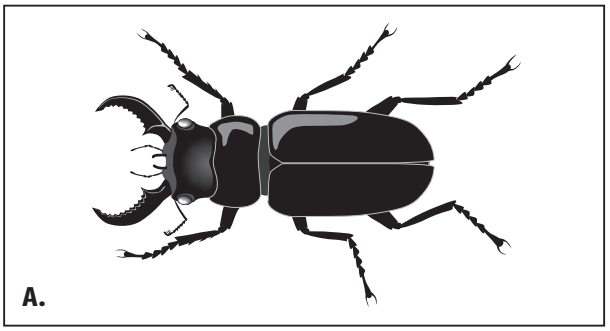
Name Date Class

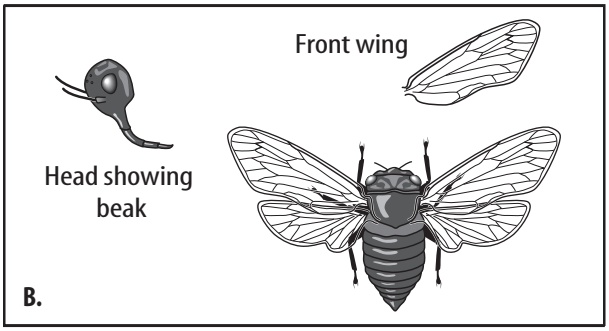
SECTION 4 Enrichment

A bug or a beetle?

Often we pick up an insect and casually refer to it as a bug or a beetle. Using scientific definitions, the insect may not belong to either of these orders of insects. Bugs belong to the order Hemiptera and beetles belong to the order Coleoptera. Look carefully at these two pictures and use the key below to find out which order these insects belong to. The key is not complete for all orders of insects, but it should help you tell the difference between bugs and beetles. There are a few wingless bugs that are not covered by this key. Use other references if needed.



A.



B.

Key (partial) to Orders of Insects

1. Wing type
- **a.** wings transparent, go to 2
- **b.** front wings hard or leathery and covering hind wings, go to 2

2. Type of mouthparts
- **a.** mouthparts chewing, go to 3
- **b.** no chewing mouthparts, go to 4

3. Wing venation
- **a.** front wings with veins, *Orthoptera*
- **b.** front wings without veins, *Coleoptera*

4. Front wing texture
- **a.** front wings nearly always thickened at the base; membranous at tip, beak comes from front or bottom of head; antennae have 4 or 5 segments, *Hemiptera*
- **b.** front wings of uniform texture; beak comes from hind part of head, *Hemiptera*

1. Which insect is a true bug and which is a true beetle?

_____

2. What are some of the distinguishing characteristics of the insects shown? List them below.

	Bug	Beetle
Order		
Wings		
Antennae		
Mouthparts		

Name Date Class

SECTION 4 Reinforcement

How are living things classified?

Directions: *Answer the following questions using information from the textbook.*

1. Why don't scientists use common names to identify organisms?

_____

_____

2. Why are scientific names important? Give four functions for scientific names.

a. _____

b. _____

c. _____

d. _____

Directions: *Use the key to species of birch trees below to answer the questions that follow.*

Key to Species of Birch Trees

1. a. bark dark, reddish-brown, yellowish-brown to black, go to 2
b. bark creamy white, pinkish, or gray, go to 6
2. a. bark and twigs with wintergreen fragrance when cut, go to 3
b. bark and twigs without a fragrance when cut, go to 5
3. a. leaves with 8-12 pairs of veins, go to 4
b. leaves with 4-6 pairs of veins, *Betula uber*
4. a. bark dark red to almost black; scales smooth, 6-12 mm long, *Betula lenta*
b. bark reddish brown, peeling in loose, ragged sheets, scales hairy, 5-7 mm, *Betula alleghaniensis*
5. a. branchlets covered near tip with many small glands, Rocky Mountains or Western Canada, *Betula occidentalis*
b. branchlets smooth, shiny, no glands present, eastern U.S., *Betula nigra*
6. a. leaves hairy on lower surface, go to 7
b. leaves smooth, hairless underside, go to 8
7. a. leaves 5-13 cm long, pointed tip, *Betula papyrifer*
b. leaves 3-7 cm long, pointed tip, winter buds shiny, *Betula pendula*
8. a. bark dull gray to grayish-white, smooth and not peeling, *Betula populifolia*
b. bark white to pinkish-white, peeling, go to 9
9. a. leaves 6-10 cm, round base, *Betula caerulea*
b. leaves 3-5 cm, squared base, *Betula pubescens*

3. Are the leaves of *Betula populifolia* hairy or smooth on the lower surface? _____

4. How many pairs of veins are on the leaves of *Betula lenta*? _____

5. What is a characteristic of the bark of *Betula alleghaniensis*? _____

_____

6. When a twig of *Betula nigra* is broken, does it give off a wintergreen fragrance? _____

Meeting Individual Needs