

SECTION 29-1 REVIEW

INVERTEBRATE EVOLUTION

VOCABULARY REVIEW Define the following terms.

- 1. **radial symmetry** _____

- 2. **bilateral symmetry** _____

- 3. **cephalization** _____

- 4. **coelom** _____

- 5. **Burgess shale** _____

MULTIPLE CHOICE Write the correct letter in the blank.

- _____ 1. The ancestors of most modern animal phyla first appeared during the
 - a. Cenozoic Era.
 - b. Precambrian Era.
 - c. Cambrian Period.
 - d. Mesozoic Era.
- _____ 2. A phylogenetic diagram shows
 - a. evolutionary relationships.
 - b. symbiotic relationships.
 - c. size relationships.
 - d. feeding level relationships.
- _____ 3. Roundworms, which have body cavities that are partially lined with mesoderm and endoderm, are classified as
 - a. acoelomates.
 - b. coelomates.
 - c. deuterostomes.
 - d. pseudocoelomates.
- _____ 4. Animals of the Cambrian Period typically had all of the following except
 - a. body symmetry.
 - b. segmentation.
 - c. a backbone.
 - d. cephalization.
- _____ 5. Which invertebrates exhibit radial symmetry?
 - a. cnidarians and echinoderms
 - b. mollusks and arthropods
 - c. sponges and flatworms
 - d. roundworms and annelids

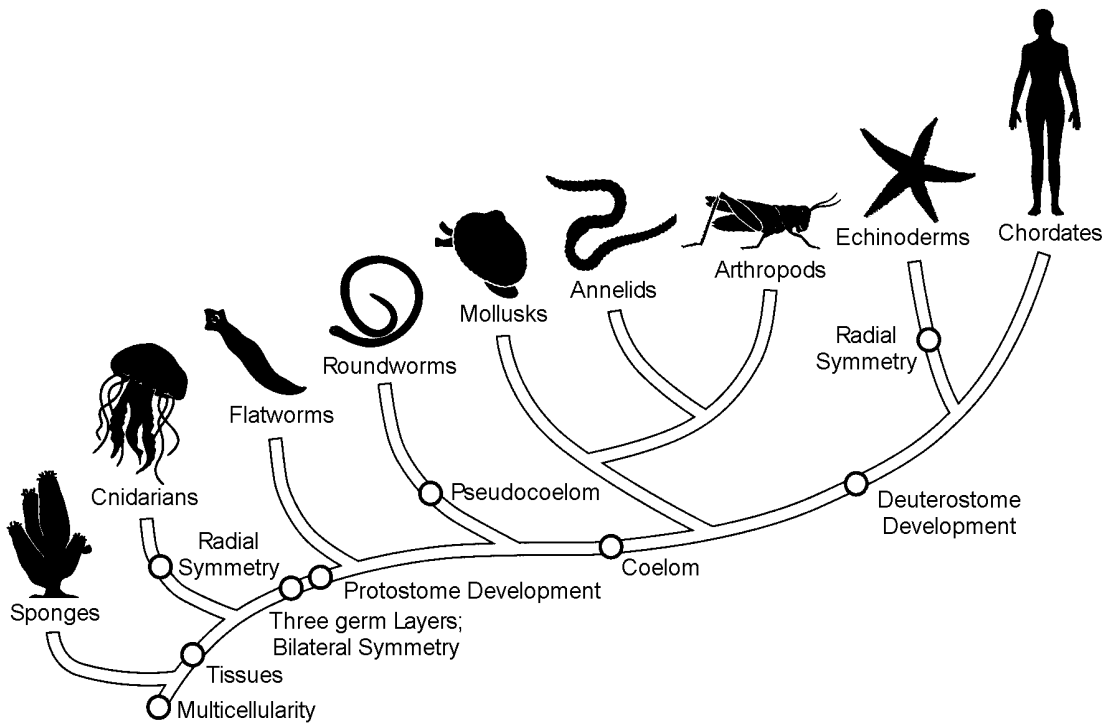
SHORT ANSWER Answer the questions in the space provided.

- Describe the two kinds of body symmetry in animals. (p.748) _____

- What is cephalization and how does it affect the way an animal responds to its environment? (p.748) _____

- What are protostomes and deuterostomes? Give an invertebrate example of each. (p.749) _____

STRUCTURES AND FUNCTIONS The diagram below represents one hypothesis about evolutionary relationships among groups of living invertebrates and chordates. Answer the following questions. (p.747)



- Which feature evolved twice during the course of invertebrate evolution? _____
- Which groups of invertebrates develop from three germ layers? _____

- To which two groups of invertebrates are annelids most closely related? _____

SECTION 29-2 REVIEW

FORM AND FUNCTION IN INVERTEBRATES

VOCABULARY REVIEW Distinguish between the terms in each of the following terms.

1. **intracellular digestion, extracellular digestion** _____

2. **open circulatory system, closed circulatory system** _____

3. **hydrostatic skeleton, exoskeleton, endoskeleton** _____

4. **internal fertilization, external fertilization** _____

MULTIPLE CHOICE Write the correct letter in the blank.

- _____ 1. Cephalization refers to the
 - a. division of the body into upper and lower parts.
 - b. concentration of sense organs and nerve cells in the front of the body.
 - c. joining together of specialized cells to form tissues.
 - d. formation of the body cavity between the germ layers.

- _____ 2. Which structures are not part of an excretory system?

a. flame cells	b. spiracles	c. nephridia	d. Malpighian tubules
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- _____ 3. One animal that has a body plan like the picture to the right is a (p.749)

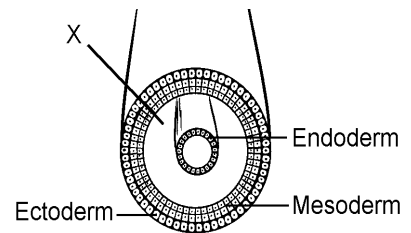
a. flatworm.	c. sponge.
b. roundworm.	d. jellyfish.

- _____ 4. The space labeled X is called a(n) (p.749)

a. coelom.	c. pseudocoelom.
b. acoelom.	d. gastrovascular cavity.

- _____ 5. An example of an invertebrate with a hydrostatic skeleton is a(n)

a. spider.	b. sea star.	c. annelid.	d. grasshopper.
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SHORT ANSWER Answer the questions in the space provided.

1. Complete the table below about the following animal groups and some of their characteristics. (pp.751-757)

Characteristic	Cnidarians	Mollusks	Echinoderms
Type of digestion			
Type of nervous system			
Type of skeleton			

2. To remove nitrogenous wastes, some insects and arachnids have Malpighian tubules that convert ammonia to uric acid. Why is that an advantage for these invertebrates? (p.755) _____

3. Describe respiration in aquatic and terrestrial organisms. (pp.752-753) _____

STRUCTURES AND FUNCTIONS Write the name of the invertebrate group or groups that exhibit the features described in the questions below. (p.749 and p.758)



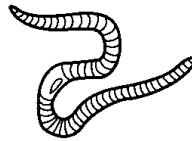
Cnidarian



Flatworm



Mollusk



Annelid



Arthropod



Echinoderm

1. radial symmetry _____

2. cephalization _____

3. true coelom _____

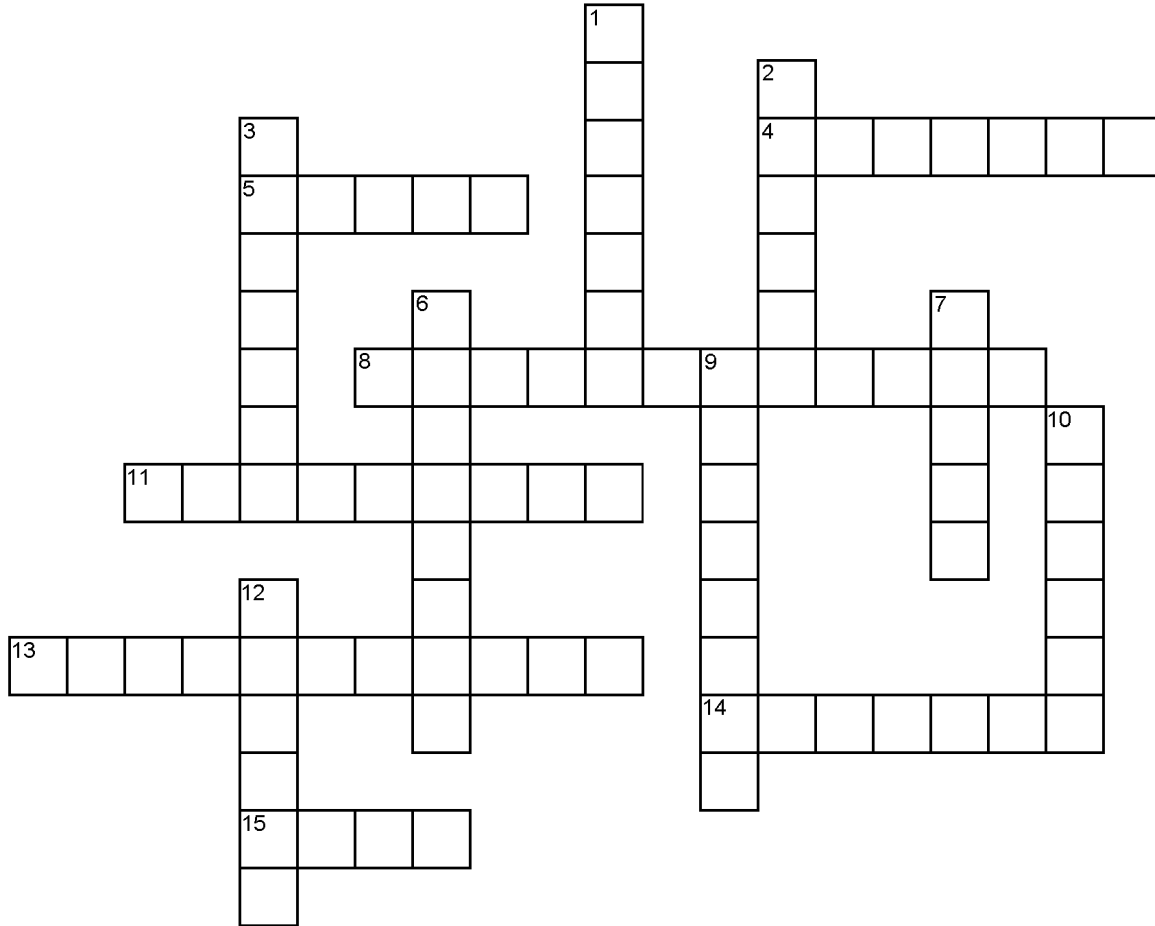
4. protostome development _____

5. segmentation _____

6. sexual reproduction _____

VOCABULARY - CHAPTER 29

The crossword puzzle is a simple way to master some of the more important vocabulary terms in this chapter.



Across

- 4. _____ is a very poisonous nitrogen waste product; not urea or uric acid
- 5. the largest invertebrate living today; cousin to an octopus
- 8. an internal skeleton
- 11. the type of symmetry found in most animals
- 13. a skeleton based on water pressure; an earthworm has this type of skeleton
- 14. informal name of a segmented worm; earthworm and leech have a segmented body
- 15. the type of circulatory system where the blood leaves the blood vessels and flows into body spaces

Down

- 1. biology term for sex cells; egg and sperm cells
- 2. adult sea stars have _____ symmetry
- 3. type of reproduction that involves only one parent
- 6. fertilization that occurs inside the female
- 7. respiratory structures are thin and _____
- 9. eggs are fertilized outside of the female
- 10. the type of circulatory system where the blood stays inside the blood vessels
- 12. a true body cavity; it forms between the mesodermal tissue