Name: _____          Period: _____

# Classifying organisms

## Five-Kingdom System

**Animal Kingdom** – invertebrates (without backbones) and vertebrates (with backbones), multicellular, no cell walls, obtain energy through respiration
**Plant Kingdom** – multicellular, have cell walls, obtain energy through photosynthesis. Ex. mosses, ferns, flowering and seed plants
**Fungi Kingdom** – cells with cell walls but not green and do not carry out photosynthesis, break down other organic materials to obtain food (through absorption). Ex. mushrooms, molds, and yeasts
**Protista Kingdom** – an organism that is not an animal, plant or fungus; comes in a wide variety of forms, some are animal-like, such as amoeba, paramecium and protozoan. Some are plant-like such as algae and others are fungi-like. Many are single-celled and others are multicellular.
**Archaea Kingdom** – simple unicellular organisms that often live in extreme conditions (ex. Hot springs, salt lakes, etc, )
**Bacteria Kingdom** – simple unicellular organisms that are found everywhere

## The classification of humans – Homo sapiens

The two-part naming system is called Binomial nomenclature (consists of genus and species.).

  **Kingdom:** Animalia
        **Phylum:** Chordata
              **Class:** Mammalia
                    **Order:** Primata
                      **Family:** Hominadae
                            **Genus:** Homo
                                  **Species:** sapiens (note: species is **not** capitalized.

## Using the information above, answer the following questions:

1. What is the next smallest classification group after Order?

2. What is the smallest classification group?

3. The first letter of every genus name is: capitalized/lower cased (circle one)

4. The first letter of every species name is: capitalized/lower cased (circle one)

5. What is binomial nomenclature?

6. Give one example of how classification is used at school.

**A Tale of Two Elephants:** Use the image of the elephants below to answer the questions
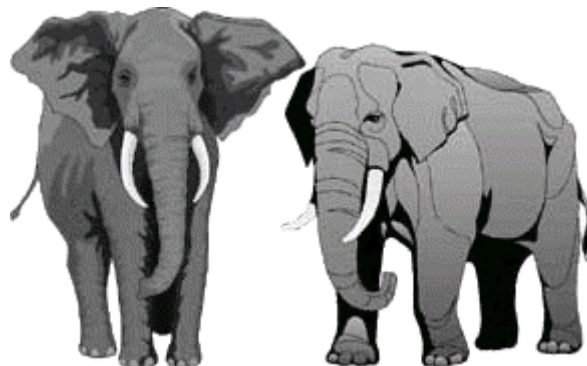


1. What organisms are shown?



2. Do they look the same?



3. Do the pictures show the same species?



4. How are they elephants similar?





5. How are they different?

**Mrs. Reese's CDs:** Congratulations, Mrs. Reese has just willed you her CD collection! Using what you know about classification, see if you can arrange these CDs into similar groups to make them easier for you to find. Make a list of four groups that these CDs can be classified into.

| | | | |
|---|---|---|---|
| Tim McGraw | Luke Bryan | The Beatles | U2 |
| Mozart | Bach | Beyoncé | Blake Shelton |
| Rolling Stones | Elvis Presley | Bruno Mars | Selena Gomez |
| Beethoven | Chopin | Carrie Underwood | Ed Sheeran |

| Group 1: _____ | Group 2: _____ | Group 3: _____ | Group 4: _____ |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
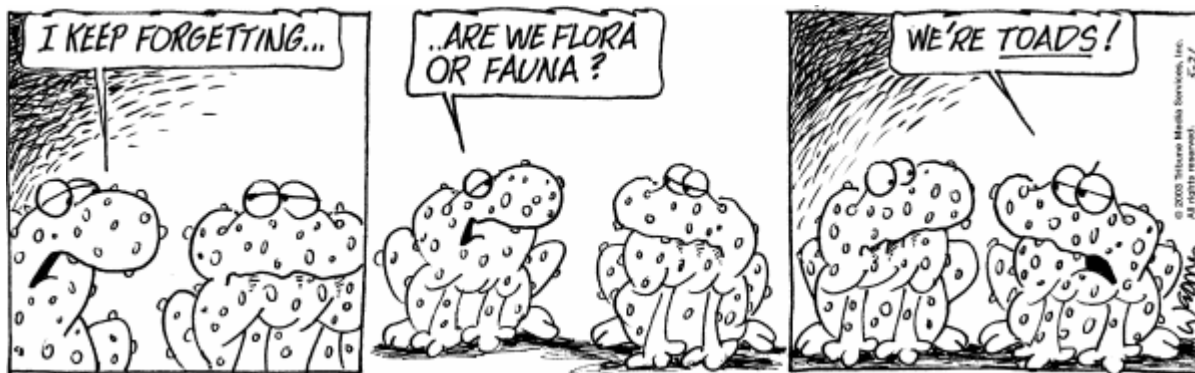
**Classification:** Study the following list of living things:

Mare, trout, parrot, quarter horse, woodpecker, spaniel, goldfish, Great Dane, eagle, bass, beagle, hawk, stallion, Dalmatian, shark

1. Classify them into two groups (give each group a name).

Group 1 _____ Group 2 _____

2. Using the same list of living things show how they could be classified into three groups.

Group 1 _____ Group 2 _____ Group 3 _____

3. Using the same list, show how they could be classified into four groups.

Group 1 _____

Group 2 _____

Group 3 _____

Group 4 _____

The most exciting phrase to hear in science, the one that heralds new discoveries, is not Eureka! (I found it!) but rather, "hmm.... that's funny...."

–Isaac Asimov

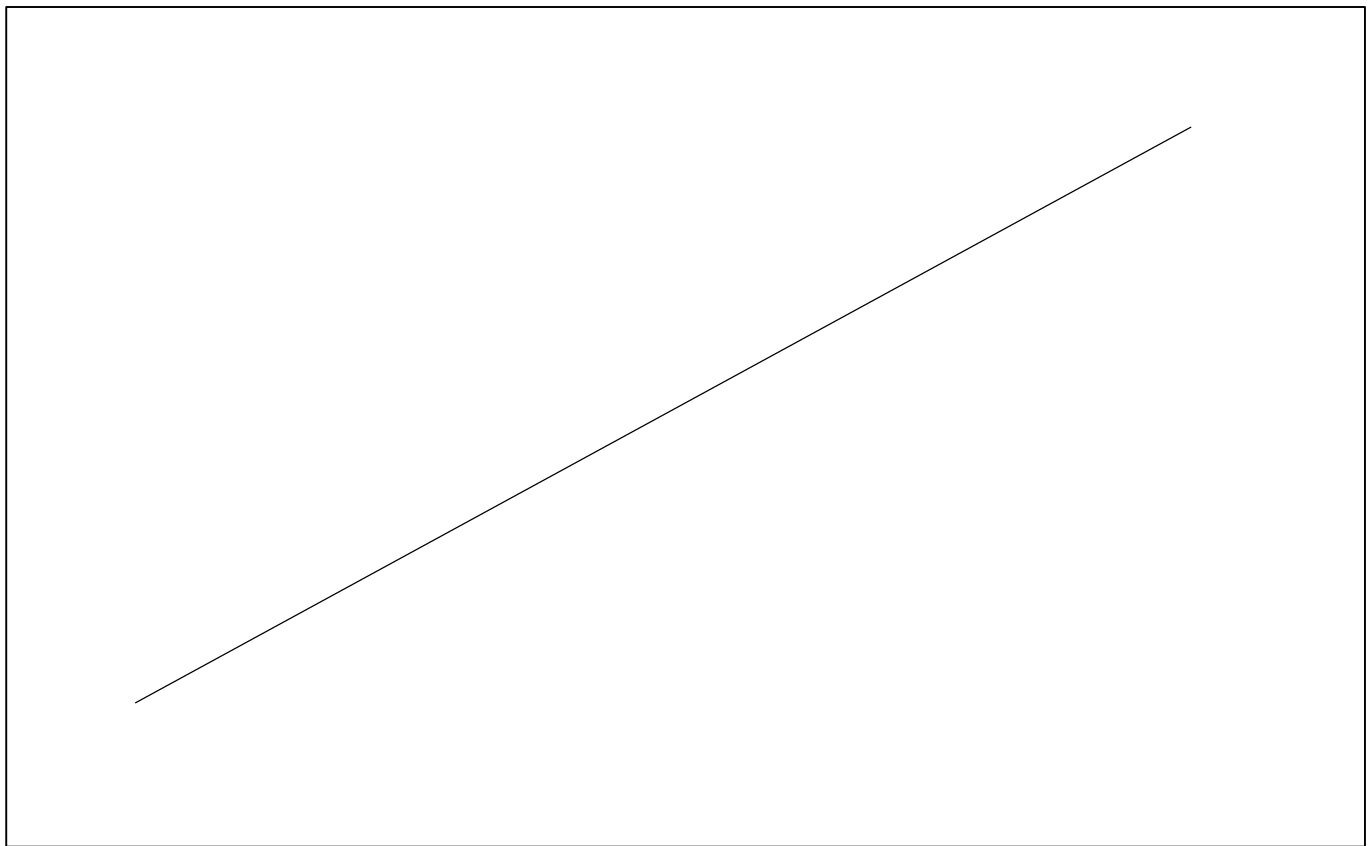Touch a scientist and you touch a child.

-Ray Bradbury



"Mr. Osborne, may I be excused? My brain is full."

**Cladogram practice:** Fill out the following character matrix. Mark an "X" if an organism has the trait.

|  | Cells | Legs | Antenna | Wings | 2 sets of wings |
|---|---|---|---|---|---|
| Worm |  |  |  |  |  |
| Carpenter ant |  |  |  |  |  |
| Spider |  |  |  |  |  |
| Dragonfly |  |  |  |  |  |
| Housefly |  |  |  |  |  |

In the box below, create a cladogram based off your table:

1. According to your cladogram, which two species are more closely related: worms and spiders or worms and ants? How do you know?

2. According to your cladogram, what species are dragonflies most closely related to? How do you know?

3. In a different colored writing utensil, add a June Bug to your cladogram based on its characteristics.

**Dichotomous Keys Using Smiley Faces:** Name each smiley face by following the dichotomous key

1. Teeth visible ....................go to 2
   Teeth not visible .................go to 4

2. Has a wide, toothy smile .......*Smilus toothyus*
   Is not smiling ......................go to 3

3. Visibly crying .................*Smilus dramaticus*
   Frowning ......................*Smilus upsettus*

4. Eyes are symmetrical .... go to 5
   Eyes not symmetrical .....go to 8

5. Eyes shaped like hearts ..... *Smilus valentinus*
   Eyes are shaped as ovals .....go to 6

6. Smiling, happy face ...... *Smilus traditionalis*
   Not happy, frowning or other .....go to 7

7. Mouth curved down, frowning .... *Smilus saddus*
   Mouth is a small circle .................*Smilus suprisus*

8. Has a pirate eye patch ..............*Smilus piratus*
   Does not have eye patch ............ go to 9

9. One eye is much larger than the other eye..... *Smilus mutatus*
   One eye is winking ................*Smilus winkus*

**Extension:**

A. The names of the smilies give you another bit of information about their taxonomy.
Each of these smilies belongs to the same genus.

What is their genus? _____

B. Names are often given to an organism by the person who discovers it, though they follow certain conventions, **often they are named after the person, or where the organism was found, or given a name that describes the creature.**

Which method was used in naming these smilies? _____

C. Suppose you discovered the new smiley like this one: What name would you give it?

D. Create a small dichotomous key that names the following creatures.