



## How Can a Key Be Used to Identify Organisms?

**C**lassification is a way of separating a large group of closely related organisms into smaller subgroups. The scientific names of organisms are based on the classification systems of living organisms. The identification of an organism is easy with a classification system. To identify an organism, scientists often use a key. A key is a listing of characteristics, such as structure and behavior, organized in such a way that an organism can be identified.

### OBJECTIVES

- Hypothesize how organisms can be identified with a key.
- Use a key to identify fourteen shark families.
- Examine the method used to make a key.
- Construct your own key that will identify another group of organisms.

### MATERIALS



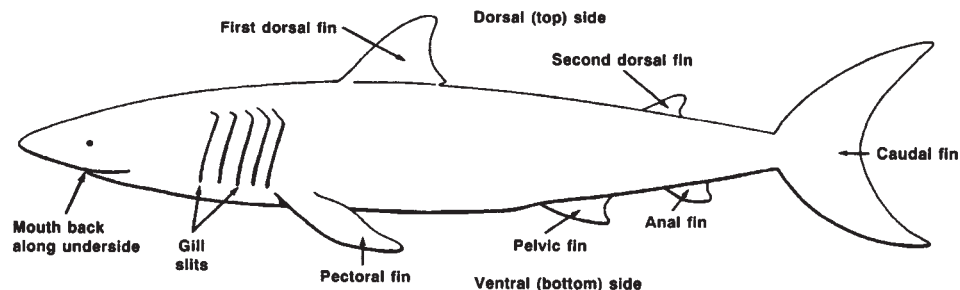
goggles

### PROCEDURE

1. Make a **hypothesis** to describe how sharks can be identified using a key. Write your hypothesis in the space provided.
2. Use Figure 1 as a guide to the shark parts used in the key on page 119.
3. Read statements 1A and 1B of the key. They describe a shark characteristic that can be used to separate the sharks into two major groups. Then study Shark 1 in Figure 2 for the characteristic referred to in 1A and 1B. Follow the directions in these statements and continue until a family name for Shark 1 is determined. For example, to key a shark that has a body that is not kite shaped and has a pelvic fin and six gill slits, follow the directions of 1B and go directly to statements 2. Follow statement 2B to statements 3. At statement 3A, identify the shark as belonging to Family Hexanchidae.
4. Continue keying each shark until all have been identified. Write the family name on the line below each shark in Figure 2.
5. Have the teacher check your answers.

### HYPOTHESIS

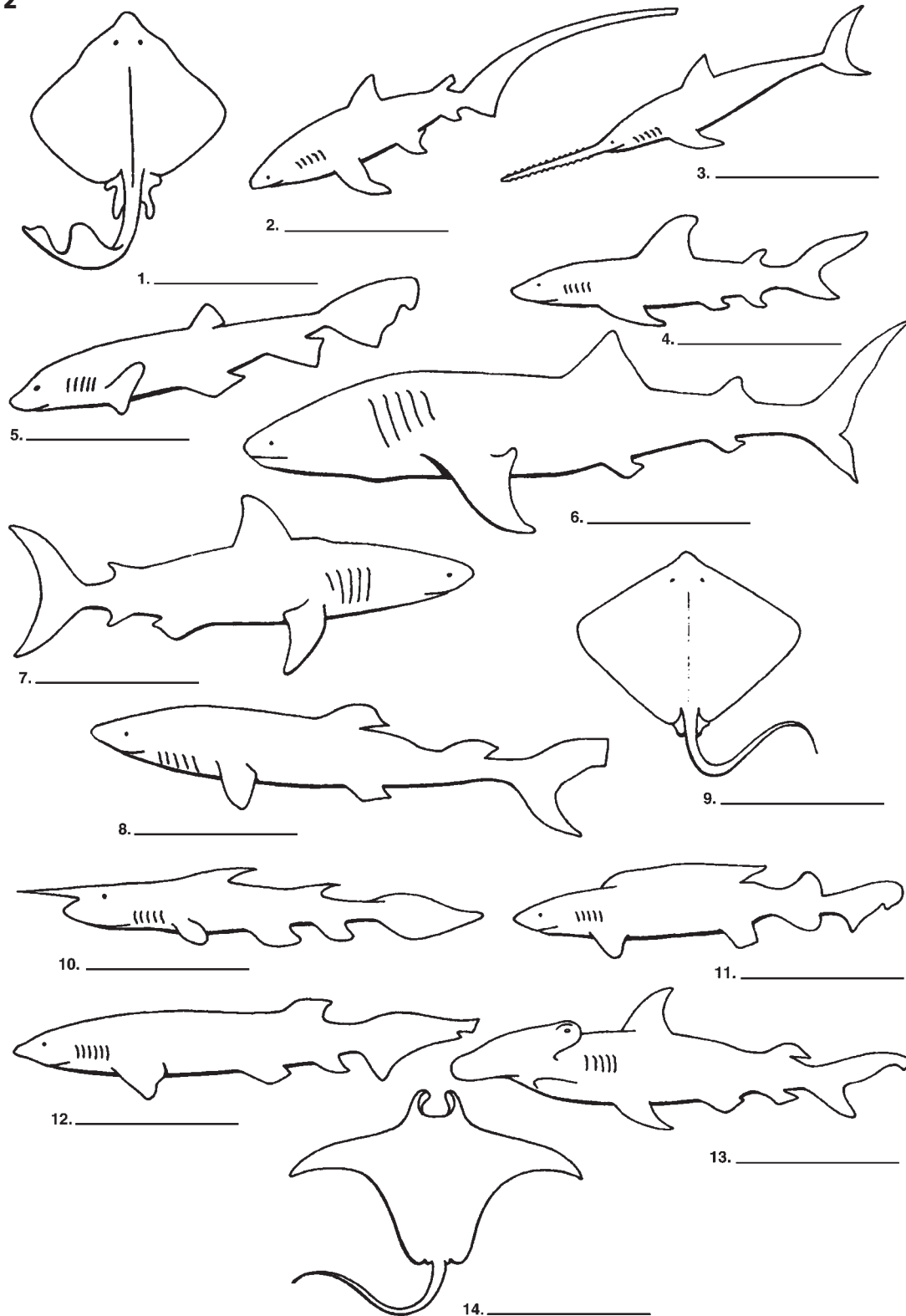
**Figure 1**



**How Can a Key Be Used to Identify Organisms?**

**17-1**

**Figure 2**



## How Can a Key Be Used to Identify Organisms?

1. A. Body kitelike in shape (if viewed from above) . . . . . Go to statement 12  
 B. Body not kitelike in shape (if viewed from above) . . . . . Go to statement 2
2. A. Pelvic fin absent and nose sawlike . . . . . Family Pristophoridae  
 B. Pelvic fin present . . . . . Go to statement 3
3. A. Six gill slits present . . . . . Family Hexanchidae  
 B. Five gill slits present . . . . . Go to statement 4
4. A. Only one dorsal fin present . . . . . Family Scyliorhinidae  
 B. Two dorsal fins present . . . . . Go to statement 5
5. A. Mouth at front of head rather than back along underside of head . . . . . Family Rhinodontidae  
 B. Mouth back along underside of head . . . . . Go to statement 6
6. A. Head expanded on side with eyes at end of expansion . . . . . Family Sphyrnidae  
 B. Head not expanded . . . . . Go to statement 7
7. A. Top half of caudal fin exactly same size and shape as bottom half . . . . . Family Isuridae  
 B. Top half of caudal fin different in size and shape from bottom half . . . . . Go to statement 8
8. A. First dorsal fin very long, almost half total length of body . . . . . Family Pseudotriakidae  
 B. First dorsal fin length much less than half total length of body . . . . . Go to statement 9
9. A. Caudal fin very long, almost as long as entire body . . . . . Family Alopiidae  
 B. Caudal fin length much less than length of entire body . . . . . Go to statement 10
10. A. Nose with long needlelike point on end . . . . . Family Scapanorhynchidae  
 B. Nose without needlelike point . . . . . Go to statement 11
11. A. Anal fin absent . . . . . Family Squalidae  
 B. Anal fin present . . . . . Family Carcharhinidae
12. A. Small dorsal fin present near tip of tail . . . . . Family Rajidae  
 B. Small dorsal fin absent near tip of tail . . . . . Go to statement 13
13. A. Hornlike appendages at front of shark . . . . . Family Mobulidae  
 B. Hornlike appendages not present at front of shark . . . . . Family Dasyatidae

### ANALYSIS

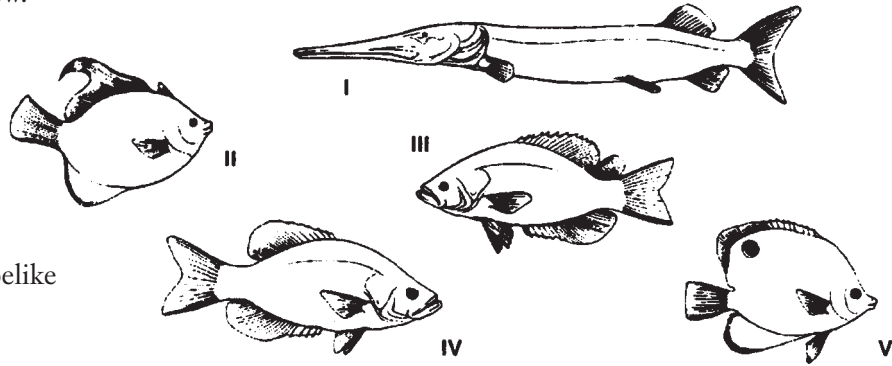
1. What is a classification key and how is it used?  
 \_\_\_\_\_
2. List four different characteristics that were used in the shark key.  
 \_\_\_\_\_
3. a. Which main characteristic could be used to distinguish shark 4 from shark 8?  
 \_\_\_\_\_
- b. Which main characteristic could be used to distinguish shark 4 from shark 7?  
 \_\_\_\_\_

## How Can a Key Be Used to Identify Organisms?

### ANALYSIS continued

4. Prepare your own key for the five fish in Figure 3. Use the same format as on page 119. The family names to be used are the numbers I, II, III, IV, and V. Your key should correctly use traits that will lead to each fish family. To help you get started, the first statements are given. Statement 1 divides the five fish into two main groups, based on body shape. Next, choose another characteristic that will divide the fish not having a tubelike body into two groups. Continue to choose characteristics that will separate a group into smaller groups. Write your key in the space below.

Figure 3



1. A. Fish with long tubelike body  
B. Fish with body shape not tubelike

### Key

1. A. \_\_\_\_\_  
B. \_\_\_\_\_
2. A. \_\_\_\_\_  
B. \_\_\_\_\_
3. A. \_\_\_\_\_  
B. \_\_\_\_\_
4. A. \_\_\_\_\_  
B. \_\_\_\_\_

### CHECKING YOUR HYPOTHESIS

Did your **hypothesis** describe the key correctly?

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### FURTHER INVESTIGATIONS

- Exchange keys with a classmate. Work through it to identify the fish. Is the key correct?
- The library will have many books that include simple keys to different plants and animals, as well as to rocks, fossils, and stars. Select a book that includes keys to local plants or animals. Take a walk and practice using the key to identify some of the organisms that live in your area.