

# [Invertebrate questions true false indicate](https://assignbuster.com/invertebrate-questions-truefalse-indicate/)

Invertebrate Questions True/False Indicate whether the statement is true or false. \_\_\_\_1. The acute senses of arthropods are the result of organs such as compound eyes and antennae. \_\_\_\_2. Arthropods have a well-developed excretory system consisting of nephridia. \_\_\_\_3. The well-developed arthropod nervous system consists of a double ventral nerve cord, an anterior brain, and several ganglia. \_\_\_\_4. Efficient gas exchange in arthropods is accomplished by tracheal tubes, book lungs, or gills. \_\_\_\_5. The exoskeleton is a protective adaptation that enables arthropods to move freely. \_\_\_\_6.

Jointed appendages are advantageous because they are limited in their strength and functions. \_\_\_\_7. In arthropods, appendages are adapted for a variety of purposes including sensing, walking, feeding, and mating. \_\_\_\_8. The exoskeleton of arthropods is harder and provides more protection than the cuticle of annelids. Modified True/False Indicate whether the statement is true or false. If false, change the identified word or phrase to make the statement true. \_\_\_\_9. Roundworms are have one body opening. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_10. All roundworms are parasites. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_11.

Trichinella can be ingested in raw or undercooked pork. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_12. Pinworms are the most common parasites in children living in the United States. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_13. Hookworms can be contracted by eating improperly cooked infected pork. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_14. The most complex and most recently evolved mollusks are gastropods. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_15. Earthworms are hermaphrodites because each worm produces both eggs and sperm. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_16. The respiratory organs in aquatic gastropods are primitive lungs. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_17.

Gastropods have two shells. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_18. The excretory structures in mollusks are called nephridia. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_19. Bivalves obtainfoodby predation. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_20. In shelled mollusks, the radula secretes the shell. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Multiple Choice Identify the choice that best completes the statement or answers the question. \_\_\_\_21. Animals with bilateral symmetry find food and mates and avoid predators more efficiently because they have \_\_\_\_\_. a. | body cavities| c. | tails| b. | more muscular control| d. | the ability to see in all directions| \_\_\_\_22.

Which of these animals has bilateral symmetry? a. | sponge| c. | jellyfish| b. | hydra| d. | flatworm| \_\_\_\_23. What type of symmetry does a penny have? a. | bilateral symmetry| c. | no symmetry| b. | radial symmetry| d. | biaxial symmetry| \_\_\_\_24. Which of the following applies to a sponge? a. | intracellular digestion| c. | bilateral symmetry| b. | has a gastrula stage| d. | develops three embryonic layers| \_\_\_\_25. The animal's digestive tract forms from the \_\_\_\_\_. a. | endoderm| c. | ectoderm| b. | mesoderm| d. | protostome| \_\_\_\_26. The embryo layer that forms the skin and nervous tissue is the \_\_\_\_\_. a. | endoderm| c. | ectoderm| b. | mesoderm| d. | protostome|

Figure 25-2 \_\_\_\_27. In Figure 25-2, where is the ectoderm? a. | A| c. | C| b. | B| d. | D| \_\_\_\_28. In Figure 25-2, where is the endoderm? a. | A| c. | C| b. | B| d. | D| \_\_\_\_29. In Figure 25-2, where is the mesoderm? a. | A| c. | C| b. | B| d. | D| \_\_\_\_30. In Figure 25-2, where is the gastrula? a. | A| c. | C| b. | B| d. | D| \_\_\_\_31. In Figure 25-2, if part A develops into a mouth, this organism will be a \_\_\_\_\_. a. | protosome| c. | autosome| b. | deuterosome| d. | autotroph| Figure 25-3 \_\_\_\_32. Which of the organisms in Figure 25-3 is asymmetrical? a. | A| c. | C| b. | B| d. | D| \_\_\_\_33. Which of the organisms in Figure 25-3 probably has the most muscular control? . | A| c. | C| b. | B| d. | D| \_\_\_\_34. Which of the organisms in Figure 25-3 has the most complex systems developed from coelom? a. | A| c. | C| b. | B| d. | D| \_\_\_\_35. Which of the organisms in Figure 25-3 has bilateral symmetry but no endoskeleton? a. | A| c. | C| b. | B| d. | D| \_\_\_\_36. Nematocysts discharge when \_\_\_\_\_. a. | salt concentration in the ocean drops| c. | a cnidarian regenerates| b. | tentacles touch a source of food| d. | cnidarians reproduce| \_\_\_\_37. A Portuguese man-of-war is an example of \_\_\_\_\_. a. | an anthozoan| c. | a hydrozoan colony| b. | a large scyphozoan| d. | a sea anemone| \_\_\_\_38. Uncooked or undercooked pork may contain \_\_\_\_\_. . | trichina worms| c. | pinworms| b. | hookworms| d. | free-living roundworms| \_\_\_\_39. In a cnidarian, digestion occurs in the \_\_\_\_\_. a. | proglottids| c. | digestive tract| b. | gastrovascular cavity| d. | tentacles| \_\_\_\_40. A \_\_\_\_\_ has a muscular tube called the pharynx, which can be extended outside its body to suck in food. a. | jellyfish| c. | planarian| b. | sponge| d. | tapeworm| \_\_\_\_41. A group of cnidarians that provide food and shelter for many kinds of animals are the \_\_\_\_\_. a. | jellyfishes| c. | sea anemones| b. | hydras| d. | corals| \_\_\_\_42. Because sponges are sessile, they get their food through \_\_\_\_\_. a. | scavenging the seafloor| c. the spicules| b. | filter feeding| d. | tentacles| \_\_\_\_43. The collar cells of sponges are similar to \_\_\_\_\_. a. | flagellated protists| c. | ciliated paramecia| b. | amoebas| d. | sessile sporozoans| Figure 26-2 \_\_\_\_44. Which structure shown in Figure 26-2 analogous to an anus? a. | A| c. | C| b. | B| d. | D| \_\_\_\_45. In Figure 26-2, how did the structure labeled A develop? a. | fertilization by sperm| c. | asexually by budding| b. | fragmentation| d. | formation of gametes| Figure 26-3 \_\_\_\_46. How are the two organisms shown in Figure 26-3 different? a. | A is a cnidarian and B is not| c. | only B is poisonous| b. | A moves but B doesn’t| d. A is a medusa and B is a polyp colony| \_\_\_\_47. Which of the two organisms shown in Figure 26-3 releases gametes? a. | A| c. | both| b. | B| d. | neither| Figure 26-4 \_\_\_\_48. Which organism shown in Figure 26-4 does not have hooks and suckers on its mouth? a. | A| c. | C| b. | B| d. | D| \_\_\_\_49. Which organism shown in Figure 26-4 is a parasite that requires two hosts? a. | A| c. | C| b. | B| d. | D| \_\_\_\_50. Which organism shown in Figure 26-4 is of a phylum that can infect plants? a. | A| c. | C| b. | B| d. | D| \_\_\_\_51. What can be inferred from Figure 26-5? Roundworm Infections| Number of Cases| Low Temperature| Day| 300| 60| 1| 295| 58| 5| 290| 55| 10| 20| 51| 15| 303| 55| 20| 295| 45| 25| 15| 25| 30| Figure 26-5 a. | this species of roundworm cannot survive outside hosts at 25 degrees| b. | this species of roundworm is widespread| c. | this species of roundworm does not flourish in warm weather| d. | this species of roundworm becomes dormant in warm weather| Figure 27-2 \_\_\_\_52. Which shell shown in Figure 27-2 is from the most recently evolved organism? a. | A| c. | C| b. | B| d. | none of them| \_\_\_\_53. Which shell shown in Figure 27-2 is from a bivalve? a. | A| c. | C| b. | B| d. | none of them| \_\_\_\_54. Which shell shown in Figure 27-2 came from a stomach-footed mollusk? a. | A| c. | C| b. B| d. | none of them| \_\_\_\_55. Which shell shown in Figure 27-2 came from a mollusk that uses jellyfish nematocysts for protection? a. | A| c. | C| b. | B| d. | none of them| Figure 27-3 \_\_\_\_56. Which part of the squid shown in Figure 27-3 is analogous to a snail’s shell? a. | A| c. | C| b. | B| d. | D| \_\_\_\_57. Which part of the squid shown in Figure 27-3 is the foot? a. | A| c. | C| b. | B| d. | D| . Figure 27-4 \_\_\_\_58. In the earthworm shown in Figure 27-4, what part is analogous to the stomach in humans? a. | A| c. | C| b. | B| d. | D| \_\_\_\_59. In the earthworm shown in Figure 27-4, what part is analagous to the central nervous system in humans? . | A| c. | C| b. | B| d. | D| \_\_\_\_60. In the earthworm shown in Figure 27-4, what part is analagous to the throat in humans? a. | A| c. | C| b. | B| d. | D| \_\_\_\_61. In the earthworm shown in Figure 27-4, what part is analogous to the kidneys in humans? a. | A| c. | C| b. | B| d. | D| Figure 27-5 \_\_\_\_62. According to Figure 27-5, which phylum evolved first? a. | annelids| c. | nematodes| b. | bivalves| d. | planaria| \_\_\_\_63. According to Figure 27-5, which phylum are annelids closest to on an evolutionary scale? a. | bivalves| c. | nematodes| b. | gastropods| d. | cestodes| \_\_\_\_64. Grasshoppers have \_\_\_\_\_. a. | two compound eyes and three simple eyes| . | three compound eyes and two simple eyes| c. | two compound eyes and two simple eyes| d. | none of these| \_\_\_\_65. The stages of incompletemetamorphosisare \_\_\_\_\_. a. | egg, larva, pupa, adult| c. | egg, larva, adult| b. | larva, pupa, adult| d. | egg, nymph, adult| \_\_\_\_66. Crabs, lobsters, shrimps, and pill bugs are members of the class \_\_\_\_\_. a. | Insecta| c. | Crustacea| b. | Chilopoda| d. | Arachnida| \_\_\_\_67. The typical tick body consists of \_\_\_\_\_ segment(s). a. | one| c. | three| b. | two| d. | four| \_\_\_\_68. Most insects have one pair of \_\_\_\_\_ that are used to sense vibrations, food, and pheromones in theenvironment. a. pedipalps| c. | antennae| b. | wings| d. | eyes| \_\_\_\_69. In spiders, the exchange of gases takes place in \_\_\_\_\_. a. | book lungs| c. | gills| b. | lungs| d. | spiracles| \_\_\_\_70. When a spider bites, it uses its \_\_\_\_\_. a. | chelicerae| c. | pedipalps| b. | mandibles| d. | silk glands| \_\_\_\_71. How many pairs of jointed appendages do arachnids have? a. | two| c. | three| b. | four| d. | six| \_\_\_\_72. Aquatic arthropods exchange gases through \_\_\_\_\_. a. | tracheal tubes| c. | their exoskeleton| b. | gills| d. | book lungs| \_\_\_\_73. Before an arthropod molts, a new exoskeleton \_\_\_\_\_. a. | grows on top of its old one| c. | cannot grow| b. | must be found| d. grows beneath its old one| \_\_\_\_74. The characteristic that most distinguishes arthropods from other invertebrates is \_\_\_\_\_. a. | the coelom| c. | jointed appendages| b. | the endoskeleton| d. | bilateral symmetry| \_\_\_\_75. What clue tells you immediately that the organism shown in Figure 28-2 is not an arthropod? Figure 28-2 a. | it has no jointed appendages| c. | it has no open circulation system| b. | it has no exoskeleton| d. | it is warm blooded| \_\_\_\_76. What clue tells you immediately that the organism shown in Figure 28-3 is not an arthropod? Figure 28-3 a. | it has no jointed appendages| c. | it doesn’t molt| b. | it has more than 6 legs| d. it cannot fly| \_\_\_\_77. What clue tells you immediately that the organism shown in Figure 28-4 is not an arthropod? Figure 28-4 a. | its gas exchange is inefficient| c. | it has no endoskeleton| b. | there are too many segments| d. | it has no jointed appendages| \_\_\_\_78. No one has ever seen a living trilobite. From this fossil picture in Figure 28-5, how can you tell it was an arthropod? Figure 28-5 a. | it molted| c. | it had segments| b. | it produced asexually| d. | it had Malpighian tubules| Figure 28-6 \_\_\_\_79. What type of metamorphosis is shown in Figure 28-6? a. | partial| c. | incomplete| b. | complete| d. | nymph| \_\_\_\_80.

What stages of metamorphosis shown in Figure 28-6 have no exoskeleton? a. | A and B| c. | C and D| b. | B and C| d. | A and C| \_\_\_\_81. What stage of metamorphosis shown in Figure 28-6 does the most eating take place? a. | A| c. | C| b. | B| d. | D| \_\_\_\_82. What stage of metamorphosis shown in Figure 28-6 contains the youngest organism? a. | A| c. | C| b. | B| d. | D| \_\_\_\_83. In what stage of metamorphosis shown in Figure 28-6 does the organism have recognizable insect characteristics like three segments and jointed appendages? a. | A| c. | C| b. | B| d. | D| \_\_\_\_84. What stage of metamorphosis shown in Figure 28-6 has characteristics of chilopoda and diplopoda? . | A| c. | C| b. | B| d. | D| \_\_\_\_85. The type of symmetry found in all adult echinoderms is \_\_\_\_\_. a. | horizontal| c. | bilateral| b. | radial| d. | regional| \_\_\_\_86. An animal that retains its chordate features throughout life is the \_\_\_\_\_. a. | seastar| c. | sea squirt| b. | sand dollar| d. | lancelet| \_\_\_\_87. A seastar can hold tightly to the surface it is touching because of the \_\_\_\_\_. a. | sieve in the madreporite| c. | suction in the tube feet| b. | endoskeleton| d. | eyespots| Figure 29-3 \_\_\_\_88. Identify the notochord in Figure 29-3. a. | A| c. | C| b. | B| d. | D| \_\_\_\_89. The notochord shown in Figure 29-3 is surrounded on two sides by what? a. endoderm| c. | exoderm| b. | ectoderm| d. | mesoderm| \_\_\_\_90. Which structure in Figure 29-4 is a characteristic only chordates have? Figure 29-4 a. | A| c. | C| b. | B| d. | D| Figure 29-5 \_\_\_\_91. Where is the dorsal nerve cord in Figure 29-5? a. | within the tunic| c. | along the heart and circulatory system| b. | surrounding the pharynx| d. | it disappeared after the larval stage| \_\_\_\_92. What structure shown in the adult sea squirt in Figure 29-5 indicates it’s a chordate? a. | gill slits| c. | heart| b. | anus| d. | ciliated grooves| Completion Complete each statement. 93. A tapeworm has its reproductive organs in segments called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 4. A(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the sexual form of a cnidarian that has a body form like an umbrella with tentacles hanging down. 95. A(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is the tube-shaped body form with a mouth surrounded by tentacles, which serves as the asexual stage in some cnidarians. 96. Sponges are considered \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ because an individual sponge can produce both eggs and sperm. 97. In \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, eggs remain inside the animal's body and sperm are carried to the eggs. 98. In \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, fertilization occurs outside the animal's body after eggs and sperm are released. 99.

A parasitic tapeworm has a knob-shaped head, called a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, by which the worm attaches itself to the host's intestinal wall. 100. During feeding, planarians extend a tubelike, muscular organ, called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, out of their mouths. 101. Digestion in cnidarians takes place in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 102. Cnidarians capture prey by means of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which are coiled, threadlike tubes that are sticky or barbed or that contain toxins. 103. Sponges get their food by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, in which small particles of food are removed from the water during passage through a part of their body. 04. An animal whose blood moves throughout its body within blood vessels has a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 105. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a tongue-like organ with rows of teeth that is used by gastropods to scrape, grate, or cut food. 106. You dissect an animal and observe pools of blood surrounding its internal organs. This animal has a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 107. The excretory structures that remove metabolic wastes from the bodies of animals such as mollusks and annelids are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 108.

In bivalves, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ expels large particles, sediment, and anything esle rejected through the excurrent siphon. 109. Annelids have a digestive organ called a(n) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that grinds organic matter, or food, into small pieces so that it can be absorbed as it passes through the animal's intestine. 110. Jawlike appendages called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are modified spines found on seastars. 111. In chordates, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a bundle of nerves housed in a fluid-filled canal that lies above the notochord. 112.

The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a semirigid, rodlike structure in chordates that becomes a backbone in vertebrates. 113. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ regulates locomotion, gas exchange, food capture, and excretion for an echinoderm. 114. The long, spine-covered, tapered arms of seastars are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 115. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a round, muscular structure that is located on the opposite end from the suction cup on the tube feet. 116. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, paired openings located in the pharynx behind the mouth, are present only during embryonic development in some chordates. 117.

The sievelike, disc-shaped opening in an echinoderm's body through which water enters and leaves is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 118. Echinoderms have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, which are hollow, thin-walled structures that each have a suction cup on the end. 119. The heart of the sea squirt is unusual because it pumps blood in one direction for several minutes and then \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 120. Adult sea squirts retain only their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ as indicators of their chordate relationship. 121. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are small, baglike filter feeders that are covered with a tough layer of tissue called a tunic. 22. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ can swim freely in the water, but these filter feeders spend most of their time buried in the sand with only their heads sticking out. 123. The paired openings located in the throat behind the mouth in chordates are known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 124. The earliest echinoderms in the fossil record had \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ symmetry. 125. Some chordate adults are sessile, while all the larvae are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. 126. Larval forms of tunicates have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ symmetry. Matching Match each item with the correct statement below. a. | deuterostome| h. | protostome| . | coelom| i. | acoelomate| c. | ectoderm| j. | endoderm| d. | mesoderm| k. | blastula| e. | sessile| l. | pseudocoelom| f. | gastrula| m. | bilateral symmetry| g. | radial symmetry| \_\_\_\_127. animal with a mouth that develops from the opening in the gastrula \_\_\_\_128. embryonic structure of an animal that consists of two cell layers \_\_\_\_129. describes organisms that don't move from place to place \_\_\_\_130. body cavity partly lined with mesoderm, such as found in roundworms \_\_\_\_131. layer of cells lining the inner surface of the gastrula \_\_\_\_132. a fluid-filled body cavity completely surrounded by mesoderm \_\_\_\_133. ody plan of an organism that can be divided down its length into right and left halves that form mirror images \_\_\_\_134. layer of cells on the outer surface of the gastrula \_\_\_\_135. animal in which the mouth does not develop from the gastrula’s opening \_\_\_\_136. single layer of cells surrounding a fluid-filled space that forms during early development \_\_\_\_137. animal that has three cell layers, with a digestive tract but no body cavities \_\_\_\_138. body plan of an organism that can be divided along any plane, through a central axis, into roughly equal halves \_\_\_\_139. third cell layer formed in the developing embryo

Match each item with the correct statement below. a. | bilateral symmetry| b. | radial symmetry| c. | one opening in digestive tract| d. | openings at either end of digestive tract| e. | filtering| f. | tentacles| g. | swimming| \_\_\_\_140. used for obtaining food in fishes \_\_\_\_141. used to obtain food in sponges \_\_\_\_142. used for obtaining food in corals \_\_\_\_143. digestive tract of flatworms \_\_\_\_144. digestive tract of earthworms \_\_\_\_145. body plan of starfishes \_\_\_\_146. body plan of a fish Match each item with the correct statement(s) below. a. | leech| c. | mollusk| b. | fan worm| d. | earthworm| \_\_\_\_147. gizzard grinds organic matter \_\_\_148. may eat only once every few months \_\_\_\_149. traps food in the mucus on its “ fans” \_\_\_\_150. burrows through soil providing aeration and fertilizer \_\_\_\_151. external parasite \_\_\_\_152. disturbances in water causes organism to withdraw inside tube \_\_\_\_153. muscular foot \_\_\_\_154. mantle Match each item with the correct statement below. a. | mandible| g. | parthenogenesis| b. | appendage| h. | spiracles| c. | spinneret| i. | book lung| d. | pheromone| j. | cephalothorax| e. | tracheal tubes| k. | molting| f. | Malpighian tubule| \_\_\_\_155. movable structure used by a spider to turn silk into thread \_\_\_\_156. jaw of an arthropod \_\_\_157. shedding of the old exoskeleton \_\_\_\_158. chamber that contains leaflike plates that serve for gas exchange \_\_\_\_159. excretory organ of terrestrial arthropods \_\_\_\_160. fused head and thorax region in some arthropods \_\_\_\_161. any structure, such as a leg, that grows out of the body of an animal \_\_\_\_162. openings through which air enters and leaves the tracheal tubes \_\_\_\_163. form of asexual reproduction in which an organism develops from an unfertilized egg \_\_\_\_164. chemical odor signal given off by an animal \_\_\_\_165. branching networks of hollow passages that carry air throughout the body

Short Answer 166. Identify each location on the drawing of the flatworm in Figure 25-1. Figure 25-1 167. What types of body plans do flatworms, roundworms, and earthworms have? Compare the efficiency of locomotion of the three groups of worms and describe how their movement is dependent on their body plans. 168. How is a pseudocoelom different from a coelom? 169. Why are acoelomate animals so small? 170. Animals with coeloms have more complex organ systems and behavior than animals without coeloms. Explain how a coelom enables more complex organ systems and behavior to develop. 171.

Briefly identify the three cell layers formed during embryonic development, and give examples of the body organs and tissues that each layer gives rise to. 172. What are the early stages of development from zygote to gastrula? 173. How do the structures of the digestive tracts of a flatworm and an earthworm differ? 174. In what way does a sponge qualify as a heterotroph? 175. What are the main characteristics of an animal? Animal| Body Mass Moved| mL O2 Required per1 g of Body Mass| Mouse| 10 g| 4. 00 mL| Kangaroo rat| 45 g| 2. 00 mL| Ground squirrel| 140 g| 0. 80 mL| Dog| 13 kg| 0. 40 mL| Horse| 500 kg| 0. 04 mL| Table 25-1 176.

Where in Table 25-1 do you think a 90-kg human adult would fall? Estimate about how many mL of O2 the human would require per 1 g of body mass. 177. After studying Table 25-1, what generalization can you make about the amount of oxygen used by animals of different body mass? 178. How many mL of O2 would a mouse require in all? Refer to Table 25-1. 179. How many mL of O2 does a kangaroo rat require per 1 g of body mass? Refer to Table 25-1. The scientific team you are working with wishes to demonstrate that animals become more efficient in interacting with their external environment when the body plan that evolved included bilateral symmetry.

You have chosen to work with mealworms, the larvae of grain beetles (Tenebrio molitor). 180. Hypothesize what would happen if you were to provide the mealworm with a vertical pane or wall on both its left and right sides. 181. How could you prove that mealworms are equally sensitive on both the right and left sides of their body? 182. Plan an experiment to prove your hypothesis. 183. You watch the mealworms moving along the sides of the box in which they are housed. State which factors other than the body plan of the mealworms might affect their behavior. 184.

Put the following terms in order to show the structures through which water enters and passes through a sponge: collar cells, osculum, pore cells. 185. What tapeworm adaptations enable them to live in intestines? 186. Imagine that you are presented with a cnidarian. The animal is small, lives in freshwater, and appears to have tentacles around a columnar body. As you watch, the animal catches a daphnia. Into which cnidarian class would you place this animal? 187. If you were to go snorkeling, would you be able to find all the classes of cnidarians in one place?

Why or why not? 188. Make a list of simple things people could do to prevent infection by parasitic worms. 189. How do parasitic roundworms keep from being digested by their host organisms? 190. The body of the planarian is an advance over the cnidarian body. Explain. 191. How is the jellyfish's reproductive cycle an example of alternation of generations? 192. How is a sponge's food-gathering technique adapted to its sessile lifestyle? 193. Hypothesize why medusae that live in the midwaters where bioluminescent prey are abundant have dark pigmentation. 194.

What advantage is there to the extracellular digestion of cnidarians over the intracellular digestion of sponges? 195. When you see a sponge passed through a sieve and separated into cells, you may think a sponge is simply a colony of individual cells. What makes you realize that it is more than this? 196. A biologist places a single, live sponge in a saltwater tank. After several weeks, the biologist observes other, smaller sponges living in the tank. Because the biologist is certain that no other sponge was introduced into the tank, what other explanation could you provide to explain theobservation?

In an experiment about possible factors that cause the differentiation and growth of cells in hydra larvae, a proportion-altering factor (PAF) was discovered and isolated in a specific colonial cnidarian known as Eudendrium sp. In the experiment, hydra larvae were placed in solutions: one with 10 drops of PAF/mL of water, one with 15 drops, one with 20 drops, one with 30 drops, and a control solution. The experiment showed that PAF factor caused parts of the hydra to grow out of normal proportions. Table 26-2 and Figure 26-1 show the differences in tentacle development that result from varying concentrations of PAF.

Study the illustration and the table and answer the questions that follow. Amount of PAF| Number of Hydras| (drops/10 mLof water)| tentaclesnear mouth| tentaclesnear base| no tentaclesformed| 0| 197| 0| 0| 10| 90| 119| 0| 15| 74| 130| 5| 20| 30| 145| 26| 30| 0| 160| 44| Table 26-2 Figure 26-1 197. What conclusions can you draw from the results shown in Table 26-2? 198. Refer to Figure 26-1. After 48 hours, most of the hydras treated with 30 drops of PAF/10 mL of water looked like polyp B, but some looked like polyp C. Describe the hydras that looked like polyp C. 199.

After 48 hours, hydras from the control group in Figure 26-1 looked like polyp A in the figure; most hydras from the 15-drop solution looked like polyp B. How does polyp A differ from polyp B? 200. What was the control in the experiment? Refer to Figure 26-1. 201. Identify each numbered part of the earthworm shown in the diagram in Figure 27-1, using the letter of each appropriate term: A. ventral nerve cord, B. setae, C. simple brain, D. hearts, E. blood vessels, F. gizzard. Figure 27-1 202. Explain how the various segmented worms obtain food. 203. Describe the body of a leech.

In what way do the leech's adaptations make it suited for its niche? 204. List and give examples of the three major classes of segmented worms. 205. How do sea slugs improve their survival opportunities by feeding on jellyfishes? 206. What is the role of the radula? 207. What are some of the functions of the mantle in mollusks? 208. What adaptations help the octopus and the squid escape their predators? 209. Suppose you are given an unknown mollusk to identify. The specimen does not have a shell. How could you decide whether the mollusk is an unshelled gastropod or a cephalopod? 10. The Greek philosopher Aristotle called worms " the intestines of the soil. " What did he mean? 211. An oyster produces a natural pearl when a parasite or a bit of sand lodges between the shell and the mantle. The oyster then grows layers of pearl around the foreign body. What is the advantage of pearl making to the oyster? 212. Most cephalopods have eyes that are remarkably like vertebrate eyes and fully capable of forming a good image. However, the cephalopod eye develops wholly from the surface ectoderm, whereas the vertebrate eye develops from the neural tube.

What does this information indicate about whether or not the vertebrate eye evolved from the cephalopod eye? Alvin, a submersible vehicle used by oceanographers to study the ocean floor, has also proved invaluable in studying populations of deep-sea mollusks and segmented tube worms. The invertebrates in question live where hot seawater circulates through cracks in the ocean floor called deep-sea vents. Suppose that you are an invertebrate biologist studying these animals. Your studies show that clams that live near the vents may grow as much as 3. 8 cm per year—far more rapidly than other deep-water clams. 213.

Some researchers have hypothesized that life may have begun at deep-sea vents. Why might this be? 214. Segmented tube worms that live near the vents grow to lengths of 1. 5 m in contrast to the growth of related tube worms living in other environments, whose growth is measured only in centimeters at most. You hypothesize that the food that the worms eat is more abundant at the vents. When you collect samples of the worms, you discover that they have no mouth or other means of taking in food. Hypothesize how the tube worms are obtaining nutrients. 215. Suppose your data show that the temperature is the same in samples aken close to the vents and some distance away from the vents. However, the size of the clams is smaller the farther they are from the vents. What would this indicate? 216. Plan an experiment to prove your hypothesis. 217. Compare and contrast chelicerae and pedipalps. 218. Compare and contrast simple eye and compound eye. 219. When natural disasters strike natural areas, often the only animals to survive are the insects. Explain why this might happen. 220. How does living in colonies contribute to the survival of bees? 221. Describe an insect that has adapted to a windy, dry climate.

Explain its adaptations. 222. It is believed that arthropods evolved from the annelids. What differences, present in the arthropod structure, make arthropods better adapted to their environment? 223. How do web-spinning spiders create their webs? 224. How do compound eyes aid arthropods? 225. What are four uses of the jointed appendages of arthropods? Give examples. 226. How are insects adapted to living on land? 227. Suppose a new species of insect is introduced into an area as a natural control to rid the area of other insect pests. What are some possible advantages and disadvantages of doing this? 228.

Many barnacles live on rocks in the ocean and strain plankton from the water. Other barnacles that also feed on plankton live on the backs of gray whales. Which group do you think has better feeding opportunities, those on rocks or those on whales? 229. Why do arthropods lack muscle strength after molting? 230. How are their different modes of feeding reflected in the mouthparts of insects? 231. Fossils reveal that the horseshoe crab has remained almost unchanged for 500 million years. Why would an arthropod such as the horseshoe crab fail to evolve? What can you infer about the rate of change of its seaside environment?

Many invertebrates, from hydrozoans to mollusks and arthropods, have specialized sense organs for monitoring gravity. This sensitivity is related to their sense of equilibrium. Arthropods can sense when they are upright and when they are turned over. The organ that senses changes withrespectto gravity is the statocyst, located at the base of each antennule of the crayfish. A statocyst is a chamber that contains sensory neurons with hairlike fibers and a solid mass of sand grains or hardened calcium salts, shown in Figure 28-1. These grains push against the hair cells, which then trigger signals in associated sensory neurons.

Figure 28-1 232. Hypothesize how the statocyst functions to keep a crayfish upright. Refer to Figure 28-1. 233. What could scientists do if their hypothesis were not supported by the data? Refer to Figure 28-1. 234. Referring to Figure 28-1, what would be the control in the experiment? 235. Write the names of the structures that make up the water vascular system in the order in which water passes through them. 236. Figure 29-1 shows the labeled parts of the water vascular system of a seastar. Match each of the following terms with the labels: tube foot, ring canal, radial canal, madreporite, ampulla.

Figure 29-1 237. If you found a small animal onthe beachand noted that it had gill slits, muscle blocks, and a dorsal nerve cord, what else would you need to know to distinguish whether it was an invertebrate chordate or a vertebrate? 238. The larval stage of echinoderms is bilateral, even though the adult is radial. How do scientists know that adult echinoderms were once bilaterally symmetrical? How is this important? 239. Describe the process whereby a seastar feeds on a clam. 240. Why are echinoderms thought to be related to chordates? 241. Describe the nervous system of echinoderms. 242.

What are the functions of the water vascular system? 243. Describe two characteristics that set echinoderms apart from other organisms in the animal kingdom. Problem 244. Complete Table 26-1. | Coelom| Body Shape| Movement|# Body Openings| Flatworm||||| Roundworm||||| Table 26-1 Sand dollars have a system of food grooves on their ventral surface. When a thin veneer of food-containing sediment passes over their dorsal surface, fine particles of food in the sediment drop between the spines on the surface and are carried to the ventral surface. Once on the ventral surface, the fine matter passes to the food grooves.

There, choice bits of detritus are captured by the tube feet, which border the grooves, and are helped along to the mouth. Suppose that you are a taxonomist confronted with the task of determining the relationship among several families of the order Clypeasteroida, to which the sand dollars belong. You have many fossil sand dollars and are studying the differences in the arrangement of their food grooves. Refer to the diagrams in Figure 29-2. Figure 29-2 245. Which characteristic of the food grooves seems to have survived variations in the sand dollars' environment?

Refer to Figure 29-2. 246. Why would taxonomists use food grooves to trace the evolution of sand dollars? See Figure 29-2. 247. Hypothesize about the advantage of food grooves on the ventral side of sand dollars. Refer to Figure 29-2. 248. Using Figure 29-2, explain which families were easiest to place in side branches that did not further evolve. 249. What characteristic did you use to establish where to place the Mellitidae? Use Figure 29-2. 250. Which families in Figure 29-2 were most difficult to place? Explain.