For Creative Minds

Animal Classification

If you have ever sorted candy or toys into piles, you are grouping them by some characteristic. You might sort candy by the shape or by what's in the candy. Or you might sort some types of candy by color. You can sort toys by how you use them, where you use them, or by size. When you sort things, you are classifying them by some characteristic.

Scientists sort things too. They sort all living things into groups to help us understand and connect how things relate to each other. This sorting of living things is called **taxonomy**. Scientists ask questions to help them sort or classify animals.

- Does it have a skeleton? If so, is the skeleton inside (endoskeleton) or outside (exoskeleton) of the body?
- Does it get oxygen from the air through lungs or from the water through gills?
- Does it have a backbone?
- What type of skin covering does it have?
- Does the animal have a steady body temperature (warm-blooded) or does it use the heat of the sun or surrounding water to warm itself (cold-blooded)?
- Are the babies born alive or do they hatch from eggs?
- Does the baby drink milk from its mother?

The first and broadest sort is a kingdom. All living things can be sorted into one of the five commonly-accepted kingdoms (Monera, Protista, Fungi, Plantae, and Animalia).

Next, living things are sorted into phyla. In the animal kingdom, a scientist asks if the animal has (or ever had) a backbone. If the answer is "no," the animal is an invertebrate. If the answer is "yes," the animal is a vertebrate. All animals with backbones are in the phylum Chordata, in a subphylum called Vertebrata. Scientists continue to ask questions and sort into more specific categories.

Once identified, living things are named by their genus and species.

Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

Order: Carnivora

Family: Canidae

Genus: *Canis*

Species: *lupus*
Subspecies: *familiaris*

Canis lupus familiaris: the domestic dog

There are five major classes of vertebrates:

Fish:
- most have scales covered with a thin layer of slime
- backbone (vertebrate)
- inside skeleton (endoskeleton)
- gills to breathe
- babies are either born alive or hatch from eggs
- cold-blooded

Amphibians:
- soft, moist skin
- backbone (vertebrate)
- inside skeleton (endoskeleton)
- most hatchlings are called larvae or tadpoles and live in water, using gills to breathe
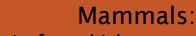- as they grow, they develop legs and lungs and move onto land
- cold-blooded

Reptiles:
- dry scales or plates
- backbone (vertebrate)
- inside skeleton (endoskeleton); most turtles also have a hard outer shell
- lungs to breathe
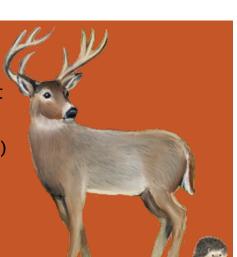- most hatch from leathery eggs
- cold-blooded

Birds:
- feathers
- backbone (vertebrate)
- inside skeleton (endoskeleton)
- lungs to breathe
- hatch from eggs
- warm-blooded

Mammals:
- hair, fur, whiskers, or quills at some point during their lives
- backbone (vertebrate)
- inside skeleton (endoskeleton)
- lungs to breathe
- most give birth to live young
- produce milk to feed young
- warm-blooded

Compare and Contrast the Animals

Which animals have fur and which have feathers or scales?
Which do *you* think would make a good pet? Why?