**Animal Groups - Vertebrates**

**Amphibians (Class)**

* Live both on land and in the water; includes salamanders, newts, frogs and toads
* Cold-blooded animals (ectotherms) with a three-chambered heart
* Oviparous (lays eggs)
* Most amphibians have soft, smooth skin, which is kept moist by mucous glands. Some, however, such as the toad, have dry, bumpy skin.
* Absorb oxygen into their bodies through their skin. Also have lungs, which are used in respiration, but they are not as highly developed as those of the higher vertebrates.

**Birds (Class)**

* Warm-blooded (endotherms) that lay eggs (oviparous); have outer covering of feathers and wings
* High metabolism so must consume a great deal of food to maintain their body temperature,
* Birds have a highly efficient respiratory system and a fast beating, four-chambered heart.
* Most are capable of flight, although a few (ostrich and penguin) cannot fly.
* Large chest muscles & many bones are hollow and lightweight.
* Includes many different species such as raptors, songbirds, tropical birds and sea/shore birds

**Fish (Class)**

* Cold-blooded (ectotherm);have paired fins, scales and gills.
* Sharks, rays, and skates = class Chondrichthyes, the cartilage fish. Members of this class do not have bone in their skeletons. Instead, they have skeletons of rubbery cartilage.
* Bony skeletons. These are members of the class Osteichthyes, and include most of the fish familiar to you, such as salmon and trout.
* Special organs called gills enable fish to obtain oxygen dissolved in the water. In most fish the gills are protected by covers called opercula. When water enters a fish's mouth, it passes over the gills where tiny blood vessels absorb oxygen from the water and release carbon dioxide into it. Water is then expelled through the gill slits.
* Have a two-chambered heart, a liver, and, in many cases, a swim bladder, which is used to regulate depth.

**Mammals (Class)**

* Warm-blooded (endotherms) with a refined nervous and reproductive systems.
* Generally considered the most advanced members of the animal kingdom.
* Nourished with milk secreted by the mammary glands of their mothers.
* Possess hair that can cover all or part of their bodies
* Well-developed brain, a four-chambered heart, muscular diaphragm that separates the abdominal and thoracic cavities.
* Most mammals are placental; some are monotremes, or egg-laying mammals, some are marsupials or pouched mammals
* Also includes groups such as primates and cetaceans

**Reptiles (Class)**

* Cold-blooded (ectotherms); most are oviparous (lay eggs)
* Have either an outer covering of scales or thick, leathery plates.
* Breathe by means of well-developed lungs.
* Tuatara are lizard like reptiles that are native to New Zealand.
* Also includes lizards, snakes, crocodiles, alligators, caimans, turtles and tortoises

Animal Groups - Invertebrates

**Mollusks (Phylum)**

* Contains over 100,000 species, making it the second largest of the animal phyla.
* Have soft bodies; many have protective shells or skeletal structures.
* Three body regions; head, foot and visceral mass
* Clams have two shells and are called bivalves. Clams also have two siphons. Water enters one siphon and carries oxygen to the gills and food materials to the digestive system. The other siphon expels water and waste. This technique is known as filter feeding.
* Slugs and snails are gastropods because they move about on a slimy muscular foot attached to what we would call the stomach, or gastric, area.
* Cephalopods include octopi and squid

**Arthropods (Phylum)**

* Largest animal phyla
* Tough external skeleton, which is made of a material called chitin.
* Bodies are composed of a series of segments and are bilaterally symmetrical.
* Have jointed legs and other jointed appendages.
* The largest class of arthropods is class Insecta
* Most insects breathe through tiny pores called spiracles, located on the thorax and abdomen.
* The second largest group of arthropods is the class Arachnida. This group includes spiders, ticks, and mites. Spiders are distinguished from insects in two important ways. First, their bodies are divided into only two regions: the abdomen and the cephalothorax. Second, all spiders have eight legs rather than six.

**Cnidarians (Phylum)**

* Soft-bodied, carnivorous animals that have stinging tentacles arranged in circles around their mouths; Nematocytes = stinging cells
* Do not have true organs; a gastrovascular cavity serves as both mouth and anus.
* Simplest animals to have radial body symmetry and specialized tissues.
* 2 Main Forms
  + Medusa = free swimming/floating, umbrella shaped, mouth usually on the concave side of the umbrella, tentacles usually protrude from the umbrella rim
    - Examples = jelly fish
  + Polyp = usually sessile or immobile. One end of the tubular body is attached to a substrate with the mouth and tentacles at the other end
    - Examples = sea anemones, hydra