arthropod? (page 715)

1. What is the basic body plan of all arthropods?

2. A tough body wall that protects and supports the body of arthropods is called a(an)

3. What is chitin?

4. Circle the letter of each sentence that is true about arthropod exoskeletons.
 - a. The exoskeletons of many land-dwelling species have a waxy covering.
 - b. All arthropod exoskeletons are the same shape.
 - c. Lobster exoskeletons cannot be crushed by hand.
 - d. An exoskeleton is an external covering.
5. What are appendages?

6. Is the following sentence true or false? The appendages of arthropods are jointed.

Evolution of Arthropods (page 716)

7. Where did the first arthropods appear more than 600 million years ago?

8. What are two ways in which arthropods have evolved since they first appeared?
 - a. _____
 - b. _____

9. Circle the letter of each sentence that is true about arthropod evolution.
 - a. Most primitive arthropods had only one or two body segments.
 - b. Arthropod appendages evolved into different forms.
 - c. The early body plan was modified gradually.
 - d. Appendages of living arthropods include wings, flippers, and mouthparts.

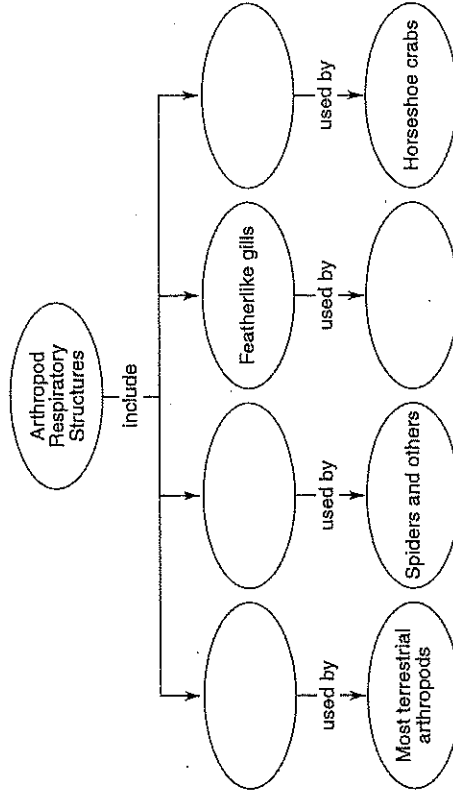
Form and Function in Arthropods (pages 716-719)

10. Is the following sentence true or false? Arthropods include herbivores, carnivores, and omnivores.

Match the arthropod structure with its description.

Structure	Description
11. Tracheal tubes	a. Saclike organs that extract wastes from the blood and add them to feces
12. Spiracles	b. Network of branching tubes through which arthropods breathe
13. Book lungs	c. Organs through which horseshoe crabs respire
14. Book gills	d. Layers of respiratory tissue stacked like the pages of a book through which spiders respire
15. Malpighian tubules	e. Small openings on the side of the body through which air enters and leaves tracheal tubes

16. Complete the concept map about arthropod respiration.



5. The largest group of crustaceans is the _____.
6. Complete the table about crustacean body parts.

CRUSTACEAN BODY PARTS

Body Part	Description
Thorax	Fusion of the head with the thorax
Abdomen	The part of the exoskeleton that covers the cephalothorax
Mandible	First pair of legs in decapods, which bear large claws
Swimmerets	

7. Circle the letter of each sentence that is true about barnacles.
- They are sessile.
 - They have an outer, shell-like covering.
 - They move backward by snapping a tail.
 - They attach themselves to rocks and marine animals.

Spiders and Their Relatives (pages 722-724)

8. Horseshoe crabs, spiders, ticks, and scorpions are grouped as _____.
9. Circle the letter of each description of structures that chelicerates have.
- four or five pairs of legs
 - three or four body sections
 - two pairs of branched antennae
 - mouthparts called chelicerae
10. What is the function of the chelicerae? _____

11. The appendages near the mouth that are usually modified to grab prey are called _____.
12. How do spiders respire? _____

13. What arthropods do arachnids include? _____
14. How are horseshoe crabs like and unlike crabs? _____
15. Why must spiders liquefy their food to swallow it? _____
16. Circle the letter of each sentence that is true about spiders and silk.
- Spiders spin silk into cocoons for eggs.
 - Spinning webs seems to be a programmed behavior.
 - Spinnerets are organs that contain silk glands.
 - Tarantulas cannot produce silk.
17. Is the following sentence true or false? Mites and ticks are often parasitic. _____
18. Scorpions have pedipalps that are enlarged into _____.
19. What do ticks transmit that cause Rocky Mountain spotted fever and Lyme disease? _____

Insects and Their Relatives (page 725)

20. Centipedes, millipedes, and insects are all grouped as _____.
21. Circle the letter of each description of structures that uniramous have.
- one pair of antennae
 - unbranched appendages
 - mouthparts called chelicerae
 - jaws
22. Why are centipedes restricted to moist or humid areas? _____
23. How many pairs of legs does each body segment of most centipedes have? _____
24. How many pairs per segment do millipedes have? _____

Insects and Humans (page 730)

17. Is the following sentence true or false? Only male mosquitoes bite humans and other animals to get a blood meal. _____
18. How do insects contribute beneficially to agriculture? _____

Insect Communication (page 731)

19. Circle the letter of each sentence that is true about insect communication.
- a. To attract females, male crickets chirp.
 - b. Much of an insect's communication involves finding a mate.
 - c. Insects communicate using visual signals.
 - d. Fireflies use sound cues to communicate with potential mates.
20. What are pheromones? _____

Insect Societies (pages 732-733)

21. What is a society? _____

22. Circle the letter of each sentence that is true about castes.
- a. Each caste has a body form specialized for its role.
 - b. Most insect societies have multiple queens.
 - c. Groups of individuals in a society are specialized to perform particular tasks.
 - d. The queen is typically the largest individual in the colony.
23. What does a honeybee's round dance tell the other bees? _____

Reading Skill Practice

By looking carefully at illustrations in textbooks, you can help yourself understand better what you have read. Look carefully at Figure 28-16 on page 728 in your textbook. What important idea do these illustrations communicate? Do your work on a separate sheet of paper.