

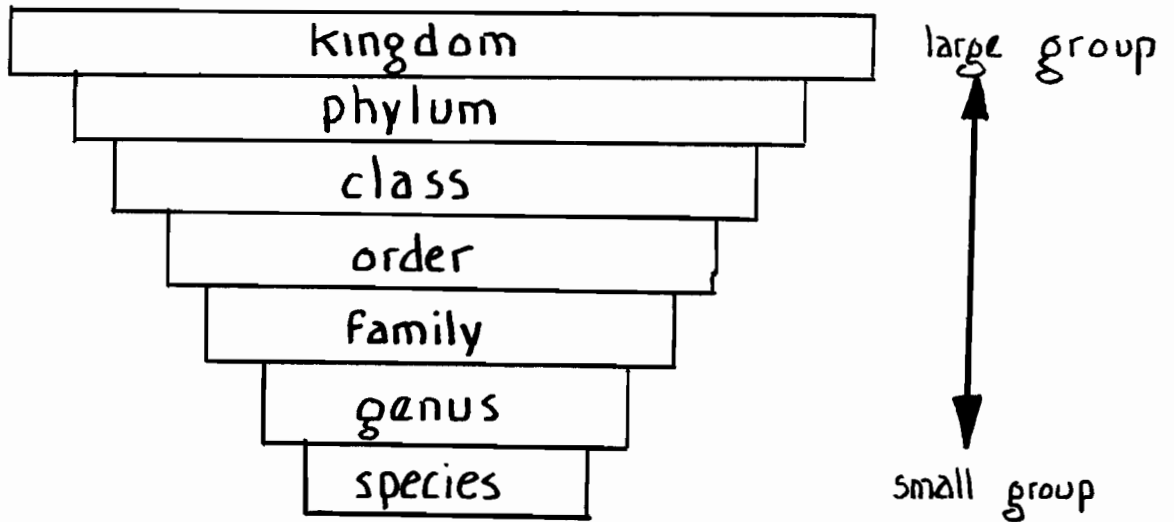
CLASSIFICATION
In The Animal Kingdom

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Imagine a world where cars could drive anywhere they wanted, even on the sidewalk. People want order in the world and establish rules to help get that order. In the drawer where you keep the eating utensils, you separate the spoons from the forks and knives. You do this by using a skill called classification. All things that look like a spoon belong together in the spoon only area. This classification helps to bring order into our world by helping us to organize the things around us. Biologists classify things by their structures or parts. A species is a group of organisms (or living things) that all have the same basic structure. Species that are similar or alike in several ways are now put into a smaller, tighter group called a genus. When you hear the scientific name of an animal, you are actually hearing two names, one behind the other. The first name is the genus (this begins with a capital letter) the second name is the species (this begins with a lower case letter). *Felis domestica* is the scientific name for a house cat. *Felis* is the genus and *domestica* is the species (these names are in Latin). Now we have big cats and small cats, therefore, not all cats are in the genus *Felis*. Cats may come in big or small varieties, but they still share some things in common. All catlike animals that are similar are in the same order. Now cats have whiskers as do dogs. Both walk on four legs and have fur. Both are mammals with tails. What do you know, they are similar, therefore, they are in the same order. Now what happens when you have many orders

that are similar? For example, you may have hundreds of animals from different orders that give birth to live young, while also having backbones with spinal cords. When you have similar orders, they are put into a very large group called a class. Mammals are a class of animals; reptiles are a class of animals. Classes can now be grouped together because even these large groups can have similarities. These very large groups are called phylum. Finally there is the big, big group. This is the one that everything is in. Every living thing is either part of the animal KINGDOM or the plant KINGDOM.



Eat, Drink and be Classified

Class Activity

Is it a herbivore (plant eater), a carnivore (meat eater) or an omnivore (both plant and animal eater)? Classification by the food it eats.

MATERIALS- Two large hoops or rope loops with a diameter of at least three feet. Empty food cans and boxes (cleaned and rough edges removed) with label still attached. Cards marked carnivore, herbivore and omnivore.

DIRECTIONS-

- 1) Lay hoops on your classroom floor (as indicated in diagram one)
- 2) Place labels in hoops (as indicated in diagram one)
- 3) Give out cans and boxes to your students. Have them read the ingredients to discover what type of animal this food product was made from

Example- Tuna Fish- Tuna

← Crackers- Contains whey, which is from milk, therefore crackers are made from cows.

Salmon- Fish

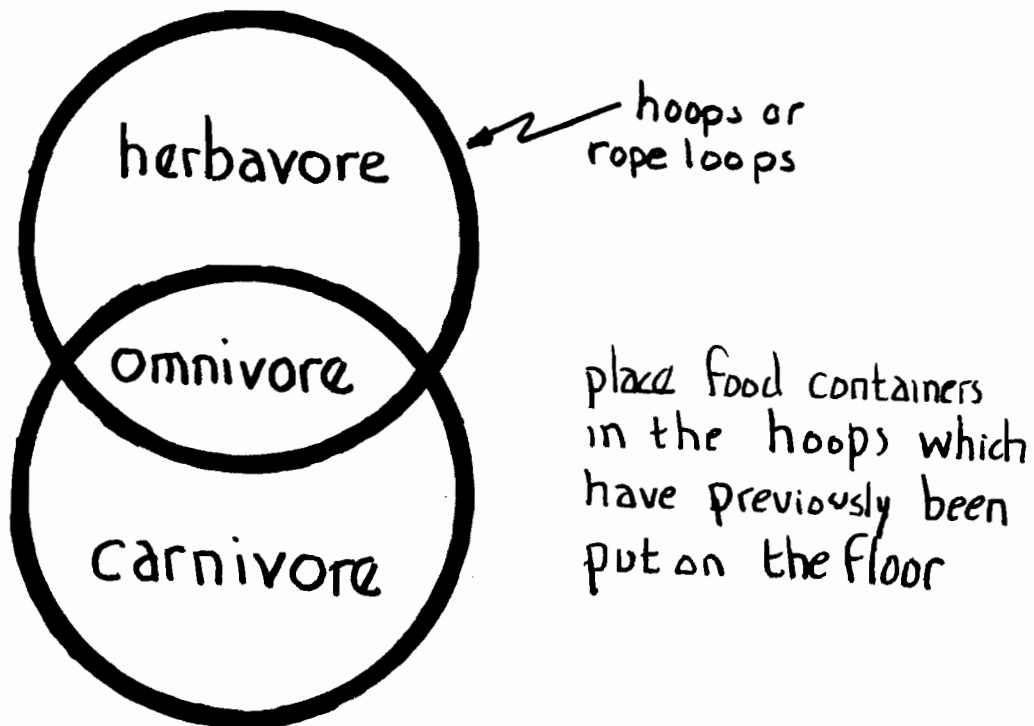
Bacon Box- Pig

- 4) Help your students decide if the food contains products from a herbivore, carnivore or omnivore.

Have your students explain how these animals are different. List the differences on oak tag, the chalk board as well as in their notebooks or journals.

5) Have your students place their box or can into the hoop they feel it belongs in. Have them explain reasons for their placement.

6) Discuss with the children their choices and help them to discover and correct their mistakes.



the Vertebrate Game

Small Group Activity

As children grow up they are encouraged to play. Adults give babies rattles and toys. Playing is something learned at an early stage of development for a child. Playing is a great deal of fun for children. Using the Vertebrate Game would have children discovering the differences between animal types allowing them to learn about classification while having fun. Games have built in motivation.

In this game, information about classification will be discovered by the children in a format different from conventional experimentation. The game board and vertebrate cards should be glued onto cardboard for durability. Laminating them will provide you with a game that is waterproof and damage proof. Have fun and learn.

MATERIALS- Game board, vertebrate cards, single die, playing pieces (cut down golf tees, bingo chips, small bones gathered from an owl pellet), a pen or pencil and a sheet of paper.

DIRECTIONS- To begin, each player puts a playing piece onto one of the animals pictured on the game board. The object of the game is to move around the board until you have landed on all five types of vertebrates.

1) Each player takes a turn rolling the die. Highest roll goes first.

2) Players move the number of spaces shown on the die.

3) Players must answer the question to stay on the space. Incorrect answers will result in the player moving back one space.

4) If a player lands on a space marked "take a Vertebrate Card" the player must take the card and answer the question on the card. If the player answers the question correctly, that player can move ahead one, two or three spaces. An incorrect answer moves them back to their original starting point.

TO WIN- the player to land on all five vertebrate types wins the game.

ANSWER KEY-

1- Amnibians

2- gills

3- backbone or spinal column

4- birds and mammals

5- tailed- salamander

tailless- frog, toad

6- heavier

7- urinary

8- eggs

9- cold or environment temperature

10- -----

- 11- -----
- 12- reptiles include crocodiles, alligators, turtles, lizards and snakes.
- 13- waterproof
- 14- live
- 15- wings
- 16- flounder, trout, salmon, killies, fluke, shark, etc.
- 17- -----
- 18- it's environment
- 19- -----
- 20- scales
- 21- adult
- 22- salamander, frog, toad, newt, etc.
- 23- wet or moist
- 24- reptiles
- 25- eggs
- 26- hollow or air spaced
- 27- -----
- 28- four
- 29- beak
- 30- both are cold blooded,
- 31- milk
- 32- they give birth to live young, they breath air with the use of lungs.
- 33- hair
- 34- three
- 35- dog, cat, cow, lion, elephant, horse, mouse, etc.

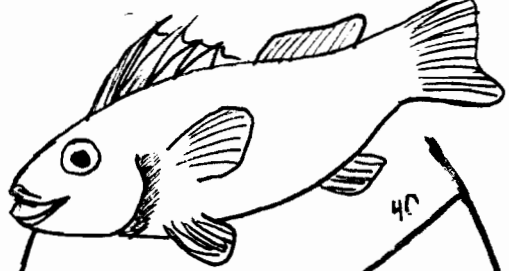
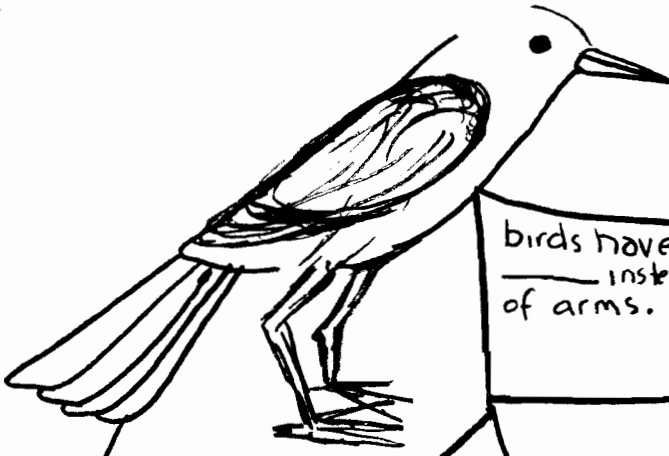
36- -----

37- gills

38- the feather is curved upward like a plane wing. This shape helps the bird gain lift. The flapping motion pushes air downward also helping the bird rise up.

39- fish do not have lungs, they remove air from the water with gills. Fish have fins to help them move about. They do not have arms and legs.

40- -----



birds have _____ instead of arms.

name five different fish.

How is a fish different from other vertebrates?

Take a Vertebrate card

a reptiles body temperature is controlled by _____

How does a feather help a bird to fly?

Removes air from water using _____

Take a Vertebrate card

Name three different mammals.

Tell why a whale is a mammal and not a fish.

the body of mammals is covered with _____

Amphibians have a _____

chamber heart



what is vertebrate



Explain how a turtle and a snake are both reptiles.

reptiles have dry skin covered with _____

Mammals nourish their young with _____ produced by _____

Amphibians have a larval form that develops as it becomes an _____

name two amphibians

birds hatch from _____ outside the body

Birds and mammals may have evolved from _____

amphibians must be kept _____

birds have _____ bones which make them light

birds have a _____ chamber heart

Birds do not have teeth. Instead they have a _____

27

26

25

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23

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40

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37

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35

33

32

vertebrate game cards (cut along dotted lines)

many scientists believe that _____ were the first land dwelling vertebrates. 1	birds do not have a _____ bladder. 7	so that a reptile does not dehydrate rapidly there is a _____ covering on the scales. 13
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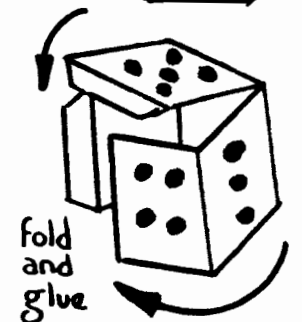
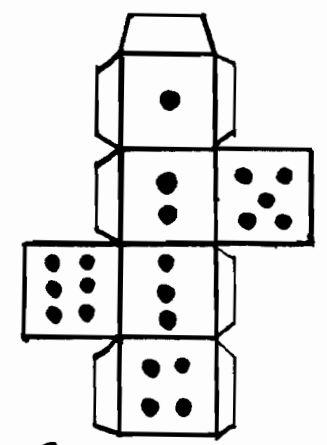
amphibians live in water during their larval stage, therefore, they had _____ for a short time. 2	amphibians hatch from tough leather like _____. 8	most mammals give birth to _____ young. 14
--	--	---

the characteristic that makes vertebrates different from other animals is that they have a _____. 3	ectothermic animals are _____ blooded. This class of animals include fish reptiles and amphibians. 9
--	---

Endothermic animals produce their own heat. This class of animals includes _____ and _____. 4	Some scientists believe amphibians evolved from air breathing fish. Move ahead 2 spaces. 10
--	---

Some amphibians have tails, some do not. Name one tailed and one tailless amphibians. 5	reptiles never have gills at any stage of their development but amphibians do. Slither over to the amphibian space. 11
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All fish are _____ than water. To stay afloat they must keep swimming or must have an air sac inside them. 6	Name three different reptiles. 12
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Observe, Draw and Classify

A Classroom Art Experience

There are many types of animals in our world; we are only one of them. Some animals have backbones, some do not. Some live on dry land, while others live only in or near water. We can see some of them, however many animals on earth are so small that you would need a microscope to see them. At first glance, a blackbird and a crow look similar. Upon careful observation, however, you should notice that the crow is the larger of the two birds. Careful observations will allow for easier classification. The differences that you notice, put animals into different categories and give them different classifications. Observation is an important tool that helps a scientist to document the things they see, hear and do. Too often we see things we think we know, however we do not really know a lot about them. Take a penny for example, you may know that Lincoln's image is on the front of the penny, but did you know his image is also on the back of the penny between the columns of the Lincoln Memorial. Also, how many times does "one cent" appear on the coin? A dime has ridges or cuts on its circular edge, does a penny have the same grooves or cuts? What happens is that you recognize only certain characteristics of a penny. The other imprints are unimportant to you, so even if you did notice them, they did

not register or imprint in your brain. Scientists need to observe, to see and to remember details.

Using words to describe the features of an animal is great, but pictures tell a story that words can not. There is one problem, however, animals do not stay in one place for too long. Scientists, therefore, have learned to capture animals in fast simple drawings that details can be added to at a later time. The key to making observation drawings is to observe and draw as rapidly as possible. Look closely at your subject. What lines make up its form? Which way does it bent or twist? How can you capture that twist in a few strokes? Practice drawing rapidly. Can you get the motion or the curve of a spine in fifteen seconds? Have a friend time you. Let them tell you when to start and when to stop. Shading is not important. Every wrinkle or stripe in a face is not important. What is important is to capture the major movements of your subject. Remember, you can always go back into your drawing and add details later. If you have a dog or cat, start with rapid sketches of your pet. You can also go to your local neighborhood zoo, the pet shop.

Sketching will give you a good sense of observation while also building up eye hand coordination allowing your eye to move over an object and allowing your hand to draw it. One of the best uses for this skill is when you go on a nature hike, pad in hand and come back with documentation of what you saw and remember.

MATERIALS- Drawing or sketch pads (you can make these by stapling sheets of white paper between a front and back sheet of color card stock), pencils or crayons, classroom animals or animal pictures cut from magazines.

DIRECTIONS-

1) Practice with your students being able to draw the form and shape of an animal in 15 seconds. Tell them when to start drawing, time them and tell them when to stop. The more drawings that they make the more they will begin to capture on paper. Try using circles, cylinders and ovals to bring about the shape of an animal.

2) There are nine phylums or major groupings in the animal kingdom. Look for the similarities and differences that put all animals into these groups. Observe and draw these similarities and differences.

15 second drawings

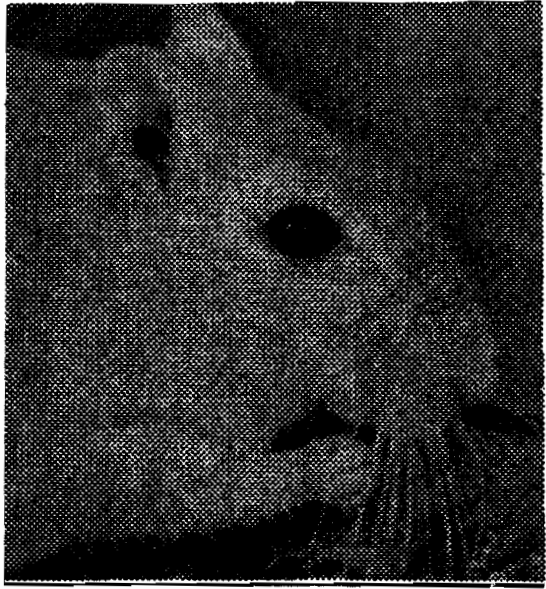


drawing 1

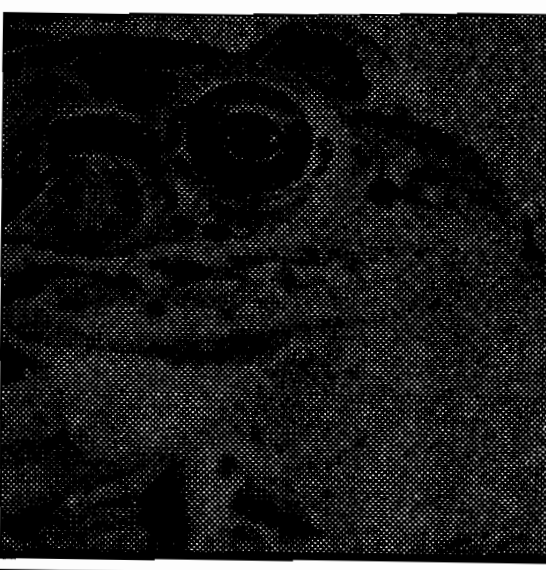
drawing 2

drawing 3

drawing 4



find the differences as you make this drawing

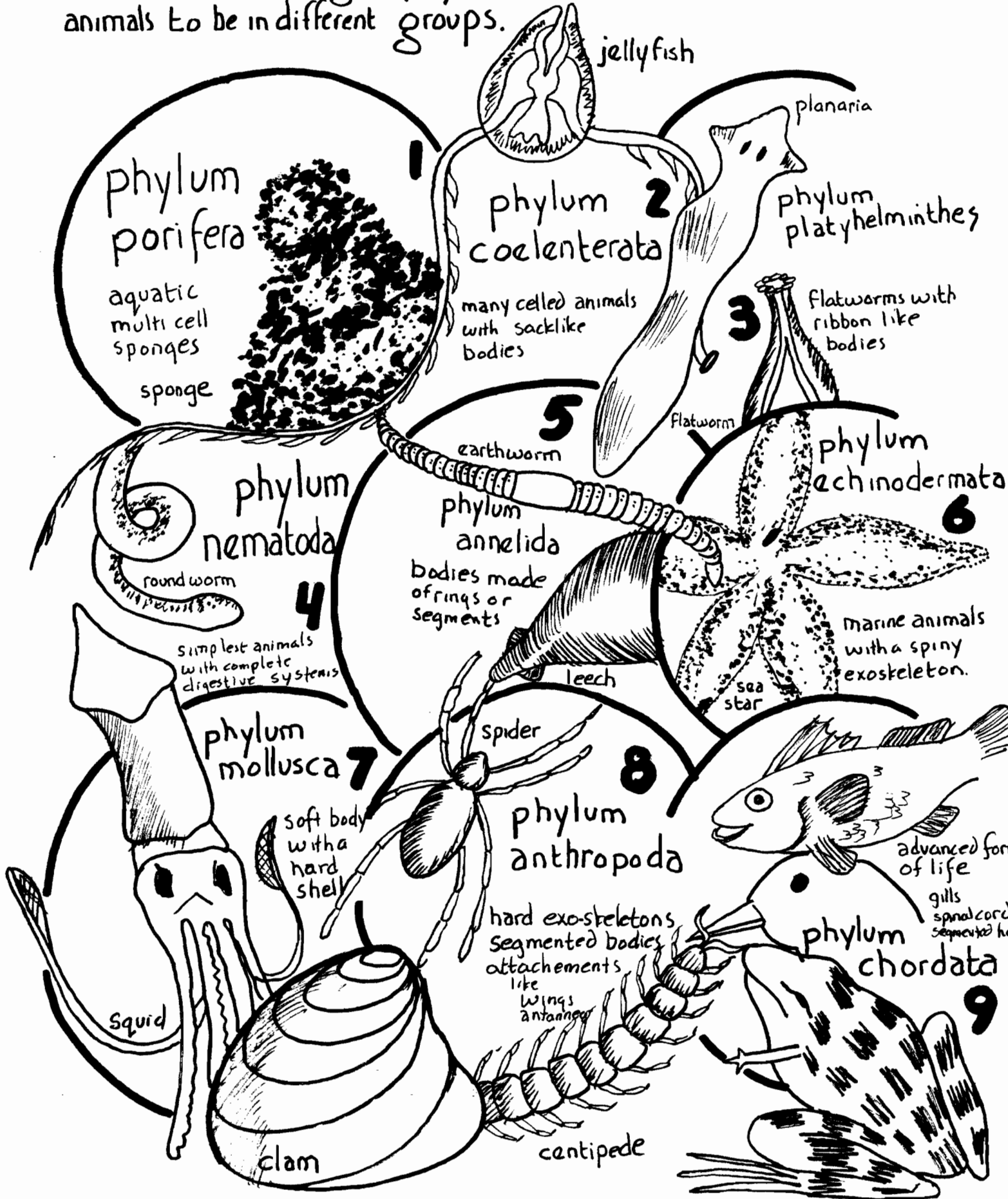


find the differences as you make this drawing

List three (3) differences between these two animals

- 1- _____
- 2- _____
- 3- _____

When examining the nine major groups or phylum of the animal kingdom, you will notice differences that cause animals to be in different groups.



Key Sorting For Common Characteristics

Small Group Experience

MATERIALS- Key Sort Sheets

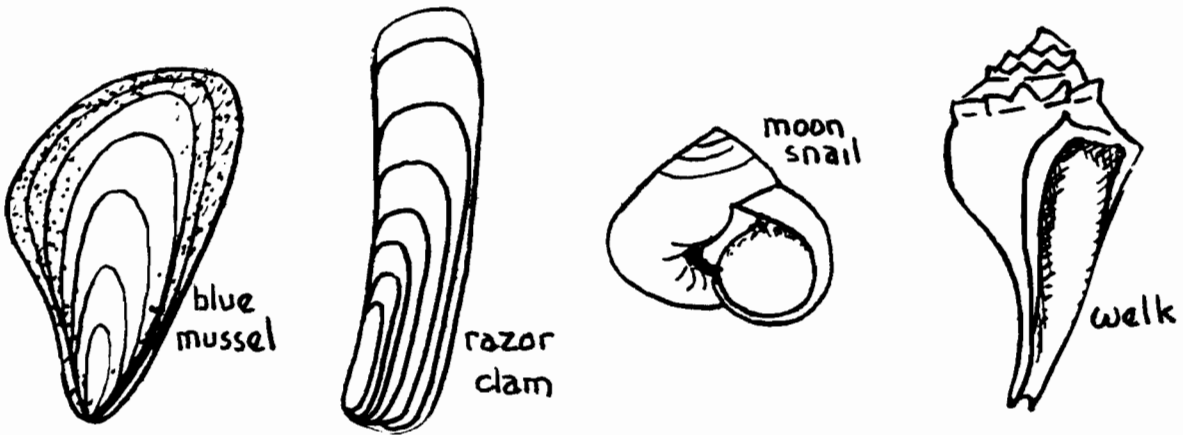
DIRECTIONS-

- 1) examine and observe the shells pictured.
- 2) Go to step one on the key.
- 3) If the shells are univalves go to step two. If they are bi-valves go to step three.
- 4) Place the names of the shelled animals into the boxes provided.
- 5) Examine and observe the drawings of the crabs.
- 6) If the crab has pincers go to step one on the key. If the crab does not have pincers go to step two.
- 7) Examine the animals in step one box. If they have no tail, go to step three. If they have a tail go to step four.
- 8) Examine the animals in step three box. If the animals left have two large pincers move them into step five box. If one claw or pincer is larger than the other, place that animal into step six box.

A "key" is an easy way to visually see how to identify living things by their name. It gives a pathway (similar to that of a flow chart) that you can follow to identify each animal. Animals are sorted by physical or common

characteristics. These are KEY characteristics. Taxonomy is a name we give to classifying living things into groups and giving the animals scientific names. Practice this method of classification on the blackboard with the entire class using pictures of animals taken from discarded magazines and books.

Key sort these living things by common characteristics.



Univalves

body inside a single shell

step 2

Bivalves

has two shells

step 3

long and thin

step 4

short and fat

step 5

short and fat

step 6

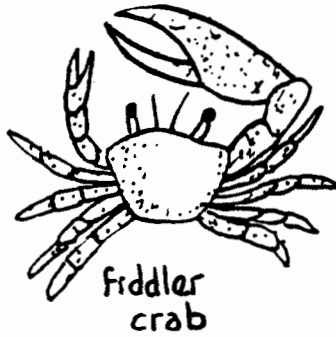
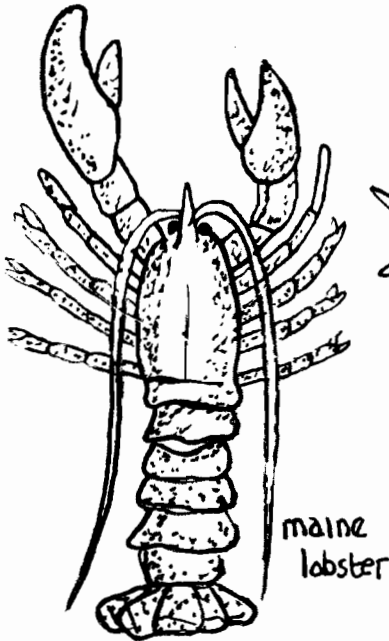
long and thin

step 7

What were some of the physical features, properties or characteristics that you used to key sort these shelled organisms?

Classify these living things into groups
use their scientific names.

This classification is called taxonomy



has
pincers

step 1

no
pincers (claws)

step 2

no
tail

step 3

tail

step 4

two
large pincers

step 5

one large claw or pincer
one small pincer

step 6

Describe how you grouped these animals.

Similar And Different

A small group animal grouping game

By grouping animals students will understand how scientists set up the nine phylums for the animal kingdom. Animals in each phylum share common characteristics. This activity will allow your students to group by these common characteristics.

MATERIALS- Pictures of animals cut from discarded magazines or books. For added durability glue pictures to card stock. Lamination will also add to the durability of these pictures. Animal pairs sheet, pen or pencil.

DIRECTIONS-

- 1) Give out pictures to the various groups in your classroom.
- 2) Have the students work together to observe and examine the pictures.
- 3) Pick pairs of animals. On the "animal pairs sheet" describe the similarities and differences that this pair of animals share.
- 4) Do the same for other pairs of animals.
- 5) Together as a group sort through the pictures and place them into piles on your desk where animals in each pile share common characteristics.

6) Give names to the animal picture piles and list qualifications for an animal to be in that pile.

The VERTEBRATE SONG

Whole Class Activity

Children love to sing. Taking words and putting them to music yields a pleasurable experience for all who hear and sing the words. People remember songs because the music triggers memory. Through this song, children will experience and learn about the characteristics that make an animal a vertebrate.

This song is sung to the tune of *Armor Hot Dogs*

MATERIALS- Song sheets, singers and someone to play the music of a guitar or piano. You might try taping the music without the words for playback and sing-a-longs at a later date. You may also wish to have the school's chorus sing this song on tape. This will allow your children to hear other children singing and may be more apt to sing themselves.

DIRECTIONS- Hand out songsheets, or project the words onto a screen using an overhead projector. Play music and have the children sing.

SONG WORDS-

Vertebrate, what's a vertebrate?

What kind of animal is a vertebrate?

Little bones run down their spine that let their skeleton
bend

Birds and fish, reptiles and amphibians and even mammals are
known as vertebrates

Vertebrates, that's a vertebrate
An animal with a back bone

Mammals, what are mammals?
What kind of animal is a mammal?
warm blooded, breathes air, nourishes it's young with milk
four chamber heart, two sets of limbs , it is covered
everywhere with hair,
mammals, that's a mammal
a mammal is a ver te bra te

Amphibians, what are amphibians?
What kind of animal is an amphibian?
They need water, once had gills, some have tails, some not.
Their young grow from a larval form and change as they
become an adult
Amphibians, wet amphibians
From the Phylum Chordata

Reptile, what's a reptile?
What kind of animal is a reptile?
Snakes and turtles, crocks and gators, scales from head to
toe
Their skin is rough, they hatch from eggs, they even get
their heat from air.
Reptiles, they say dinosaurs were reptiles
But only fossils can tell

Birds, what are birds?
What kind of animal is a bird?
Hatched from eggs in a nest with wings that let them fly.
Their other limbs help them stand, or grip and hang so they
can move around on land
These are birds, wonderful birds
Their air space bones make them light

Fish, what are fish?
What kind of animal is a fish.
Not like whales that breath the air with lungs inside of
them,
In streams and rivers, lakes and ponds and even in the
oceans depths
These are fish, gill breathing fish
With back bones that make them a ver te brate

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The VERTEBRATE SONG



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An animal with a back bone