



ZAP!

Zoo Activity Packet

Animals Have Class

A Teacher's Resource
for Grade 5

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Learning Objectives

The work sheets and activities in this Zoo Activity Packet are suggested to help students develop the following concepts:

1. Scientists separate living things into different groups so that they may study them more easily.
2. Living things are grouped together (classified) according to their body characteristics.
3. The more closely related two animals are, the more taxonomic ranks they will both be found in.
4. All living things are given a two-part Latin or Greek scientific name to avoid confusion among scientists from different areas.

Indiana Academic Standards for Science

The Animals Have Class Zoo Activity Packet meets the following Indiana Academic Standards for Science:

The Scientific View of the World

- 5.1.1 Recognize and describe that results of similar scientific investigations may turn out differently because of inconsistencies in methods, materials, and observations.

Computation and Estimation

- 5.2.1 Multiply and divide whole numbers mentally, on paper, and with a calculator.
5.2.2 Use appropriate fractions and decimals when solving problems.

Manipulation and Observation

- 5.2.4 Keep a notebook to record observations and be able to distinguish inferences from actual observations.

Communication Skills

- 5.2.7 Read and follow step-by-step instructions when learning new procedures.

Interdependence of Life and Evolution

- 5.4.4 Explain that in any particular environment, some kinds of plants and animals survive well, some do not survive as well, and some cannot survive at all.
5.4.5 Explain how changes in an organism's habitat are sometimes beneficial and sometimes harmful.
5.4.7 Explain that living things, such as plants and animals, differ in their characteristics, and that sometimes these differences can give members of these groups (plants and animals) an advantage in surviving and reproducing.

Systems

- 5.6.1 Recognize and describe that systems contain objects as well as processes that interact with each other.

Taxonomy and Classification:

Background Information for the Teacher

Zoologists classify animals according to their body characteristics. This orderly arrangement of the animal kingdom shows how the various kinds of animals are related.

Taxonomy is the science of classification of living things. There are seven basic ranks, as well as many intermediate ranks, which define animals:

Kingdom is the highest rank. The most easily recognized kingdoms are those for plants and animals. There is some disagreement among scientists over the other kingdoms. Some scientists include a kingdom for fungi, one for protists (one-celled organisms), and one or two kingdoms for various types of bacteria.

Phylum (plural: Phyla) is the largest subdivision of the animal kingdom and covers animals of broadly similar characteristics. The phylum Chordata, for example, includes all animals with any kind of backbone.

Class is the main subdivision of phylum, bringing together animals with a closer relationship. All animals that have hair and mammary glands, for instance, belong in the class Mammalia.

Order takes the subdivision a stage further. Mammalia, for example, is divided into 19 orders, among them Marsupialia, Primates, Rodentia, and Carnivora.

Family includes animals that are recognizably similar. For example, among the Carnivora (flesh eaters), the family Felidae includes all cat-like animals. Family names end in the suffix -idae.

Genus (plural: Genera) is a group of closely related animals within a family. The Felidae include the genera Panthera (big cats such as lions), Felis (cats that purr but do not roar), Acinonyx (the cheetah, with its nonretractable claws), and Lynx (the lynx). Genus should start with a capital letter and be italicized or underlined.

Species is the most specialized division. It defines animals that are of the same kind and can interbreed. A species name is always *italicized* or underlined. A species name is never capitalized, even if it is a proper name (e.g., Phoenicoparus jamesi is the James flamingo).

The scientific name of an animal is its genus and species, and should be *italicized* or underlined. This internationally accepted method of naming an animal is referred to as binomial ("two names") nomenclature, and was first used by Carolus Linnaeus (born Karl von Linne in Sweden) in the 18th century.

The complete taxonomy for humans (scientific name Homo sapiens) is:

Kingdom	Animalia
Phylum	Chordata
Class	Mammalia
Order	Primate
Family	Hominidae
Genus	Homo
Species	sapiens

Names for animals differ widely from one language to another. Bear for example is "bar" in German, "oso" in Spanish, "orso" in Italian, and "ours" in French. In order for zoologists in any part of the world to know exactly what animal is being discussed, each species is given a scientific name in Latin or Greek. Scientists in Japan or Brazil may not recognize the English word "bear," but they know what animals are included when we use the genus name *Ursus*.

An international descriptive name is also useful because common names for the same animal may differ (e.g., puma, cougar, screamer, catamount, and mountain lion all refer to the same animal, Felis concolor), or the same common name may describe different animals (e.g., in England, the robin is a small songbird, Erithacus rubecula; in the United States, the robin is a larger bird of the same family, Turdus migratorius; in Australia, it is a kind of flycatcher, genus Petroica).

The groups listed below are those commonly studied at the fifth grade level. They are listed from the simple to the complex.

Invertebrates

1. Cnidaria - Animals with stinging cells (anemones, coral, jellyfish)
2. Echinoderms - Animals with spiny skin (sea urchins, sea stars, sand dollars)
3. Mollusks - Animals with soft bodies (snails, clams, oysters, mussels)
4. Arthropods - Animals with jointed legs (spiders, insects, lobsters, crabs)

Vertebrates

1. Fish - Cold-blooded live in water, and are covered with scales
2. Amphibians - Cold-blooded, live part of their lives in water and part on land
3. Reptiles - Cold-blooded, have lungs and dry skin, usually covered with scales
4. Birds - Warm-blooded, have feathers, lay hard-shelled eggs
5. Mammals - Warm-blooded, have hair or fur, give birth to live young, produce milk for their young

Vocabulary

- Classify:** to separate living things into similar groups
- Invertebrate:** animals without a backbone
- Scientific name:** two-part Latin or Greek name given to all living things; consists of genus and species. A scientific name is always underlined or written in *italics*. The first name (genus) is always capitalized, and the second name (species) is never capitalized.
- Taxonomy:** the science of classification of living things
- Vertebrate:** animals with a backbone

Students should also be familiar with names for classes of invertebrates and vertebrates (i.e., mammal, amphibian, mollusk, etc.) and the taxonomic ranks (Kingdom, Phylum, Class, etc.).

Pre-Visit Activities

- ☞ List features that help make an animal belong to a specific classification.
- ☞ Collect animal pictures and divide them into classification groups. Make a bulletin board display or large collage of the pictures.
- ☞ Have students watch for animal tracks and if possible, make plaster casts of them. Can they tell if it was a small or large animal? Walking or running? Does it have claws?
- ☞ Play Mammal Jeopardy or Animals Without Backbones game (see enclosed sheets).
- ☞ Have students (either as individuals or small groups) gather pictures of a variety of animals. Tell them to classify their animals into groups using their own classification system (e.g., by color, by size, by habitat, by type of movement, etc.). Have them explain it to the others. Repeat, using the same pictures, but with another system. A variation could be to have each group classify their pictures and have the others guess their classification system.
- ☞ Make a list of vocabulary words (word search or crossword puzzle words could be used) concerning animal classification. Practice pronunciation and spelling, and ask students to tell what they think they mean. Write down their ideas, then assign them the task of finding examples at the ZOO.
- ☞ Play “Twenty Questions” with various animals trying to use classification clues.
- ☞ Pin or tape an animal picture on the back of a child who stands in front of the class. Other students give classification clues until the person is able to guess what animal it is. Continue until others have had a turn, or put a picture on the back of every student and have them walk around at the same time asking yes or no questions to identify their animal.
- ☞ Use the Creature Feature and Name That Animal work sheets enclosed to supplement your studies of scientific names and Latin root words.
- ☞ Use the Zoo Math work sheet enclosed.
- ☞ Have students design and create a new zoo exhibit. They should choose an animal and develop a profile containing information on classification and other pertinent facts. The exhibit should be designed with three groups in mind: the animals, the zoo keepers, and the public. Compare the exhibit with one found at the zoo on your field trip.
- ☞ Make flash cards with pictures of animals on one side and their taxonomy on the other.
- ☞ Use a variety of craft materials (pipe cleaners, yarn, egg cartons, fast-food containers, etc.) to make imaginary animals. Have the students develop a classification system for their animals.

Mammal (Zoo) Jeopardy

Involve your students in friendly competition by playing a variation of the quiz game Jeopardy. Run off one copy of the category score sheet for each team. Divide students into two or more teams and take turns choosing a question. Points are scored for correct answers and lost if answers are incorrect. Players keep track of points and/or correct answers on their sheets. When all questions have been answered or time has expired, the team with the highest score wins.

The following questions and categories can be used for Mammal Jeopardy; this idea can be adapted with any set of questions concerning animal groups or other general topics.

Category: Mammals In History I

Questions: (answers are in parentheses following question)

1. Name three ways mammals have been important to people throughout history. (They've provided food, clothing, shelter, transportation, and so on)
2. Name three mammals that have helped people "get around" (horse, camel, llama, donkey, ox, elephant, sled dog, seeing-eye dog, and so on).
3. What mammal was responsible for spreading the fleas that carried the Bubonic Plague, or Black Death, throughout parts of Europe during the Middle Ages? (Black Rat)
4. Name three mammals that are now extinct. (saber-tooth cat, mammoth, mastodon, dire wolf, and so on)

Category: Famous Mammals

Questions:

1. What famous aquatic mammal stars in shows at Sea World? (Shamu the whale)
2. Who becomes friends with Timon and Pumba in the "Lion King?" (Simba)
3. What is the name of the dolphin who could communicate with people? (Flipper)
4. Name the famous whale that starred in the movie "Free Willy." (Keiko)

Category: Mammals Around The World

Questions:

1. What black and white hooped mammals live in herds on the African plains? (Zebras)
2. What African mammals live in social groups called prides? (Lions)
3. What semi-aquatic Australian mammal lays eggs? (Platypus)
4. Name three types of pouched mammals that live in Australia (kangaroo, wombat, wallaby, koala, Tasmanian devil, and so on)

Category: Mammal Pets I

Questions:

1. What mammal pet has a split upper lip, often eats garden vegetables and can weigh up to 15 pounds (7 kg)? (Rabbit)
2. What mammal is the most common pet in the United States? (Cat)
3. What mammal was probably the first to be domesticated as a pet? (Dog)
4. What mammal pet is native to Asia, lives in the desert, and doesn't need to drink water? (Gerbil)

Category: Mammals Around The World II

Questions:

1. What Australian mammal is the mascot for an Australian airline and feeds only on eucalyptus leaves? (Koala)
2. What African mammal weighs up to 14,000 pounds (6300 kg), lives on grassy plains, has huge incisors, and makes a loud trumpeting sound when in danger? (African elephant)
3. What South American mammal has a name that begins with a double consonant and is related to camels? (Llama)
4. What mammal found in Europe is covered with sharp spines and rolls up into a tight ball to defend itself? (Hedgehog)

Category: Endangered Mammals I

Questions:

1. True or False. Congress has passed a law that helps protect endangered species. (True--the Endangered Species Act)
2. What are two reasons that some mammals become endangered? (loss of habitat, poisoning, commercial hunting, poaching, and so on)
3. Name an endangered mammal that lives in the ocean. (humpback whale, gray whale, manatee, and so on)
4. Name two mammals in North America that are threatened or endangered. (gray wolf, grizzly bear, black-footed ferret, Delmarva fox squirrel, Florida panther, and so on)

Category: Endangered Mammals II

Questions:

1. What black and white endangered mammal feeds on bamboo? (giant panda)
2. What mammal in the dog family used to live in almost every habitat and region of the world north of the equator until it was hunted and poisoned almost to extinction? (Wolf)
3. What weasel-like mammal preys on prairie dogs and lives in their burrows? (Black-footed ferret)
4. What endangered marine mammal migrates each year along the Pacific coast of North America? (Gray whale)

Category: Mammals In History II

Questions:

1. What mammal has been used for thousands of years to carry people and supplies across deserts? (Camel)
2. What shaggy-furred mammal used to roam the U.S. plains in huge herds? (Bison)
3. What African primate was sent into space before humans? (Chimpanzee)
4. What was the first mammal to orbit the earth? (Dog)

Mammal Jeopardy Score Sheet

Categories	Points: Team 1	Team 2	Team 3	Team 4
Mammal Pets				
Mammals Around the World I				
Endangered Mammals I				
Mammals in History I				
Famous Mammals				
Mammals Around the World II				
Endangered Mammals II				
Mammals in History II				

Creature Feature

Scientific names, consisting of the animal's genus and species, are usually formed from descriptive Latin or Greek words. If you understand the root words, you can probably guess what the animal looks like.

Listed below are some common Latin and Greek root words used in naming species. Using the list, try to match the imaginary animal pictures to their imaginary scientific names and then write out the names' meaning in English, or create your own names for the animals.

Latin and Greek Roots

NUMBERS

bi - two
 di - two
 diplo - twice
 hemi - half
 mon - single
 mono - one
 multi - many
 novem - nine
 octo - eight
 pent - five
 poly - many
 quad - four
 quin - five
 semi - half
 sept - seven
 sex - six
 tetra - four
 tri - three
 uni - one

ANIMAL TERMS

anceps - two headed
 avi - bird
 bufo - toad
 campus - sea monster
 canis - dog
 felis - cat
 hippo - horse
 ichthyes - fish
 ophio - snake, serpent
 rana - frog

COLORS

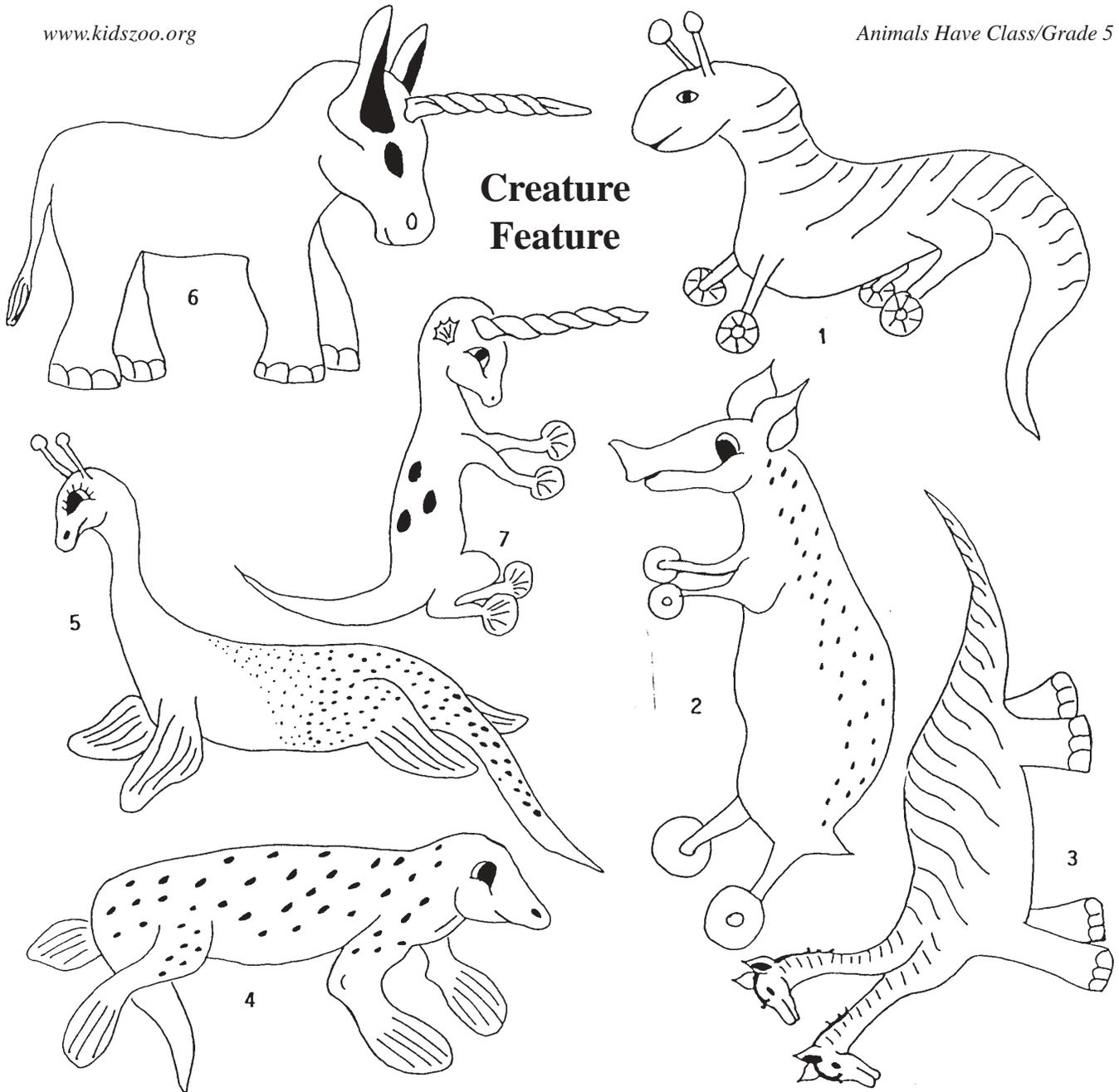
chloro - green
 coccineus - scarlet
 cyano - blue
 flavi - yellow
 leuco - white
 melano - black
 rhodo - red
 xanth - yellow

BODY PARTS

auri - ear
 carpus - wrist
 caudata - tail
 cephalus - head
 cornis - horn
 dactyl - finger
 dentata - toothed
 derm - skin
 morpha - body form
 pede - leg
 penni - feather
 poda - foot
 ptera - wing
 pus - face
 rhino - nose
 stoma - mouth
 uros - tail

DESCRIPTION

alti - high
 annuli - ringed
 aqua - water
 bates - climber
 brevis - short
 cinctus - girdle, encircle
 coronatus - crowned
 curvi - curved
 dasy - shaggy
 echino - spiny
 erectus - upright
 hydro - water
 hyla - tree
 hylo - tree
 lati - broad
 lepto - thin
 lineatus - lined
 macro - large
 marinus - marine
 mega - large
 micro - small
 nudi - naked
 pachy - thick
 phyll - leaf
 platy - wide, flat
 porus - with holes
 pseudo - false
 punctata - dotted
 scler - hard
 sphere - globe
 volans - flying



Creature Feature

ANIMAL#

SCIENTIFIC NAME

MEANING

Unicornis curvipoda

One horned with curved feet

Platyrhino polypunctata

Diplocephalus polylineatus

Spheropoda multiligneatus

Melanopunctata platypoda

Semipunctata platypede

Name That Animal

Using your list of Latin and Greek root words, determine which scientific name belongs to each of the animals listed below. All the animals and names are real.

COMMON NAME

PROPER BINOMIAL (SCIENTIFIC NAME)

1. Lined seahorse	_____	_____
2. Golden-crowned spadebill	_____	_____
3. Marine toad	_____	_____
4. Bird-voiced tree frog	_____	_____
5. Ringed anemone	_____	_____
6. Nine-banded armadillo	_____	_____
7. Spiny starfish	_____	_____
8. Green honeycreeper	_____	_____
9. Leaf-fingered gecko	_____	_____
10. Flathead bullhead (catfish)	_____	_____
11. Short-spined snake-skinned brittle star	_____	_____
12. Six-lined racerunner	_____	_____
13. Elephant tusk shell	_____	_____
14. Greater glider	_____	_____
15. Flounder	_____	_____
16. Panda	_____	_____
17. Gibbon	_____	_____
18. Electric eel	_____	_____
19. Indian rhino	_____	_____
20. Eastern hog-nosed snake	_____	_____
21. Hippopotamus	_____	_____
22. Square stinging coral	_____	_____
23. Silky short-tailed bat	_____	_____
24. Two-toed anteater	_____	_____
25. Polar bear	_____	_____

BINOMIAL SCIENTIFIC NAMES

- | | |
|-------------------------------------|------------------------------------|
| A. <u>Carollia brevicauda</u> | N. <u>Platichthys flesus</u> |
| B. <u>Cyclops didactylus</u> | O. <u>Echinaster echinophorus</u> |
| C. <u>Millepora squarrosa</u> | P. <u>Ophioderma brevispinum</u> |
| D. <u>Rhinoceros unicornis</u> | Q. <u>Bartholomea annulata</u> |
| E. <u>Heterodon platvrhinos</u> | R. <u>Hylobates concolor</u> |
| F. <u>Hippopotamus amphibius</u> | S. <u>Schoinobates volans</u> |
| G. <u>Ictalurus platycephalus</u> | T. <u>Ailuropoda melanoleuca</u> |
| H. <u>Phyllodactylus lanei</u> | U. <u>Dentalium elephantinum</u> |
| I. <u>Cnemidophorus sexlineatus</u> | V. <u>Electrophorus electricus</u> |
| J. <u>Bufo marinus</u> | W. <u>Dasypus novemcinctus</u> |
| K. <u>Chlorophanes spiza</u> | X. <u>Thalarcos maritimus</u> |
| L. <u>Platyrrinchus coronatus</u> | Y. <u>Hippocampus erectus</u> |
| M. <u>Hyla avivoca</u> | |

Zoo Math

Find the solutions to these problems:

1. Using echolocation, a bat can detect an insect up to 3 feet away. A moth is 91 feet away from a bat. The bat is flying at a speed of 44 feet per second. How long will it be before the bat detects the moth?
2. In one night a single bat can eat 3,000 insects. How many insects can 300 bats eat in one night? one week? one year?
3. A captive gibbon might eat 24 ounces of food every day. This includes 8 ounces of kale, 3 ounces of cabbage, and 2 ounces of beans. How many ounces of other unnamed foods does he evidently eat in a day? What percent of his food is made up of cabbage?
4. If the same gibbon still eats 24 ounces of zoo food each day, how much will he eat in one week? in one month (30 days)? Convert your answers into pounds.
5. A lioness can eat about 11 pounds of food in a day. How many pounds does she eat in a year?
6. There are 15 lions in a pride, and each one eats about 13 pounds of meat per day. In one week how many pounds would the whole pride eat?
7. About how many 500-pound animals would the pride have to kill each week in order to make sure each of the 15 lions gets a full meal all seven days?
8. The Fort Wayne Children's Zoo has 500,000 visitors each year. If each visitor spends about \$6.25 during their visit, how much is the zoo's annual income from zoo visitors?
9. In one year, 31,408 wild parrots were imported for the pet trade. A total of 1,451 were dead on arrival. What percent of the birds died? Another 15% of the parrots died during their quarantine period. How many is this?

(Adapted from the San Antonio Zoo's "World of the Wild" Satellite in the Classroom educational program.)

Animals Without Backbones

1. Cut out each box below.
2. Take all the cards from the A column and arrange them into a row face down. Arrange the B cards into another row face down.
3. With your partner, take turns choosing one card from Row A and one card from Row B. The object of the game is to match the animal group with its examples or features. When you make a match, keep the pair. If not, return the cards to their rows face down.
4. Repeat using Row C and Row D. The partner with the most pairs wins the game.

A	B	C	D
sponge	covered with small holes	flatworm	flat bodies, often found in food
jellyfish	hollow-bodied roundworms	roundworms	round bodies, can infect people
segmented worms	earthworm	insect	fly or bee
mollusk	snail or clam	spiny-skinned animal	starfish
lobster	hard-shelled arthropod	spider	four pairs of legs

At-the-Zoo Activities

- ☞ As you walk through the zoo, read the clues to the Mystery Animal game, included in this packet. See if the students can guess the identity of the Mystery Animal (the siamang). Because the siamang lives on the Tree Tops Trail boardwalk in the Indonesian Rain Forest, try to go there last.
- ☞ Ask the children to observe the giraffe for five minutes, then the leopard for five minutes. Ask them to explain why they think these two animals belong to the same classification group. This exercise can be done with any two animals from the same classification group (birds, mammals, reptiles, etc.).
- ☞ To improve observation skills while touring the zoo, have students fill out the enclosed Primate Study Sheet.
- ☞ While touring the zoo, students should choose any two animals and list two ways that they are alike and two ways that they are different. A third animal could be added to the group and find three similarities and three differences.
- ☞ Make a list of all the animal groups you have studied. See how many animals students can place in each group while at the zoo.

Mystery Animal

TEACHER: As you walk through the zoo with your group, orally give one of the following clues for the Mystery Animal. Have students look for these characteristics in various zoo animals they see. Ask for guesses after each clue. (Try to end your walk in the Indonesian Rain Forest.)

I breathe with lungs.

I give birth to live young.

I am warm-blooded.

I nurse my young with milk.

I have fur.

I have a large, well-developed brain.

My arms are 1 1/2 times the length of my legs.

We are mature adults at age 6 and expect to live to age 25 or 30.

I eat leaves, fruit, some insects, and bird eggs.

I avoid going in water and can't swim.

I live in tropical forests in Indonesia.

I have hard patches of skin on my rump for long sits in trees as we use no nests.

I walk upright with arms held high for balance.

My fur is all black, but I might have a white band of fur on my belly.

Our family hoots in unison in early morning to claim our feeding area and again at night to mark home territory.

My throat sac can be inflated to the size of my head for calls over a mile away.

I can swing 33 feet through the air.

I stand 2 or 3 feet tall and weigh 13 to 15 pounds.

Some in our family are the smallest of the apes.

WHO AM I? _____

Primate Study Sheet

Primates include all types of monkeys and apes. At the zoo, observe several species of primates and record your observations on this chart. Make sure to include some monkeys and some apes.

Name of Primate				
Monkey or Ape?				
Does it have fingernails or claws?				
Does the animal use its tail to grasp things?				
What color is the fur around the animal's eyes?				
Estimate the weight of the primate.				
What does it eat?				
Are the arms longer or shorter than the legs?				
Tell how the animal got its name.				
Tell an interesting fact about the animal's behavior.				

Post-Visit Activities

☞ Make a post-visit graffiti board. Pass around a marking pen and a sheet of cardboard or large piece of white paper stapled onto cardboard, and have students record their reactions to the field trip. Add it to your zoo bulletin board or learning center.

☞ If students have done work sheet activities at the zoo, go over them when you return to the classroom. Discuss their answers, ideas, experiences, and any questions they have about what they saw and did. Encourage students to discuss their reactions to the zoo. What did they like most? Least? Why? Have their feelings or ideas changed about zoos?

☞ Have students write articles for the school newspaper or publish a newsletter about their trip for their fellow students and parents. Divide responsibilities for different topics or phases of the trip or classes of animals among the students. Encourage them to interview one another and to illustrate their stories with sketches or cartoons.

☞ Ask students to make up riddles about animals using classification clues.

☞ Use the "Hidden Animals in Syntax" sheet, and then have students create their own sentences with hidden animal names.

☞ Give each student or group an animal picture. Ask them to write a description of the picture using classification terms. The other students or groups must decide which animal they are describing.

☞ Ask students to imagine themselves at one of the zoo exhibits, and then answer the following questions: What do you hear, smell, and feel? If the animal in this exhibit could talk, what would it say to you?

☞ Have students do the Aquarium Scramble sheet enclosed.

☞ Have a spelling bee using zoo vocabulary and animal names.

☞ Play animal charades. Divide the class into teams: each team must act out an animal's movements while the rest of the teams try to guess what it is. Keep track of the time for each team.

☞ Play Vertebrate Grab Game (See enclosed materials).

☞ Have the children write a cinquain about their favorite reptile. Cinquain (sing-KANE) is a five line oriental poetry form that will help students capture the essence of an animal in just a few words.

Examples: Ostrich
 long-necked
Always looking confused
You seem so silly
 "Stretch"

 Polar bear
 Shaggy, white
Swims in ice-water
Brrr, a cold life
 Arctic (use the enclosed form)

Hidden Animals in Syntax

See if you can find the hidden animals in each sentence below. Draw a line under the name of the animal's name. After completing the sentences write three of your own at the bottom of the page.

1. His grammar was incorrect when he said, "John is the most rich person in the world!"
2. Place the smelly, bad rag on top of the washing machine.
3. I understand Joe is new to our school this year.
4. "Take the Snickerdoodles off the cookie pan!" dad exclaimed.
5. Mom said, "Please don't wear those sloppy thongs again!"
6. Captain Whitt, a marine, was assigned to the first amphibious division.
7. The disgusted real estate agent yelled, "You've got termites in here!"
8. Either carry the jug against your hip or poise it on top of your head.
9. "Leo, pardon me, but you're stepping on my foot!" shouted Ann.
10. The 40-gallon fish tank water was a little murky.

1. _____

2. _____

3. _____

Aqaurium Scramble

Unscramble the names of the fish you saw in the aquarium tanks at the Australian Adventure.

GIRTEGFHSIR

WNSLHCOIF

STUHRETLFYBIF

TSABHIF

SAWERS

GNAT

ESSIFUGROHN

ETPLAETEU KSRAH

LAHFEMSDIS

Vertebrate Grab Game

Before you start, enlarge and copy each of the generalized body forms (shown below) onto a piece of cardboard. Cut out the figure and label it mammal, bird, amphibian, fish or reptile. Next, discuss the characteristics of and differences between the five groups of vertebrates. Use the illustrated "Vertebrate Brag Game" sheet on page 25 during the discussion. You can make a copy of the page for each student.

Divide the class into two equal teams and have the teams line up, facing each other, about 50 feet apart. Have the students count off and remember their numbers. Show the animal cutouts and explain that each represents one of the five classes of vertebrates. Place the cutouts in the center of the area between the two teams.

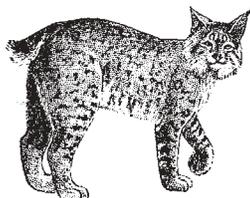
Read one of the vertebrate clues (page 24) to the entire group, and then call out a number. The child on each team with that number must run to the center of the area and find the cutout that fits that clue, then run back to his or her team before being tagged. For example, if you said, "These vertebrates have hollow bones... number five," the number five child on each team would run to the middle, grab the bird cutout and run back home. When one child grabs the cutout, the other one may chase and try to tag him or her in order to score a point. Some questions have more than one answer so each team can score points if each grabs a correct cutout. Score like this:

- *2 points: grabbing correct cutout and making it home
- *minus 2 points: grabbing incorrect cutout and making it home
- *1 point (each team): grabbing correct cutout and getting tagged before reaching home
- *minus 1 point (each team): grabbing incorrect cutout and getting tagged before reaching home

Cutouts should be returned to the middle after each round.



FISH



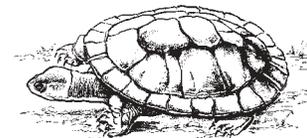
MAMMAL



AMPHIBIAN



BIRD



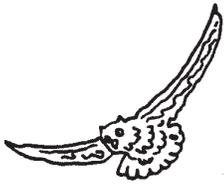
REPTILE

This game courtesy of Ranger Rick's NatureScope series, Amazing Mammals I.

Clues for Vertebrate Grab Game

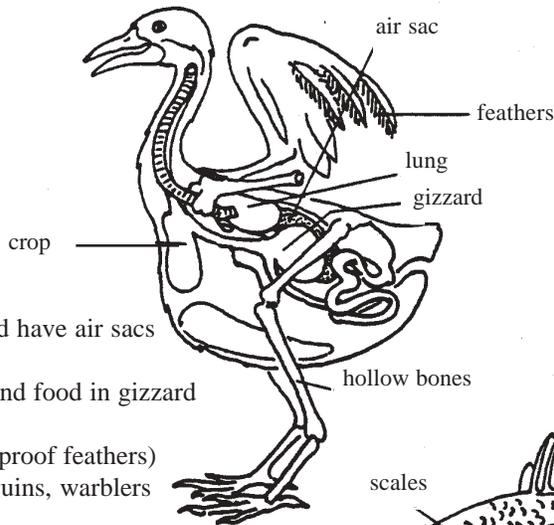
1. These vertebrates have hollow bones. (birds)
2. These vertebrates are warm-blooded. (birds, mammals)
3. A turtle is an example of this group of vertebrates. (reptiles)
4. The largest animal ever to live is a member of this group. (mammals [blue whale])
5. These vertebrates are cold-blooded. (fish, reptiles, amphibians)
6. All of the vertebrates in this group breathe with gills. (fish)
7. Only these vertebrates have hair. (mammals)
8. These vertebrates never have claws and usually have four legs. (amphibians)
9. All of the vertebrates in this group nurse their young. (mammals)
10. This is the only group of vertebrates that has feathers. (birds)
11. These vertebrates have scales and lay eggs that usually have a leathery skin. (reptiles)
12. A few vertebrates in this group lay eggs, but almost all give birth to live young. (mammals)
13. Sweating helps keep many of the vertebrates in this group cool. (mammals)
14. These vertebrates have air sacs attached to their lungs. (birds)
15. Only these vertebrates have a muscular diaphragm that helps them fill their lungs with air. (mammals)
16. These vertebrates have the most fully developed brains. (mammals)
17. The vertebrates in this group have different kinds of teeth for eating different kinds of food. (mammals)
18. Many of these vertebrates have oil, milk, sweat, and scent glands in their skin. (mammals)
19. These vertebrates do not have teeth. (birds)

Vertebrate Grab Game



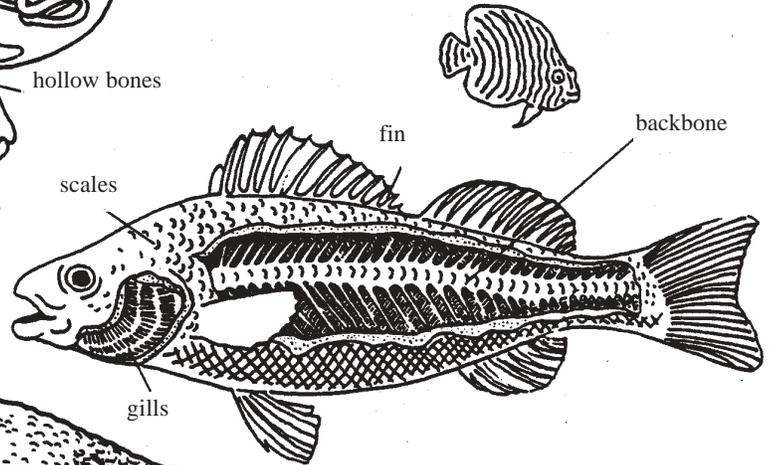
BIRDS

- warm-blooded
 - feathers
 - breathe with lungs and have air sacs
 - wings
 - store food in crop; grind food in gizzard
 - lay hard-shelled eggs
 - oil gland (helps waterproof feathers)
- Examples: ducks, penguins, warblers



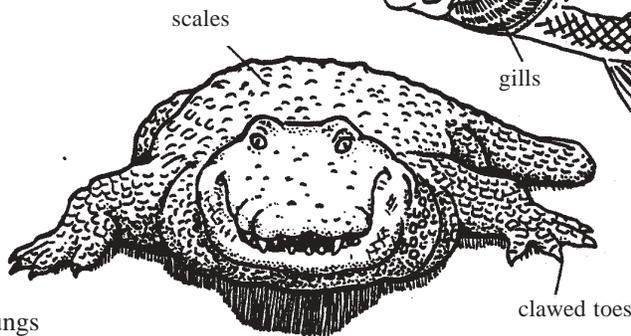
FISH

- cold-blooded
 - scales
 - breathe with gills
 - fins
 - eyes usually on sides of head
 - usually lays eggs in water
 - life cycle often includes a larval stage
- Examples: sharks, trout, minnows



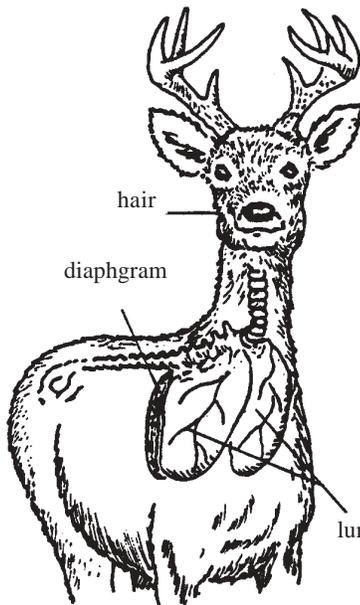
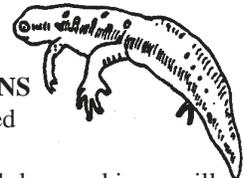
REPTILES

- cold-blooded
 - scales
 - breathe with lungs
 - many have four legs (with three to five clawed toes), but some have no legs
 - most lay leathery eggs; some give birth to live young
- Examples: snakes, lizards, turtles, crocodiles



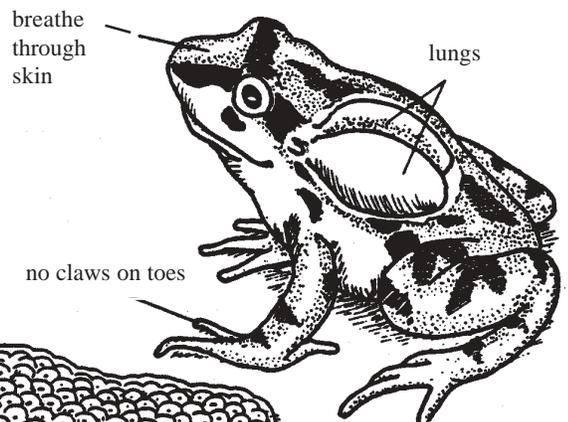
AMPHIBIANS

- cold-blooded
 - moist skin
 - breathe with lungs, skin, or gills
 - most have four legs but a few have two legs; toes never have claws
 - lay eggs—usually in a jellylike mass in water
 - life cycle includes a larval stage
- Examples: frogs, toads, salamanders

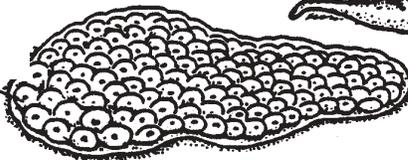


MAMMALS

- warm-blooded
 - most have hair
 - breathe with lungs; have a muscular diaphragm
 - most give birth to live young
 - nurse their young with milk
 - glands in the skin (oil, sweat, scent, milk)
 - different kinds of teeth for eating different kinds of food
 - large, well-developed brains
- Example: deer, kangaroos, people



eggs in jelly-like mass



Animal Cinquain

(1 word – animal)

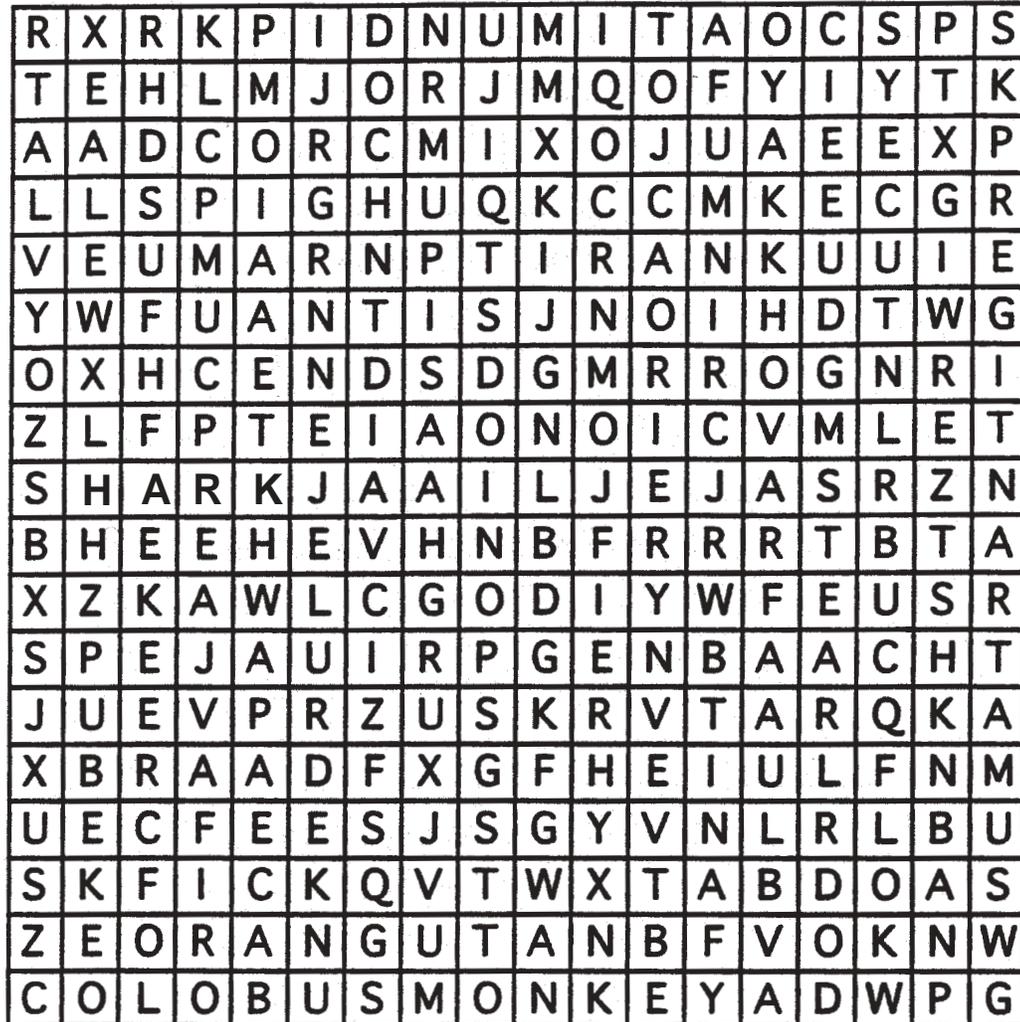
----- -----
(2 words that describe the animal)

----- ----- -----
(3 words expressing action)

----- ----- ----- -----
(4 words telling how you feel about it)

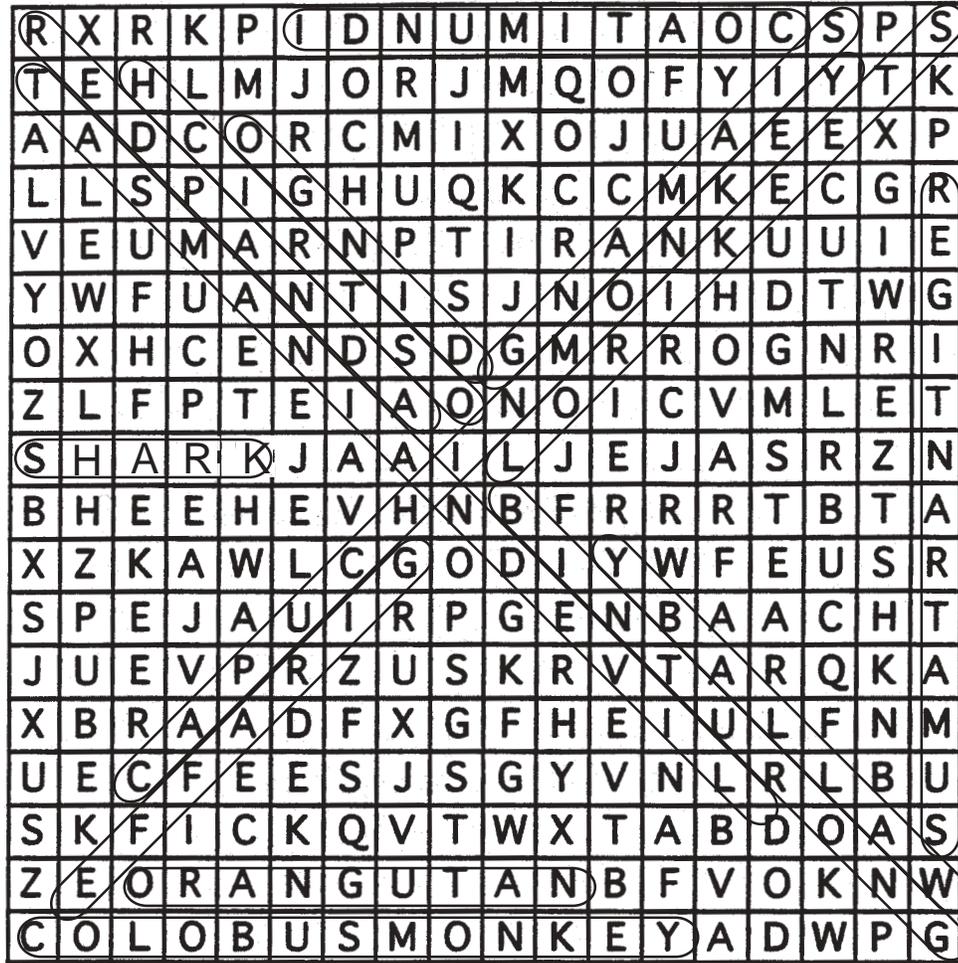
(sum up with 1 word)

Zoo Animal Word Search



BINTURONG
 CAPUCHIN MONKEY
 COATIMUNDI
 COLOBUS MONKEY
 DINGO
 GIRAFFE
 LORIKEETS
 ORANGUTAN

OSTRICH
 RED PANDA
 SHARK
 SIAMANG
 SUMATRAN TIGER
 TASMANIAN DEVIL
 WALLABY



Answer Key: Zoo Math

1. 2 seconds
2. 900,000 - 6,300,000 - 327,600,000
3. 11 ounces - 12.5%
4. 168 oz./week (10.5 pounds) 720 oz./month (45 pounds)
5. 4,015 lbs.
6. 1,365 lbs.
7. 3 animals
8. \$3,125,000
9. 4.6% - 4,711

Answer Key

Mystery Animal: the siamang

Hidden Animals in Synyax Answer Key

1. His grammer was incorrect when he said, "John is the most rich person in the world!"
2. Place the smelly, bad rag on top of the washing machine.
3. I understand Joe is new to our school this year.
4. "Take the Snickerdoodles off the cookie pan!" dad exclaimed.
5. Mom said, "Please don't wear those sloppy thongs again!"
6. Captain Whitt, a marine, was assigned to the first amphibious division.
7. The disgusted real estate agent yelled, "You've got termites in here!"
8. Either carry the jug against your hip or poise it on top of your head.
9. "Leo, pardon me, but you're stepping on my foot!" shouted Ann.
10. The 40-gallon fish tank water was a little murky.

Answer Key

Aquarium Scramble

Triggerfish
Clownfish
Butterflyfish
Batfish
Wrasse
Tang
Surgeonfish
Eapulette Shark
Damsel fish

Evaluation Form

Zoo Activity Packet

Dear Teacher:

Please take a few minutes to fill out and return this evaluation form. Your input will help us improve our teacher resource materials in the future.

Return in the envelope provided or mail to Education Department, Fort Wayne Children's Zoo, 3411 Sherman Blvd., Fort Wayne, IN 46808. Thank you for your time and effort!

SCHOOL or GROUP NAME: _____

GRADE LEVEL: _____ DATE OF VISIT: _____

1. Were the materials and activities appropriate for your grade level? _____

2. Which work sheet(s) did you use? _____

3. Which activities did you try? _____

4. Which of these were enjoyed most by your students? _____

5. Did you create or modify any activities to supplement this packet? If so, we would appreciate receiving a copy to include in future packets or to distribute to teachers on request.

6. What other materials would you like to see included in the packet? _____

7. Additional comments: _____
