# Arthropods

**A.** Arthropods have jointed **appendages**, bilateral symmetry, segmented bodies, an exoskeleton, a body cavity, a digestive system with two openings, and a nervous system; most species have separate sexes.

**1.** Some arthropods have many segments, while others have fused segments forming body regions.
**2.** A hard, thick, outer covering called an **exoskeleton** covers, supports, and protects the arthropod; it is shed and replaced occasionally in a process called **molting**.

**B.** Insects have three body regions

**1.** An insect's head has a pair of antennae, eyes, and a mouth.
**2.** The thorax has three pairs of legs; if the insect has wings, they are attached to the thorax.
**3.** The abdomen contains reproductive structures and an open circulatory system; insects obtain air and release waste gases through openings called **spiracles**.
**4. Metamorphosis** – series of body changes as insects become adults
- **a.** Incomplete metamorphosis stages – egg, nymph, adult
- **b.** Complete metamorphosis stages – egg, larva, pupa, adult

**5.** Insects eat plants, blood of animals, nectar, decaying materials, wood, and clothes; mouth parts are diverse and adapted to diet.
**6.** Insects are successful due to their exoskeletons, ability to fly, rapid reproductive cycles, and small sizes.

**C.** Arachnids such as spiders and ticks have two body regions (the cephalothorax and abdomen), four pairs of legs, and no antennae.

**1.** Scorpions have a sharp, poison-filled stinger at the end of their abdomen.
**2.** Spiders inject their prey with enzymes to digest it.
**3.** Mites and ticks are generally parasites; ticks often carry diseases.

**D.** Centipedes and millipedes have long bodies with many segments, many legs, antennae, and simple eyes.

**E.** Crustaceans such as crabs, shrimp, and barnacles have one or two pairs of antennae and mandibles for crushing food. Arthropods are a food source, aid agriculture, and are an important part of ecological communities
in which humans live; some arthropods are pests that carry disease or damage property.

**1.** Insecticides can kill insects, but cause other environmental problems; biological methods for controlling insects are being developed.
**2.** Some arthropod fossils are more than 500 million years old; arthropods probably evolved from a segmented worm ancestor.

**DISCUSSION QUESTION:**
What is an exoskeleton and what is its purpose? *An exoskeleton is a hard, thick, outer covering that supports and protects an arthropod.*