

SECTION REVIEW

In this section you learned about the spiny-skinned animals that belong to the phylum Echinodermata. Echinoderms include animals such as starfishes, brittle stars, sand dollars, sea cucumbers, and sea lilies.

You discovered that echinoderms are characterized by spiny skin, five-part radial symmetry, an internal skeleton, and a unique body system called the water vascular system. The water vascular system consists of a sys-

tem of internal water-filled canals and many suction-cuplike structures called tube feet. It is involved in movement and many other essential life functions.

You learned that echinoderms are important in controlling the populations of other organisms in many marine habitats. In recent years, echinoderms have become important to humans as subjects of scientific research and as possible sources of medicine.

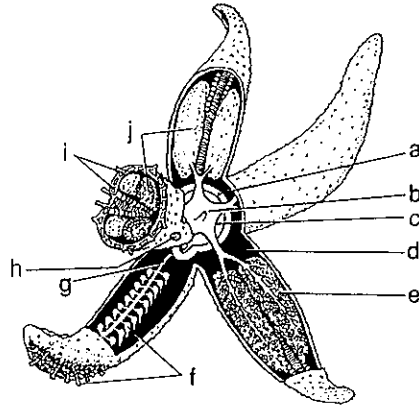
Formulating Definitions: Building Vocabulary Skills

1. In your own words, write a definition of the word *echinoderm* that lists five important characteristics of echinoderms.

2. List six animals that are classified as echinoderms.

Identifying Structures: Building Vocabulary Skills

Examine the accompanying illustration of a starfish. In the spaces provided, identify and write a brief definition for each part of the starfish. Note that the last two structures have been identified for you.



- a. _____

- b. _____

- c. _____

- d. _____

- e. _____

- f. _____

- g. _____

- h. _____

- i. Skeletal plates: _____

- j. Gonad: _____

Characteristics of Echinoderms: Using the Main Ideas

Decide if each of the following statements correctly describes echinoderms. If it does, write an E in the blank before the statement. If it does not, write an N and explain why the statement is incorrect.

- _____ 1. Echinoderms live in salt water and in fresh water. _____

- _____ 2. All echinoderms are carnivores. _____

- _____ 3. Echinoderms have no brain. _____

- _____ 4. Echinoderms have a respiratory system that includes lungs or feathery gills. _____

- _____ 5. Echinoderms have an external skeleton. _____

- _____ 6. Echinoderms are vertebrates. _____

- _____ 7. Adult echinoderms exhibit bilateral symmetry. _____

- _____ 8. The water vascular system is unique to echinoderms. _____

- _____ 9. In most species of echinoderms, solid wastes are expelled through the anus. _____

- _____ 10. Although primitive, the nervous system of the echinoderm can tell the animal when it is in light or darkness and when it is right side up. _____

Concept Mapping

The construction of and theory behind concept mapping are discussed on pages vii–ix in the front of this Study Guide. Read those pages carefully. Then consider the concepts presented in Section 29–1 and how you would organize them into a concept map. Now look at the concept map for Chapter 29 on page 284. Notice that the concept map has been started for you. Add the key facts and concepts you feel are important for Section 29–1. When you have finished the chapter, you will have a completed concept map.

Section 29-2 Invertebrate Chordates (pages 645-646)

SECTION REVIEW

In this section you were introduced to the chordates, or members of the phylum Chordata. You also learned about the invertebrate chordates.

Chordates are animals that are characterized by a notochord, a hollow dorsal nerve cord, and pharyngeal slits. Some chordates possess these features as adults. Others may possess these features only at an early stage of development.

The invertebrate chordates are divided

into two groups: tunicates and lancelets. Invertebrate chordates are of interest to evolutionary biologists because they represent the link between vertebrates and the rest of the animal kingdom. It is important to remember that vertebrates did not evolve from modern tunicates and lancelets. However, modern invertebrate chordates are thought to be similar to the ancient chordates that gave rise to the vertebrates.

Defining Terms: Building Vocabulary Skills

In your own words, define each of the following terms.

1. Lancelet: _____

2. Hollow dorsal nerve cord: _____

3. Chordate: _____

4. Tunicate: _____

5. Notochord: _____

6. Pharyngeal slits: _____

Concept Mapping

The construction of and theory behind concept mapping are discussed on pages vii-ix in the front of this Study Guide. Read those pages carefully. Then consider the concepts presented in Section 29-2 and how you would organize them into a concept map. Now look at the concept map for Chapter 29 on page 284. Notice that the concept map has been started for you. Add the key facts and concepts you feel are important for Section 29-2. When you have finished the chapter, you will have a completed concept map.