

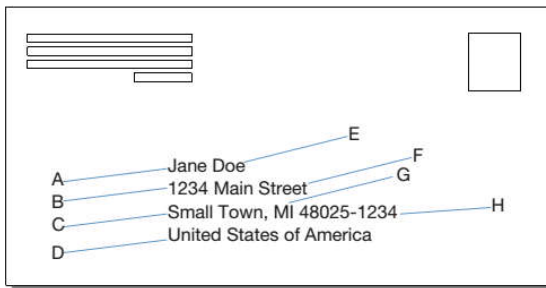
## Biological Classification

How are organisms grouped, sorted, and classified?

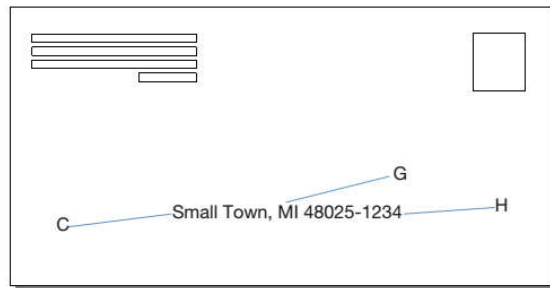
### Why?

From the time we begin to talk, we start to name things. We like to see how things are related. It is natural then, that biologists would name and organize organisms into a classification system. In this activity you will learn about the major classification groups and how organisms are named.

### Model 1 – Addressing an Envelope



Addressed Envelope 1



Addressed Envelope 2

1. Both envelopes above are to be sent to Small Town, MI. Which of the two envelopes in Model 1 will be more successful at being delivered to the correct person and household? Justify your choice.
2. In Addressed Envelope 1, which four letters (A–H) correspond to the *most specific* part of the address?
3. In Addressed Envelope 1, which four letters (A–H) correspond to the *most general* part of the address?

## Model 2 – Taxonomy

	Envelope (Jane Doe)	Taxa	Lion ( <i>Panthera leo</i> )	Tiger ( <i>Panthera tigris</i> )	House Cat ( <i>Felis catus</i> )
Country		Kingdom	Animalia	Animalia	Animalia
State and Zip			Chordata	Chordata	Chordata
Town			Mammalia	Mammalia	Mammalia
Street name			Carnivora	Carnivora	Carnivora
House No.			Felidae	Felidae	Felidae
Last name			<i>Panthera</i> *	<i>Panthera</i>	<i>Felis</i>
First name			<i>leo</i>	<i>tigris</i>	<i>catus</i>

4. Using the envelope outline from Model 1, classify the full address by writing the appropriate information in the “Envelope” column in Model 2.

### Read This!

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Carolus Linneaus (1707–1778) is known as the father of modern taxonomy. Taxonomy is the science of finding, describing, and categorizing organisms with the ultimate goal to name the species. In traditional Linnean taxonomy the seven major taxonomic groups are (in order from least specific to most specific) Kingdom, Phylum, Class, Order, Family, Genus, and Species. Modern taxonomy categorizes the six kingdoms into three domains.

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5. Use the Linnaean taxonomic groupings described in the paragraph above to complete the third column of the table (“taxa”) in Model 2.
6. Which two of the three cats listed in Model 2 are *most closely related*? Explain your answer.
7. At which taxonomic level (kingdom, phylum, etc...) do the two cats you identified in Question 6 separate?
8. What is the most specific taxonomic grouping (kingdom, phylum, etc...) in which all three cats are the same?

9. The genus and species names are collectively referred to as the scientific name. It is written in a form known as **binomial nomenclature**, a two-term Latin naming system. There are three rules for writing a scientific name using this system. Analyze the information in Model 2 to complete the rules below:

**Rule 1:** The scientific name is always written in \_\_\_\_\_ parts, with the genus name written \_\_\_\_\_ and the species name \_\_\_\_\_. (fill in blanks with 2, first or last)

**Rule 2:** The scientific name is always written in *italics*. If it is handwritten, it is written in cursive or underlined.

**Rule 3:** The first letter of the genus name is a \_\_\_\_\_ letter.  
(fill in blank with capital or lowercase)

10. Using this system, would it be possible for two different *species* to have the same name? Explain.

**Complete the classification reference chart on the next page first!**

**Classification Practice:** Use your classification reference chart to help you. Place the following characteristics in the proper Kingdoms. Those that are used more than once have a number of times it will be used in parentheses ( ).

- |                |                  |                      |                      |                   |
|----------------|------------------|----------------------|----------------------|-------------------|
| Yeast          | Eukaryotes (4)   | Multicellular (3)    | Mammals              | Lizard            |
| Mushroom       | Only unicellular | Fish                 | Hetero- & autotrophs | <i>E. coli</i>    |
| Frog           | Bird             | Insects              | (2)                  | Only heterotrophs |
| Flower         | Prokaryotes      | Algae                | Moss                 | (2)               |
| Decomposer (2) | Only autotrophs  | Multi- & unicellular | Tree                 |                   |

K. Animalia	K. Plantae	K. Fungi	K. Protista	K. Archaeobacteria & Eubacteria

### Classification of Living Things Reference Table

**I. Vocabulary:** Fill in the basic definitions to the following terms.

<b>Unicellular Organism</b>	<b>Multicellular Organism</b>
<b>Prokaryotic Cell</b>	<b>Eukaryotic Cell</b>
<b>Autotroph</b>	<b>Heterotroph</b>

**II. Kingdoms:** All living organisms are classified into 3 groups known as domains. These can be further classified into increasingly more specific groups: **Kingdom, Phylum, Class, Order, Family, Genus, Species**. Fill in the characteristics for each of the 6 kingdoms in the table below.

<b>Domain</b>	<b>Kingdom</b>	<b>Cellular Organization</b> (Unicellular or Multicellular)	<b>Type of Cells</b> (Prokaryotic or Eukaryotic)	<b>Energy Source</b> (Autotroph or Heterotroph)	<b>Example</b>
Eukarya	<b>Animalia</b>				
	<b>Plantae</b>				
	<b>Fungi</b>				
	<b>Protista</b>				
Archaea	<b>Archaeobacteria</b>				
Bacteria	<b>Eubacteria</b>				

