Name: _____ Date: _____ Period: _____

Biology: Using and Making a Dichotomous Key

Classification is a way of separating a large group of closely related organisms into smaller subgroups. With a classification system, identification of an organism is easy. The scientific names of organisms are based on the classification systems of living organisms. To classify an organism, scientists often use a key. A dichotomous key is a listing of specific traits, such as structure and behavior, in such a way that an organism can be identified.

Materials:

- Metric ruler
- Pencil

Procedure:

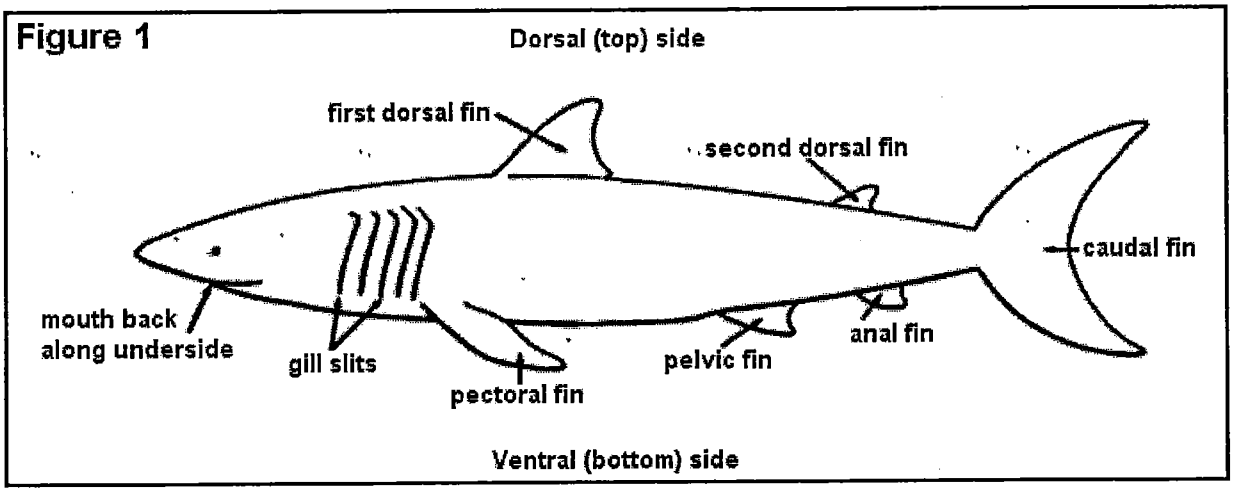
1) Use figure 1 below as a guide to the shark parts used on the next page.

2) Read sentences 1A and 1B of the key. Then study Shark 1 in figure 2 for the characteristics referred to in statements 1A and 1B. Follow the directions in these sentences and continue until a family name for Shark 1 is determined.

3) Continue this process with each shark until all animals have been identified. Write the family name on the line below each animal.

   Example: Let's do shark 5 together.
   1) Examine the picture of Shark 5 while we read statements 1A and 1B. Which statement best describes the appearance of Shark 5? Statement 1B (body not kitelike)
   2) Because statement 1B tells us to move to statement 2, we must now read statements 2A and 2B. Which best describes Shark 5? Statement 2B (pelvic fin present)
   3) Because statement 2B tells us to move to statement 3, we must now read statements 3A and 3B. Which best describes Shark 5? Statement 3B (five gill slits)
   4) Because statement 3B tells us to move to statement 4, we must now read statements 4A and 4B. Which best describes Shark 5? Statement 4A (only one dorsal fin)
   5) The answer to shark 5 is FAMILY SCYLIORHINIDAE

Figure 1



DATA AND OBSERVATIONS

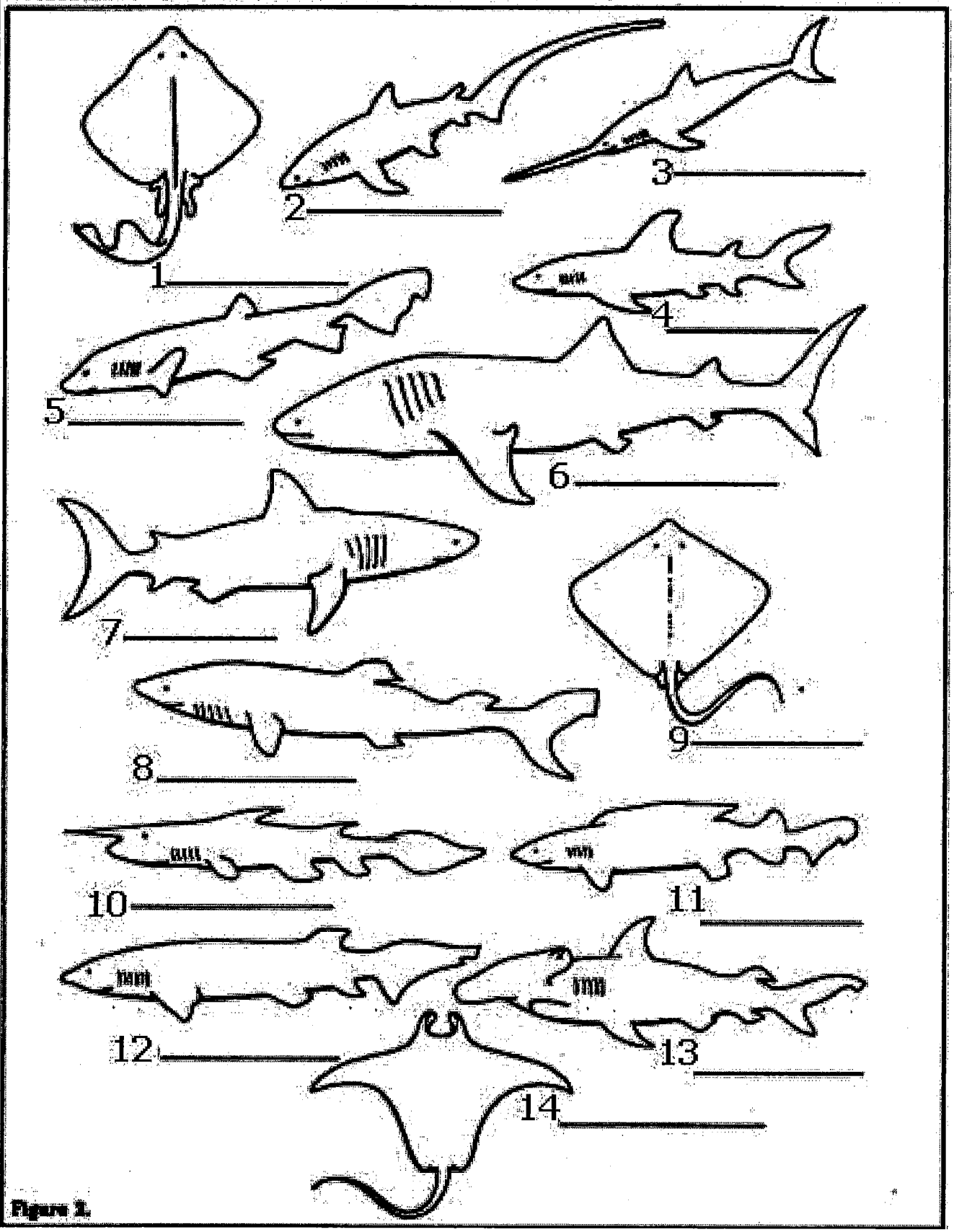


Figure 1.

Shark Dichotomous Key

1. A. Body kitelike in shape (if viewed from the top) ..... Go to statement 12
   B. Body not kitelike in shape (if viewed from the top) ..... Go to statement 2

2. A. Pelvic fin absent and nose sawlike ..... Family Pristiophoridae
   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 ..... Family Scyliorhinidae
   B. Two dorsal fins ..... Go to statement 5

5. A. Mouth at front of head rather than back along underside of head ..... Family Rhinocodontidae
   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 the same size and shape as bottom half ..... Family Isuridae
   B. Top half of caudal fin different in size and shape than 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 regular length ..... Go to statement 9

9. A. Caudal fin very long, almost as long as entire body ..... Family Alopiidae
   B. Caudal fin regular length ..... Go to statement 10

10. A. A long needlelike point on end of nose ..... Family Scapanorhynchidae
    B. Nose without long 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 Raiidae
    B. No dorsal fin present near tip of tail ..... Go to statement 13

13. A. Front of animal with two hornlike appendages ..... Family Mobulidae
    B. No hornlike appendages ..... Family Dasyatidae

Analysis:

1) What is the purpose of a dichotomous key? _____

_____

_____

Use traits from the key above to answer the next three questions:

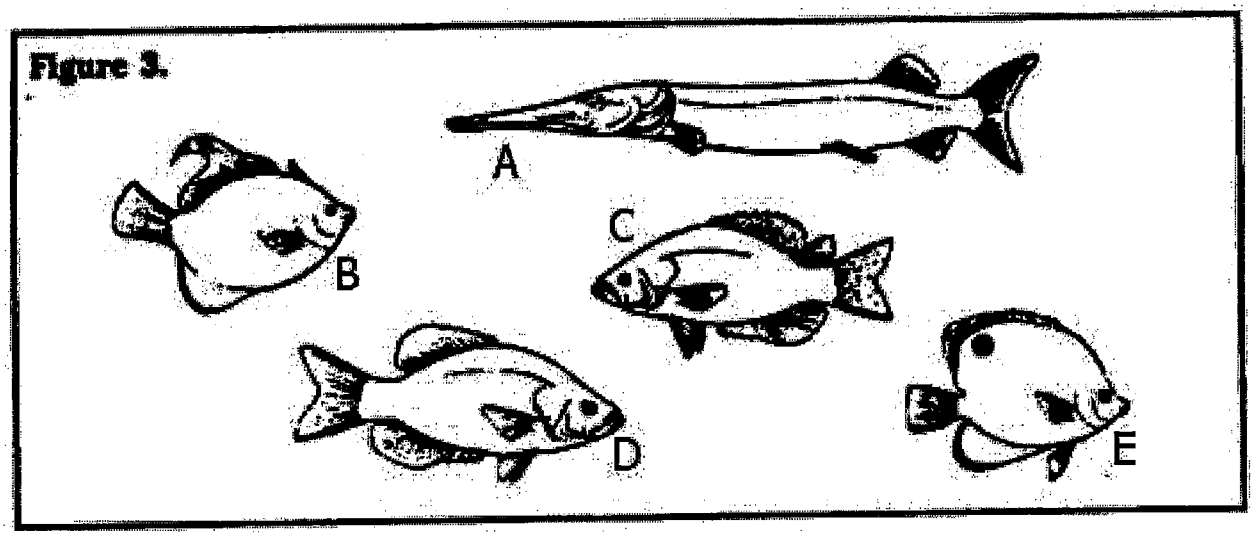
2) What main trait could be used to separate shark 4 from shark 8? _____

3) What main trait could be used to separate shark 4 from shark 7? _____

4) What main trait could be used to separate shark 5 from shark 12? _____

Creating Your Own Dichotomous Key

Using the fish pictures below, create a dichotomous key that can be used to identify each. Use the same format that you followed on the previous page. Instead of ending with the family name for these fish, you should end with the letters A, B, C, D, and E. To help you get started, I have given you the first pair of statements.



1A. Fish has a long, tube-like body..... _____

1B. Fish does not have a long, tube-like body ..... _____