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Activity 3:11: Classification

Everyday, you classify the objects around you. Think about it. Sorting objects and putting them in a specific place is classification. Do you have a sock drawer in your dresser? How about a cabinet in your kitchen for storing plates and cups? Objects that are similar are usually stored together. For example, your black and white socks are organized into the same sock drawer. Scientists use similar ideas to organize the diverse amount of living things that make up our world.

Objective:

We will classify objects according to physical characteristics in order to understand how scientists classify living things.

Materials:

resources
different size, color, and shaped objects

Procedures:

1. Classify the objects given to you into two groups. You may choose any characteristic to classify them by.
2. List the characteristics you could use to organize the two groups.

_____

_____

_____

_____

_____

_____

_____

3. Draw and describe your groups in the Chart 1, "Classification of Objects."

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Activity 3:11: Classification

Chart 1: Classification of Objects

Characteristic 1:	Characteristic 2:
Members of Group 1:	Members of Group 2:

4. For each separate group you made, break them up again into two smaller groups. In the table below, list how you separated the two groups.

Characteristic 1A:	Characteristic 1B:	Characteristic 2A:	Characteristic 2B:
Members of 1A:	Members of 1B:	Members of 2A:	Members of 2B:

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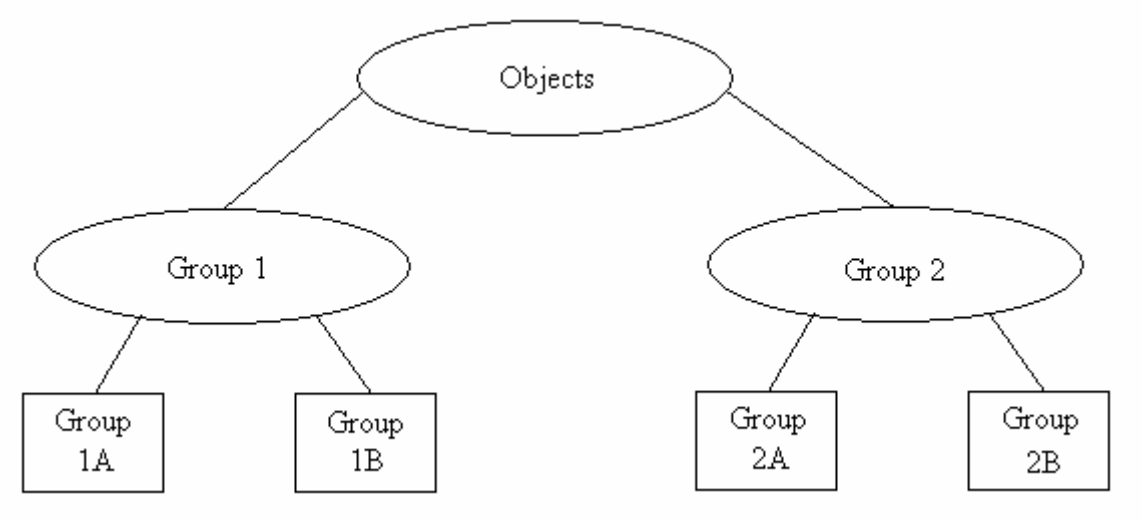
Activity 3:11: Classification

The objects you organized can be displayed in what almost looks like a family tree.



Scientists organize animals the same way. The group at the top is known as the kingdom. Kingdoms are then divided into phylums, which are then divided into even smaller groups called orders. Scientists have a lot of animals to classify. Because of this fact, there are many levels to the animal classification family tree. In order from top to bottom, they are:

Kingdom → Phylum →Class→ Order → Family → Genus → Species

Let's begin by learning about the kingdoms. There are five kingdoms of living things. All the kingdoms and their descriptions are shown in the Chart 2, "The Five Kingdoms."

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Activity 3:11: Classification

Chart 2: The Five Kingdoms

KINGDOM	STRUCTURAL ORGANIZATION	METHOD OF NUTRITION	TYPES OF ORGANISMS	NAMED SPECIES	TOTAL SPECIES (estimate)
Monera	small, simple single *prokaryotic* cell (nucleus is not enclosed by a membrane); some form chains or mats	absorb food	bacteria, blue-green algae, and spirochetes	4,000	1,000,000
Protista	large, single *eukaryotic* cell (nucleus is enclosed by a membrane); some form chains or colonies	absorb, ingest, and/or photosynthesize food	protozoans and algae of various types	80,000	600,000
Fungi	multicellular filamentous form with specialized *eukaryotic* cells	absorb food	funguses, molds, mushrooms, yeasts, mildews, and smuts	72,000	1,500,000
Plantae	multicellular form with specialized *eukaryotic* cells; do not have their own means of locomotion	photosynthesize food	mosses, ferns, woody and non-woody flowering plants	270,000	320,000
Animalia	multicellular form with specialized *eukaryotic* cells; have their own means of locomotion	ingest food	sponges, worms, insects, fish, amphibians, reptiles, birds, and mammals	1,326,239	9,812,298

From: http://anthro.palomar.edu/animal/table_kingdoms.htm

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Activity 3:11: Classification

5. Using the Chart 2, "The Five Kingdoms," which kingdoms would the following organisms live in?

A turtle: _____

Plankton: _____

Grass: _____

Yeast: _____

E. coli: _____

Once the scientists decide which kingdom the animal lives in, they are further subdivided. Chart 3, "Animal Classification," shows some different animals and their classification.

Chart 3: Animal Classification

GROUP NAME	ORGANISM				
	HUMAN	CHIMPANZEE	HOUSE CAT	LION	HOUSEFLY
KINGDOM	Animalia	Animalia	Animalia	Animalia	Animalia
PHYLUM	Chordate	Chordate	Chordate	Chordate	Arthropoda
CLASS	Mammal	Mammal	Mammal	Mammal	Insect
ORDER	Primates	Primates	Carnivora	Carnivora	Diptera
FAMILY	Hominidae	Pongidae	Felidae	Felidae	Muscidae
GENUS	Homo	Pan	Felis	Felis	Musca
SPECIES	sapiens	troglodytes	domestica	leo	domestica
Scientific Name	*Homo sapiens*	*Pan troglodytes*	*Felis domestica*	*Felis leo*	*Musca domestica*

From: http://www.borg.com/~lubehawk/taxonmy.htm

From the chart, you can see how some animals are related. Look at the house cat and lion for example. Both animals are classified into the same branch all the way down until the species. No two animals have the same species. This is why scientific names are based on both species and genus.

6. Cut out the organisms' cards from Resource Sheet 1:3, "Organisms."
7. Place the organisms into groups based on one characteristic.
8. Write the name of the characteristics and how you grouped your organisms in Chart 1, Grouping of Organisms. Be sure to give each group a name. These groups will be your kingdoms.

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Activity 3:11: Classification

Chart 1: Grouping of Organisms #1

Characteristic: Name:	Characteristic: Name:	Characteristic: Name:	Characteristic: Name:	Characteristic: Name:

9. Examine your groups. Find a new characteristic to regroup your categories into two or more new groups.
10. Construct a graphic organizer to show your new groups. Give each new group or category a name. These groups will represent the phylum.

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Activity 3:11: Classification

11. Explain how you classified your groups.

_____

_____

_____

12. Explain why you think scientist construct charts and "family trees" to classify and group organisms.

_____

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Analysis:

1. Name at least two ways you can think of to classify animals.

_____

_____

_____

_____

2. How closely related are the house cat and the lion? Justify your answer with evidence from the organism chart.

_____

_____

_____

_____

3. Using the organism chart above describe how we are related to monkeys. In other words, using this chart, how much of our classification do we share?

_____

_____

_____