**Unit 2: Classification of Organisms**

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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:**   |  |  |  | | --- | --- | --- | | **Mammals** | Cat  Dog  Bear  Cow  Person  Pig  Squirrel  Dolphins  Giraffe | · Warm blooded  · Live births (most)  · Feed young with milk  · Hair or fur  · Breathes with lungs  · 4 limbs/fins | | **Fish** | Trout  shark  goldfish  Sea horse  carp  Catfish  flounder  Sting ray | · Cold blooded  · Lay eggs (most)  · Scales or smooth skin  · Breathe with gills  · Aquatic (Live in water) | | **Birds** | Robins  cardinals  Blue jays  penguins  Chickens  woodpecker  Blue heron ostrich  Peacock  roadrunner  Flamingo | · Warm blooded  · Lay eggs  · Feathers  · Breathe with lungs  · Have beaks  · 2 legs 2 wings | | **Reptiles** | turtles  alligator  crocodile  snake  lizards | · Cold blooded  · Lay eggs  · Have scales  · Breathe with lungs | | **Amphibians** | frogs  salamanders  newt | · 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:**   |  |  |  | | --- | --- | --- | | **Arthropods** | (insects, arachnids, crustaceans)  Butterfly beetle bee  Spider tick scorpion  Crab lobster shrimp | · Exoskeleton  · Segmented bodies  · Jointed limbs  · Largest group of invertebrates | | **Mollusks** | Snails  Clams oysters  Squid octopus | · Soft bodied  · Most live in shell(s) | | **Worms** | Flatworms  Round worms  Annelid worms | · Soft bodied | | **Sponges** | Tube sponge  Vase sponge | · Aquatic (live in water)  · Simple organisms  · No tissues or organs  · Feed on tiny organisms in current. | | **Cnidarians** | Sea anemones  Coral  Jellyfish | · Aquatic (live in water)  · Symmetrical bodies  · Mouth surrounded by tentacles with stinging cells to paralyze prey. | | **Echinoderms** | Sea stars  Sand dollars  Sea urchins | · Aquatic (live in water)  · Spiny exoskeleton |   Like the Animal Kingdom, other Kingdoms can be classified into groups, too.  The **Plant Kingdom Classification…**   |  |  | | --- | --- | | **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. | | Roses Dandelions  Sunflowers Maple trees  Apple trees Orange trees  Pine trees | Mosses  Green algae  Liverworts | | |