5.1

* **Vertebrates** are animals with endoskeletons
  + They have backbones
  + **Endoskeleton** – an internal support system that grows along with the animal, allow more flexibility and ways of moving
  + Most vertebrates are fish
    - Use gills to get oxygen
  + Fish can be classified in 3 groups
    - Jawless fish
    - Cartilaginous Fish
    - Bony fish
      * Have **scales** – overlapping bony structures on the outside of the body of bony fish
  + Most young fish develop inside an egg

5.2

* Amphibians and reptiles are adapted for life on land
  + Have limbs
  + Have moist skin and lay eggs without shells
    - Most amphibians have the following characteristics
      * Have two pairs of legs for a total of four limbs
      * They lay their eggs in water
      * They obtain oxygen through their smooth, moist skin. Many also have lungs
      * Their sensory organs are adapted for sensing on land
  + Reptiles have dry, scaly skin and lay eggs with shells
    - Evolved after amphibians and are closely related
      * They have two pairs of legs, 4 total
      * They have tough, dry skin covered by scales
      * They obtain oxygen from air with lungs
      * Their sensory organs are adapted for sensing on land
      * They lay their eggs, which have shells, on land
  + Body temperatures of amphibians and reptiles change with the environment
    - **Ectotherms** – animals whose body temperatures change with the environmental conditions

5.3

* Birds meet their needs on land, in water, and in the air
  + Bird species live in most environments
    - All birds
      * Have feathers and a beak
      * Have four limbs, a pair of scaly legs and a pair of wings
      * Their eggs have hard shells
  + Birds can maintain body temperature
    - **Endotherms** – animals that maintain a constant body temperature
      * Down feathers help maintain heat
    - Most birds can fly
      * Endoskeleton
      * Wings and feathers
      * Specialized respiratory system
      * Hollow bones
    - Birds **incubate** – use their body heat to keep their eggs warm
  + Most birds care for their offspring

5.4

* Mammals live in many environments
  + They are a diverse group of vertebrates
    - Mammals all have
      * Have hair during some part of their lives
      * Have teeth specialized for consuming particular kinds of food
      * Produce milk and feed their young with that milk
  + Mammals are endotherms
    - Body fat helps maintain temperature
* Mammals have adapted to many environments
* Mammals have reproductive adaptations
  + Development before birth
    - **Placenta** – specialized organ that transports nutrients, water, and oxygen from the mother’s blood to the developing embryo, waste from the embryo travels through the placenta and exits through the mother
    - **Gestation** – the time when a mammal is developing inside it’s mother
  + Mammals raise their young at various degrees depending on the species