NAME:_____

CLASSIFICATION LAB:
USING A DICHOTOMOUS KEY

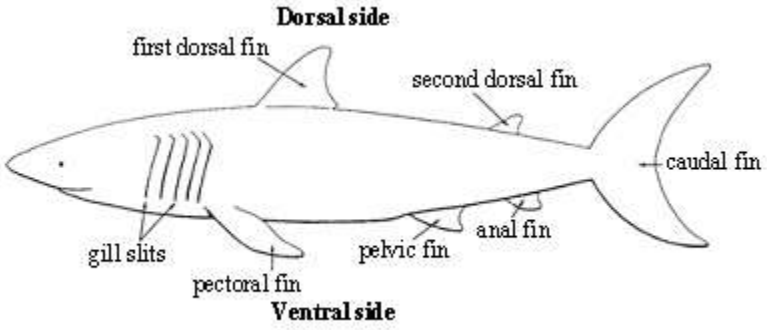
Background:

Living things are organized by scientists into a classification system. Organizing these organisms makes it much easier to determine relationships between them. To classify organisms, scientists will often use a biological key or a dichotomous key. A dichotomous key is a listing of specific traits, primarily structural, that allows an organism to be sorted into one of two categories. By using a dichotomous key unknown organisms can be identified.

Procedure:

Part A: Using the key

1. To use a the key ALWAYS start at statement 1 for each new shark. Read the (A) and (B) statements and follow the directions of the most correct statement.
2. If the statement instructs to go to another statement, follow directions and then choose the best of the two new statements and continue.
3. If the statement ends in a Family name, write that on the line below the shark.
4. Repeat steps for all of the sharks.



Part B: Making a key

1. Using the dinosaur pictures find a trait that could separate them into two large groups.
2. Put the number of each dinosaur into group A or group B.
3. Find a trait that could be used to split group A into groups A_1 and A_2.
4. Find a trait that could be used to split group B into groups B_1 and B_2.
5. Put the number of each dinosaur into the appropriate group.
6. Continue this process until each group ends with only one dinosaur.
7. Record your key on the sheet attached.

Dichotomous Key to Shark Families

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

2. A. Pelvic fin absent and nose saw-like .....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 snout.....Family **Rhinocodontidae**
   B. Mouth on underside of head .....Go to statement 6

6. A. Head expanded on side with eyes at end of expansion .....Family **Sphymidae**
   B. Head not expanded .....Go to statement 7

7. A. Top half of caudal fin about the same size as bottom half .....Family **Isuridae**
   B. Top half of caudal fin different in size than bottom half .....Go to statement 8

8. A. First dorsal fin very long, almost ½ total length of the body.....Family **Pseudotriakidae**
   B. First dorsal fin regular length .....Go to statement 9

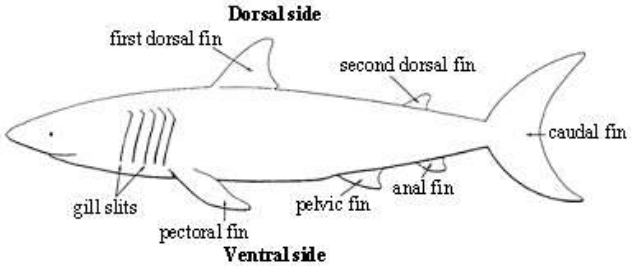
9. A. Caudal fin very long, almost as long as entire body .....Family **Alopiidae**
   B. Caudal fin regular length .....Go to statement 10

10. A. A long needlelike point on end of nose .....Family **Scapanorhynchidae**
    B. Nose without long point .....Go to statement 11

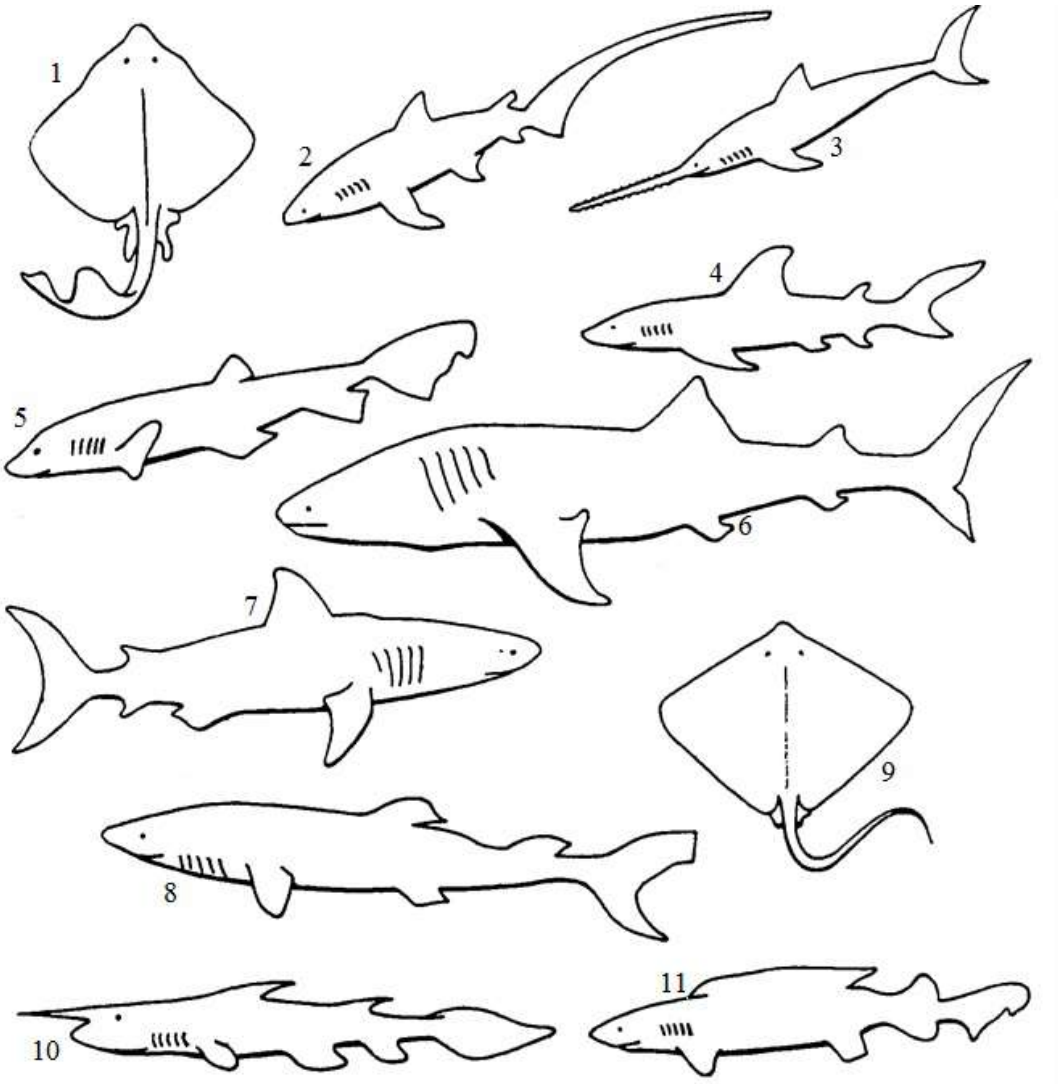
11. A. Anal fin absent .....Family **Squalidae**
    B. Anal fin present .....Family **Carcharhinidae**

12. A. Small dorsal fin present near tip of tail .....Family **Rajidae**
    B. No dorsal fin present near tip of tail .....Go to statement 13

13. A. Front of animal with two horn-like appendages .....Family **Mobulidae**
    B. No horn-like appendages.....Family **Dasyatidae**

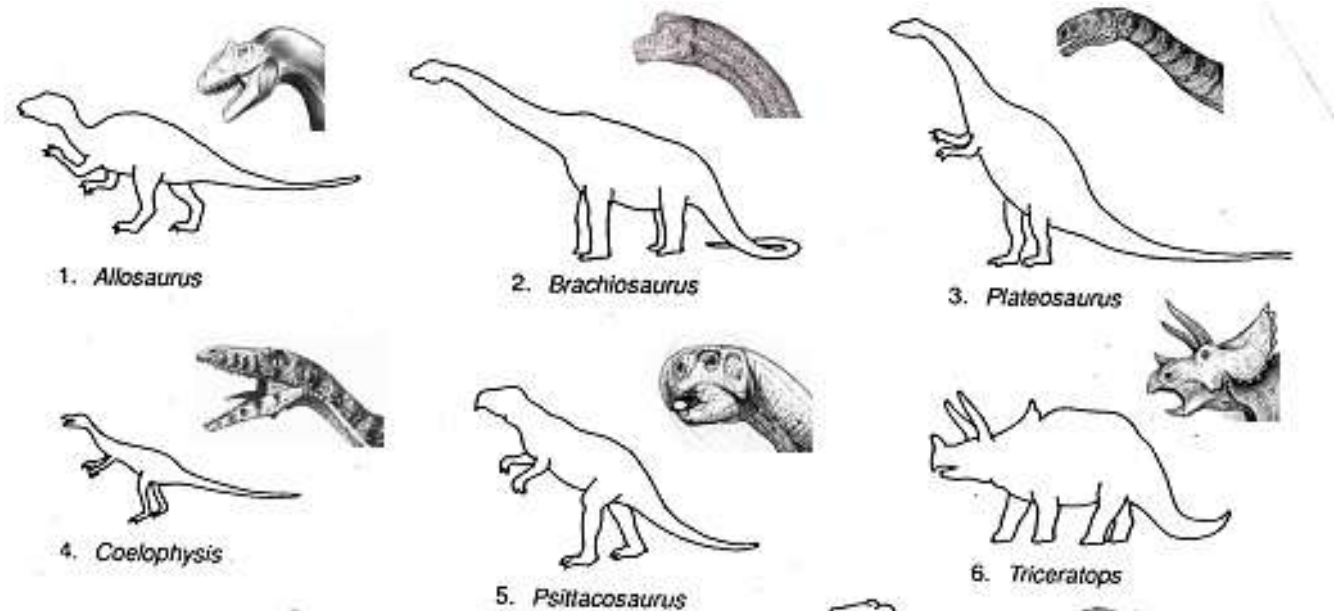


Part A



Shark Family Name
1. Rajidae
2. Alopiidae
3. Pristiophoridae
4. Carcharhinidae
5. Scyliorhinidae
6. Rhinocodontidae
7. Isuridae
8. Squalidae
9. Dasyatidae
10. Scapanorhynchidae
11. Pseudotriakidae

Part B



On the next page you will record your completed dichotomous key.

When making a key, try to:

- Start with big categories first (for example herbivores and carnivores)
- Use obvious characteristics
- Be specific! Avoid words like "big" or "small" by using measurements instead
- Make the choices positive so that something IS instead of IS NOT.

DINOSAUR DICHOTOMOUS KEY

1. A walks on 4 legs	.....	Go to 2
B walks on 2 legs	.....	Go to 3
2. A has 2 horns	.....	Triceratops
B has no horns	.....	Brachiosaurus
3. A has a pointed beak	.....	Psittacosaurus
B has no pointed beak	.....	Go to step 4
4. A has solid colored scales	.....	Allosaurus
B has striped scales	.....	Go to step 5
5. A 1 1/2 mm Tall (in picture)	.....	Coelophysis
B 3 1/2 mm Tall (in picture	.....	Plateosaurus

This key is only one example of what will work. To CHECK YOUR OWN KEY, pick a dinosaur and starting from step one, see if you get to him by going through your key.

Analysis:

1. Which type of evidence was used to classify organisms in this lab. Choose one and give an example.
   a. Comparative biochemistry
   b. Comparative anatomy
   c. Fossil record

   Comparative Anatomy...we compared number of legs

2. Two levels of classification are **Kingdom** and **Phylum**. What are the other five levels of classification?

   Class, Order, Family, Genus, Species

3. Is the family name of the sharks the most specific name that can be given to them? Support your answer.

   No, the species is the most specific name for an organism.

4. How do we determine the scientific name for organisms like sharks? Why is it important that this naming system is consistent?

   Scientific names are the Genus., species stated in Latin. It is important to be consistant so that all scientists in the world can communicate without language barriers.

Conclusion:

Explain the purpose of creating and using dichotomous keys. How does this purpose relate to evolutionary relationships and how organisms are classified?

We create and use dichotomous keys to organize organisms. It helps us to show similarities between organisms and relate this through the scientific names (classification). The more similarities, the scientific names have, the more closely they are related in the evolution.