**Unit 2: Classification of Organisms**

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| **S5L1. Students will classify organisms into groups and relate how they determined the groups with how and why scientists use classification.** a. Demonstrate how animals are sorted into groups (vertebrate and invertebrate) and how vertebrates are sorted into groups (fish, amphibian, reptile, bird, and mammal). b. Demonstrate how plants are sorted into groups. **Essential Question: Why is important for scientist to put organisms into specific groups?****At the end of this unit students will be able to:*** **Explain why scientists use classification.**
* **Sort animals into vertebrates and invertebrates.**
* **Identify, illustrate, and explain the essential features of the five vertebrate groups.**
* **Sort plants according to whether they are vascular or non-vascular.**
* **Identify, illustrate, and explain the main characteristics of each plant group (vascular and non-vascular).**

To start off, let’s think about Earth and the millions of different types of plants and animals living on it. That's right... millions of different types! In 1753, a Swedish scientist named Carolus Linnaeus thought of an orderly system for classifying plants and animals. He grouped all organisms according to a two-part name, a binomial. The first part of the name is the "generic" grouping or genus. The second part is the "specific" grouping or species. Scientists today still use the basic idea of his system, but modern classifications systems are much more complicated having many levels of hierarchical organization. DNA research and analysis has allowed biologists to classify organisms more specifically. This begins to explain "HOW" they classify organisms, but "WHY" do scientists classify?**Scientists use classification:** To organize living things in groups. Makes organisms easier to study. Helps scientists understand more about the organisms.  Makes the organisms universally easy to study. Helps us understand the characteristics of organisms by the way they are grouped. **Heirarchy of Classification** (King Phillip Came Over For Gorilla Stew!) Scientists use various levels of classification to place like organims in together in groups.**Binomials** are the 2-part name used to identify all organisms. A binoimal is generated using the groupings above. An organism's binomial is its GENUS and SPECIES.**Animal Kingdom Classification**To begin to classify animals, consider the backbone. This divides all animals into 2 major groups: vertebrates and invertebrates. Animals that have a backbone are called vertebrates, animals without a backbone are called invertebrates.**Vertebrates:** All vertebrates have a backbone. Their other physical characteristics are quite varied.One way to groups of vertebrates is according to their diet. You've done this before. · **Herbivores** - Animals that primarily eat plants. · **Carnivores** - Animals that feed mostly on meat from other animals.· **Omnivores** – Animals that eat both plants and meat from other animals. Another way to group vertebrates is according to their body temperature and physical characteristics. These are called...**The 5 Classes of Vertebrates:**

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| **Mammals** | Cat Dog BearCow Person PigSquirrel DolphinsGiraffe  | · Warm blooded· Live births (most)· Feed young with milk· Hair or fur· Breathes with lungs· 4 limbs/fins |
| **Fish** | Trout shark goldfishSea horse carp Catfish flounderSting ray  | · Cold blooded· Lay eggs (most)· Scales or smooth skin· Breathe with gills· Aquatic (Live in water) |
| **Birds** | Robins cardinalsBlue jays penguinsChickens woodpeckerBlue heron ostrich Peacock roadrunner Flamingo  | · Warm blooded· Lay eggs· Feathers· Breathe with lungs· Have beaks· 2 legs 2 wings |
| **Reptiles** | turtles alligatorcrocodile snakelizards  | · Cold blooded· Lay eggs· Have scales· Breathe with lungs |
| **Amphibians** | frogs salamandersnewt | · Cold blooded· Lay eggs· Moist, slimy skin· Breathe gills at start of life, lungs later in life.· Goes through metamorphosis. |

Another group of ANIMALS are the Invertebrates.**Invertebrates** are animals **without** a backbone. They too are classified into groups. **6 Classes of Invertebrates:**

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| **Arthropods**  | (insects, arachnids, crustaceans)Butterfly beetle beeSpider tick scorpion Crab lobster shrimp  | · Exoskeleton· Segmented bodies· Jointed limbs· Largest group of invertebrates |
| **Mollusks** | SnailsClams oystersSquid octopus | · Soft bodied· Most live in shell(s) |
| **Worms** | FlatwormsRound wormsAnnelid worms | · Soft bodied |
| **Sponges**  | Tube spongeVase sponge | · Aquatic (live in water)· Simple organisms· No tissues or organs· Feed on tiny organisms in current. |
| **Cnidarians** | Sea anemonesCoralJellyfish | · Aquatic (live in water)· Symmetrical bodies· Mouth surrounded by tentacles with stinging cells to paralyze prey. |
| **Echinoderms** | Sea starsSand dollarsSea urchins  | · Aquatic (live in water)· Spiny exoskeleton |

Like the Animal Kingdom, other Kingdoms can be classified into groups, too.The **Plant Kingdom Classification…**

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| **Plants** |
| **Vascular*** Tubes to transport water and nutrients.
* Stems, leaves, roots
* Come in all sizes…tall and short.
* Can be grouped as gymnosperms and angiosperms.
* Have vascular tissues: **xylem** and **phloem**.
 | **Nonvascular** * Do not have tubes to transport water and nutrients.
* Moves water and nutrients from cell to cell.
* Leaf-like structures, root-like structures, and stem-like structures.
* Grow low to the ground.
* They take water and nutrients from their surroundings.
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| Roses DandelionsSunflowers Maple treesApple trees Orange treesPine trees | MossesGreen algae Liverworts  |

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