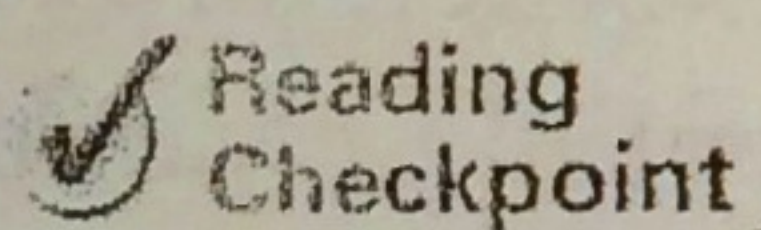


The appendages attached to the head of a crayfish include two pairs of antennae that are used for smelling, tasting, touching, and keeping balance. The crayfish uses most of its leg appendages for walking. However, it uses its first pair of legs, called chelipeds, for obtaining food and defending itself.

Obtaining Oxygen and Food Because crustaceans live in watery environments, most have gills to obtain oxygen. The gills are located beneath the shell of a crustacean. Water containing oxygen reaches the gills as a crustacean moves along in its environment.

Crustaceans obtain food in many ways. Some are scavengers that eat dead plants and animals. Others are predators, eating animals they have killed. The pistol shrimp is a predator with an appendage that moves with such force that it stuns its prey. Krill, which are shrimplike crustaceans that live in cold ocean waters, are herbivores that eat plantlike microorganisms. In turn, krill are eaten by predators such as fishes, penguins, seals, and even great blue whales, the world's largest animals.

Life Cycle Most crustaceans, such as crabs, barnacles, and shrimp, begin their lives as microscopic, swimming larvae. The bodies of these larvae do not resemble those of adults. Crustacean larvae develop into adults by **metamorphosis** (met uh MAWR fuh sis), a process in which an animal's body undergoes dramatic changes in form during its life cycle.



What organs does a crustacean use to obtain oxygen?



FIGURE 12

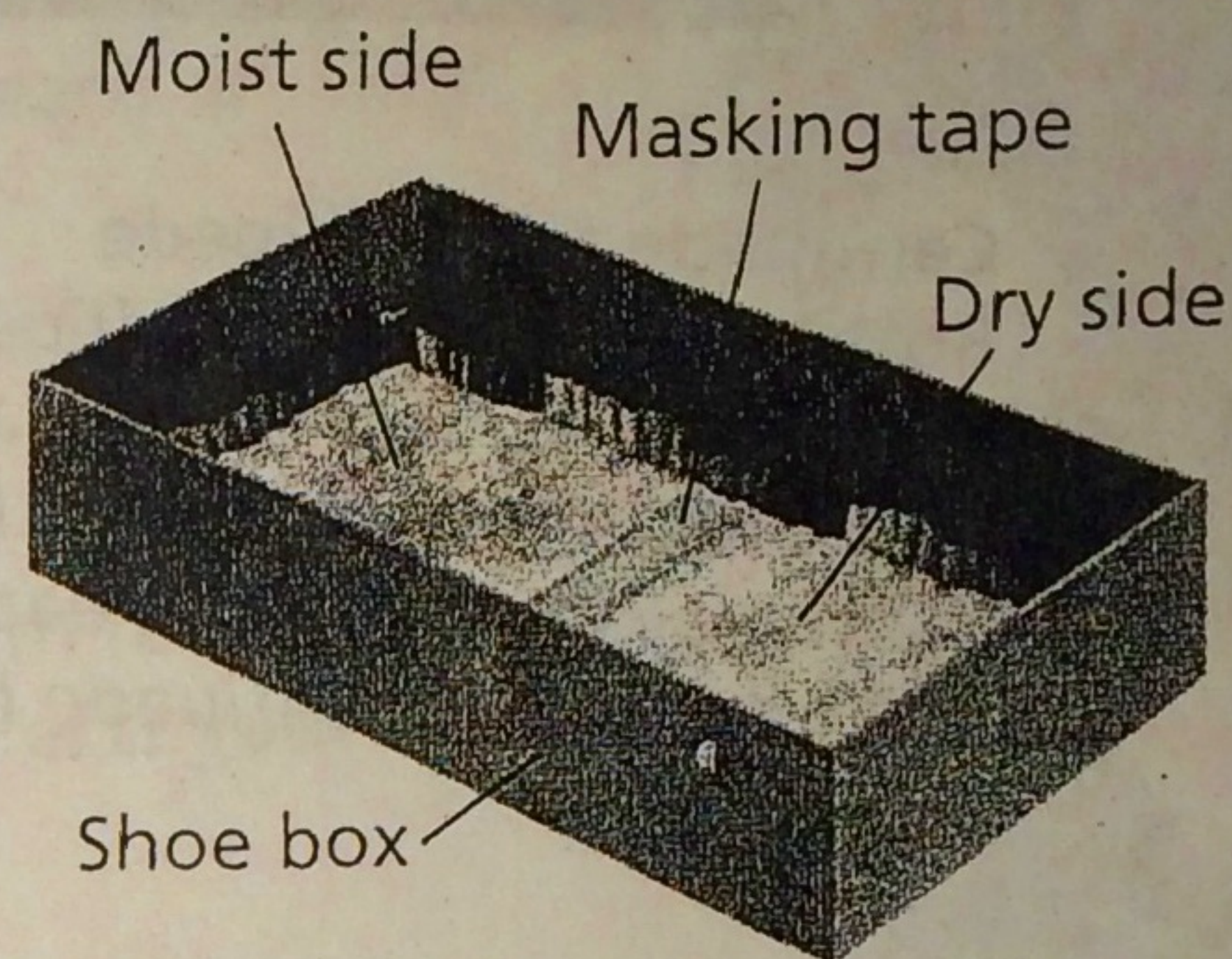
Crab Larva


This larva of a crab floats in the ocean with other microscopic animals.

Lab zone Try This Activity

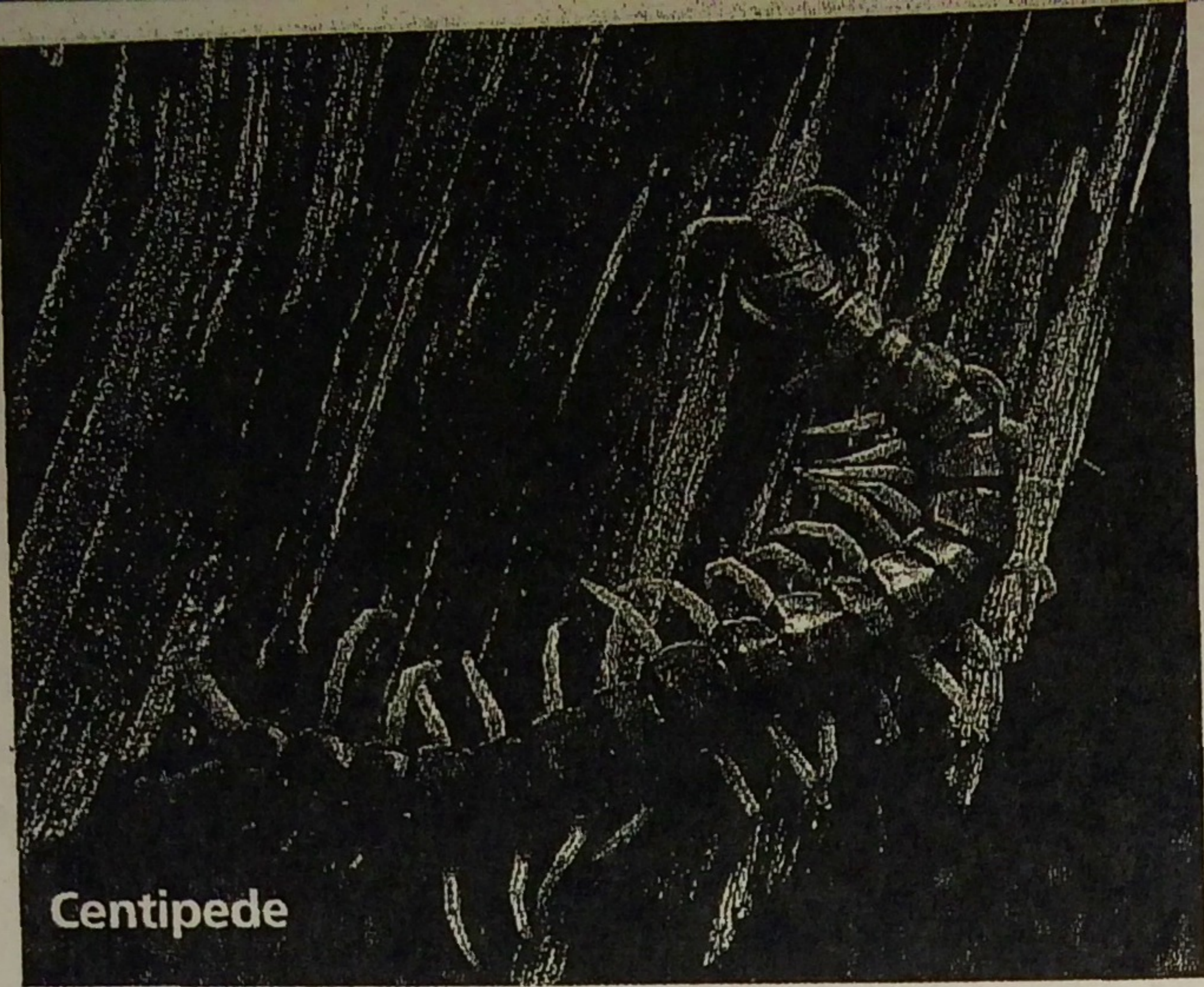
Pill Bugs—Wet or Dry?

1. Line a box with aluminum foil. Tape down two paper towels side by side in the box. Tape a strip of masking tape between the two towels. Moisten one of the paper towels. Keep the other towel dry.

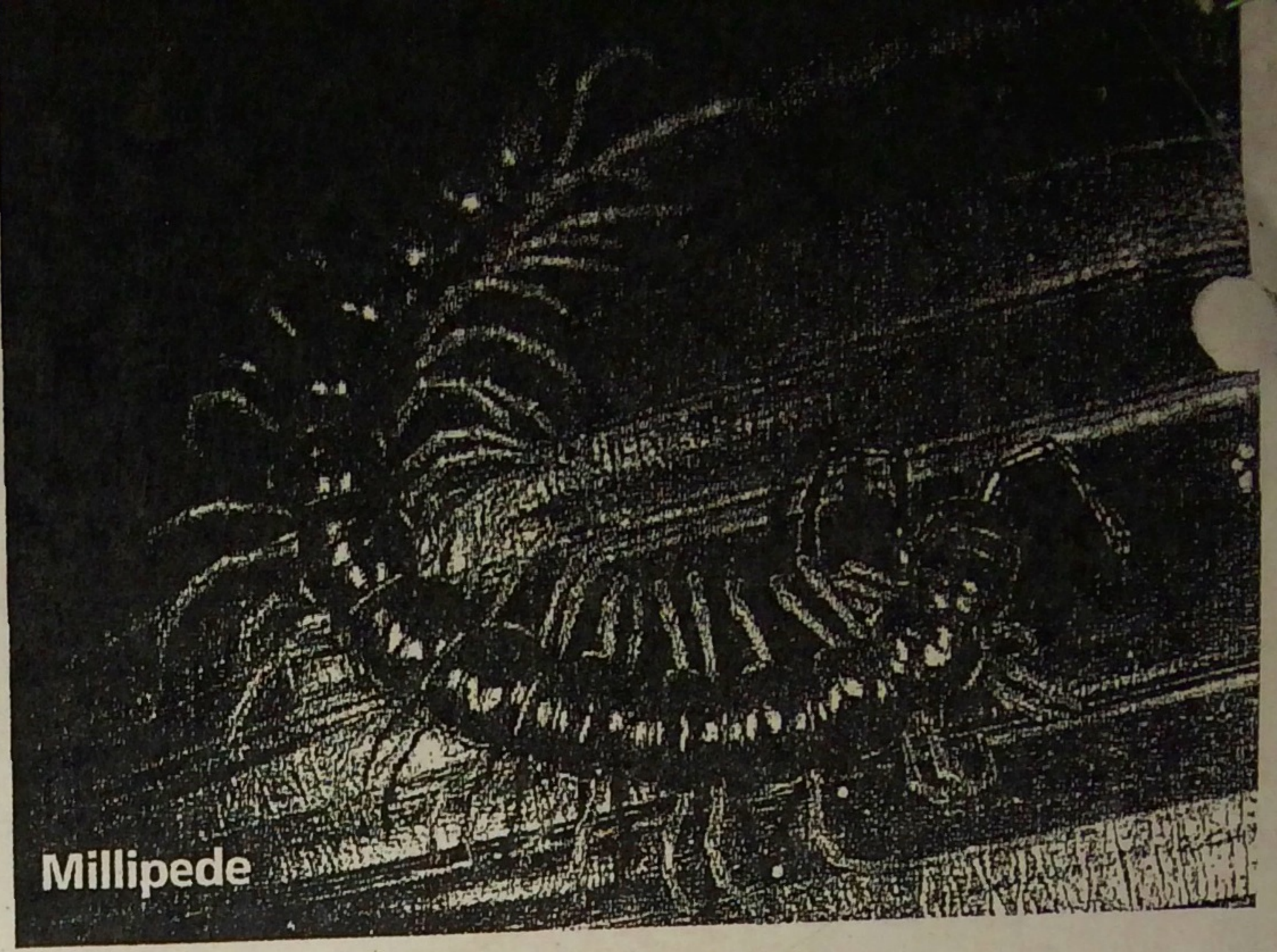


2.  Put ten pill bugs on the masking tape. Then put a lid on the box.
3. After 5 minutes, lift the lid and count the pill bugs on the dry towel, the moist towel, and the masking tape. Record your results in a data table.
4. Repeat Steps 2 and 3 two more times. Then average the results of the three trials. Wash your hands after handling the pill bugs.

Interpreting Data Do pill bugs prefer a moist or a dry environment?



Centipede



Millipede

FIGURE 16

Centipede and Millipede

Both centipedes and millipedes have many pairs of legs.

Interpreting Photographs How many pairs of legs does each segment of the centipede have?

Centipedes and Millipedes

Centipedes and millipedes are arthropods with two body sections and many pairs of legs. The two body sections are a head with one pair of antennae, and a long abdomen with many segments. Centipedes have one pair of legs attached to each segment. Some centipedes have more than 100 segments. In fact, the word *centipede* means “hundred feet.” Centipedes are swift predators that inject venom into their prey.

Millipedes, which may have more than 80 segments, have two pairs of legs on each segment—more legs than any other arthropod. Though *millipede* means “thousand feet,” they don’t have quite that many legs. Most millipedes are scavengers that graze on partly decayed leaves. When they are disturbed, millipedes can curl up into a ball, protected by their tough exoskeleton. Some will also squirt an awful-smelling liquid at a potential predator.

Section 2 Assessment

Target Reading Skill Asking Questions Use the answers to the questions you wrote about the headings to help you answer the questions below.

Reviewing Key Concepts

- Naming** What are the major groups of arthropods?
 - Summarizing** How are all arthropods alike?
 - Applying Concepts** Some restaurants serve soft-shelled crab. What do you think happened to the crab just before it was caught?
- Identifying** What are the characteristics of a crustacean?

Writing in Science

Observation Write about an arthropod that you have observed. Describe details about its physical appearance, its movements, and any other behaviors that you observed.