

Features Of Arthropods (p. 664 – 682)

I. Jointed Appendages

1. Insects, scorpions, spiders, & crustaceans belong to the phylum Arthropoda.

2. Define the term appendage.

Appendage - structures such as legs + antennae that extend from an arthropod's body wall

3. What are jointed appendages of arthropods used to do?

- Walking, sensing, sucking, ripping, chewing

4. Describe the body structure of ancient trilobites.

- Segmented, jointed appendages (with 1st eye)

II. Arthropod Diversity

1. The total number of arthropod species is greater than the sum of all other animal species.

Circle One : True False

2. List the three subphyla of the phylum Arthropoda.

- 1. Chelicerata - horseshoe crabs, spiders, scorpions, mites, & ticks
- 2. Crustacea - lobster, shrimps, crabs, crayfish, pill bugs, barnacles
- 3. Uniramia - insects, centipedes, millipedes

III. Arthropod Body Plan

1. Circle the correct characteristics of arthropods. (Circle all that apply.)

<u>Segmentation</u> :	<u>Present</u>	Not present
<u>Head Region</u> :	<u>Distinct</u>	Undistinguishable
<u>Skeleton</u> :	Endoskeleton	<u>Exoskeleton</u>
<u>Respiration</u> :	<u>Gills</u>	<u>Modified Lungs</u>
<u>Circulation</u> :	Closed Circulation	<u>Open Circulation</u>
<u>Excretion</u> :	Nephridia	<u>Malpighian Tubules</u>

2. List the three main body regions of most arthropod bodies.

- 1. Head
- 2. Thorax
- 3. Abdomen

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Fossil Example

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Feeding Styles

- Herbivore
- Carnivore
- Omnivore
- Parasites
- Filter Feeders
- Detritivores
- Blood Suckers

3. Match the following terms with the correct definitions.

Imagine still wearing your first pair of underwear.

- | | |
|---------------------------------|--|
| 1. <u>E.</u> Cephalothorax | A. Process of shedding & discarding exoskeletons. |
| 2. <u>B.</u> Compound Eye | B. Composed of multiple units with lenses & retinas. |
| 3. <u>G.</u> Chitin | C. Excretory units; slender, finger-like extensions. |
| 4. <u>A.</u> Ecdysis (Molting) | D. Air openings on the side of arthropods. |
| 5. <u>F.</u> Tracheal Tubes | E. Body region with head fused with the thorax. |
| 6. <u>D.</u> Spiracles | F. Network of branching tubes for respiration. |
| 7. <u>C.</u> Malpighian Tubules | G. Tough, but brittle, material of exoskeletons.
(protein + carbohydrate) |

IV. Arachnid Modifications

1. List the four main groups of arachnids.

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1. Spiders 2. Scorpions 3. Ticks 4. Mites
(Daddy Longlegs)

2. Circle the letter of each sentence that is false concerning arachnids.

- a. Arachnids ^{do not} include horseshoe crabs and sea spiders. (Class Merostomata)
 b. The body of arachnids is made up of a cephalothorax and abdomen.
 c. Almost all arachnids are terrestrial carnivores.
 d. Since arachnids do not have jaws, they liquefy prey tissue with enzymes.

Swallow 6-8 spiders per year?

3. What is the function of chelicerae?

- Contain fangs + are used to stab + paralyze food

4. Define the term pedipalps.

Pedipalps - appendages near the mouth that are usually modified to grab prey

5. Circle the letter of each sentence that is true about spiders.

- a. Spider chelicerae are modified into fangs. ^{paralyze}
 b. Poison glands of spiders secrete toxins that ^{paralyze} liquefy prey.
 c. Only the black widow and brown recluse are dangerous to humans in the United States.
 d. All spiders create elaborate, beautiful webs.

6. Define the term spinnerets.

Spinnerets - appendages that secrete sticky strands of silk

V. Scorpions & Mites (Smaller version of a tick)

1. Circle the letter of the sentence that is false about scorpions and mites.

Hide in shoes →

- a. Scorpions have a segmented stinger-tipped abdomen.
 b. The pedipalps of scorpions are grasping pincers used for ^{food + reproduction} defense.
 c. Examples of mites are chiggers and ticks.
 d. Mites are capable of passing infections when feeding or biting.
(Lyme Disease)

Silk 5x stronger than steel (relative to size)

Firefly Mimicry

VI. Insect Diversity

1. Insects mainly live in which type of habitat?

Circle One : Freshwater Marine **Terrestrial**

2. Define the term mandible.

Mandible - chewing mouthparts of insects

3. Approximately, how many insect species exist on Earth? **700,000+**
(closer to a million)

4. Match each insect body region with the correct characteristics.

- | | |
|----------------------|--|
| 1. <u>A.</u> Head | A. Region with mandible, compound eyes, and antennae. |
| 2. <u>B.</u> Thorax | B. Section with three pairs of jointed walking legs & wings. |
| 3. <u>C.</u> Abdomen | C. Region with 9 - 11 segments. |

5. Differentiate between the stages of complete and incomplete metamorphosis.

Complete : Change in body form dramatically (Larva → chrysalis → pupa → adult)

Incomplete : Gradually acquire adult structures (Egg → nymph → adult)

6. How does insect flight create an evolutionary advantage?

1. Disperse long distances 2. Colonize many habitats 3. Escape danger

7. List the four determining factors of caste in a bee colony.

1. Heredity 2. Diet 3. Hormones 4. Pheromones

8. Differentiate between centipedes and millipedes. (3cm - 26cm long)

Centipedes : 15 or more body segments (1 pair of legs per segment)

Millipedes : 15 or more body segments (2 pairs of legs per segment)
(roll into a ball for protection)

VII. Crustaceans

1. List four examples of crustaceans.

1. Crabs 2. Lobsters 3. Crayfish 4. Shrimps

2. The most successful terrestrial crustaceans are isopods (pill bugs & sow bugs).

Circle One : **True** False

3. Circle the letter of the sentence that is false concerning aquatic crustaceans.

- a. Copepods are among the most abundant multicellular organisms on Earth.
 b. Almost 1/4 of all crustaceans are decapods (shrimps, lobsters, & crabs).
 c. Forceful flexing of ^{abdomen} ~~thorax~~ muscles propel decapods through water.
 d. Barnacles are sessile, hermaphroditic crustaceans.

Examples

Complete:
 - flies, bees, ants, beetles, butterflies, ladybugs

Incomplete:
 - grasshoppers, cockroaches, mosquitoes, chinch bug

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(poisonous head)

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