

# CHAPTER REVIEW

## CONTENT REVIEW

### Multiple Choice

Choose the letter of the answer that best completes each statement.

- Which of these is an arachnid?  
a. scorpion                      c. grasshopper  
b. horseshoe crab      d. lobster
- A free-living arthropod is certain to have  
a. antennae.                      c. jointed appendages.  
b. chelicerae.                      d. gills.
- Insects are characterized by  
a. a stony exoskeleton containing calcium carbonate.  
b. chelicerae and pedipalps.  
c. three pairs of legs on the thorax.  
d. many body segments, each of which bears two pairs of legs.
- In crustaceans, nitrogenous wastes are excreted with the help of  
a. green glands                      c. Malpighian tubules.  
b. spiracles                              d. pheromones.
- A wormlike immature animal undergoes a resting stage during which it changes into an adult that has four wings and six legs. This animal is a (an)  
a. crustacean.                      c. chelicerate.  
b. insect.                              d. trilobite.
- Most spiders breathe using  
a. mandibles.                      c. Malpighian tubules.  
b. tracheal tubes.                      d. book lungs.
- Which is most likely to be a herbivore?  
a. spider                              c. tick  
b. centipede                              d. millipede
- Trilobites  
a. are primarily terrestrial.  
b. are extinct.  
c. have highly specialized appendages.  
d. communicate by "dancing."

### True or False

Determine whether each statement is true or false. If it is true, write "true." If it is false, change the underlined word or words to make the statement true.

- If the level of juvenile hormone in an insect's body is high, the insect is in the pupal stage.
- Arthropods have a closed circulatory system.
- Centipedes are herbivores that have two pairs of legs on each segment.
- A spider uses fanglike pedipalps to inject venom into its prey.
- All the members of the class Uniramia are now extinct.
- Horseshoe crabs are classified as crustaceans.
- Arthropods are characterized by an exoskeleton composed of calcium carbonate.
- Arthropods must periodically molt, or shed, their exoskeletons.

### Word Relationships

In each of the following sets of terms, three of the terms are related. One term does not belong. Determine the characteristic common to three of the terms and then identify the term that does not belong.

- tracheal tube, book lung, spiracle, pupa
- green gland, gill, Malpighian tubule, chitin
- mandible, chelicera, pedipalp, walking leg
- chelicerate, uniramian, crustacean, insect

## CONCEPT MASTERY

Use your understanding of the concepts developed in the chapter to answer each of the following in a brief paragraph.

1. Beetles undergo complete metamorphosis and dragonflies undergo incomplete metamorphosis. Describe the major events of the life cycles of beetles and dragonflies. Be sure to include a comparison of their life cycles.
2. In some classification schemes, arthropods are divided into two subphyla—Chelicerata and Mandibulata—based on the type of mouthparts they possess (chelicera and mandibles, respectively). Which groups of arthropods belong to the subphylum Mandibulata according to this classification scheme? Explain why many experts do not favor this method of grouping arthropods.
3. Using a crayfish as your representative organism, discuss the distinguishing characteristics of arthropods.
4. Certain chemicals bind with juvenile hormone and make it inactive. Describe how exposure to such chemicals would affect the development of a moth.

## CRITICAL AND CREATIVE THINKING

Discuss each of the following in a brief paragraph.

1. **Applying concepts** Explain why you will never see spiders three stories tall or ants big enough to eat New York (except in the movies).
2. **Relating concepts** Blue crabs usually have hard, stony shells. However, some blue crabs have thin, papery shells. These crabs are called soft-shell crabs and are a popular food for some people, who eat them whole—shell and all! Explain why some crabs are soft-shelled.
3. **Relating cause and effect** People who squash an annoying hornet are often unpleasantly surprised to find themselves suddenly under attack by dozens of hornets. Explain this phenomenon.
4. **Making inferences** Instead of spraying a field with chemicals, a plane disperses tens of thousands of tiny wasps over the growing plants. What is the most likely reason for such an action?
5. **Applying concepts** At the park one day, you observe a bee flying around an open can of soda. Soon after, you notice that there are a lot of bees buzzing around this can. However, there are no bees on other open cans of soda a few meters away.
  - a. Explain how the bees probably found the first can of soda.
  - b. Explain why the bees do not seem interested in the other cans of soda.
6. **Assessing concepts** Which do you think is a better arrangement for an insect society: having workers that can each perform all necessary tasks or having workers that are specialized for specific tasks? Explain your answer.
7. **Using the writing process** Certain crabs have a peculiar symbiotic relationship with coral: They cause branches of coral to grow around them to form a protective prison. The imprisoned crab obtains food and oxygen from the currents of water that flow through its coral cage. Write a short story or play in which one of these imprisoned crabs converses with a more typical crustacean.