Phylum Arthropoda

*General Characteristics of phylum shared by members of all subphyla:*
- chitinous, hardened exoskeleton that must be shed to grow
- obvious segmentation (metamerism)
- paired, jointed appendages on many segments

**Subphylum: Trilobita**
- body plan: head, thorax, pygidium
- compound eyes
- antennae
- mandibles for feeding?
- branched (biramous) appendages
- respiration by gills?
- able to roll up like pill bugs
- once most common arthropod, now completely extinct

**Subphylum: Myriopoda** (centipedes, millipedes)
- body plan: head, long trunk
- lack compound eyes
- single pair of antennae
- mandibles for feeding
- unbranched legs on most segments
- respiration by tracheae

**Major Groups:**
- Chilopoda (centipedes)
- Diplopoda (millipedes)

**Subphylum Chelicerata:** (spiders, horseshoe crab, scorpions, mites, ticks)
- body plan: cephalothorax, abdomen
- most lack compound eyes
- no antennae
- chelicerae for feeding (no mandibles)
- four pairs of unbranched legs
- respiration by gills, book lungs, book gills or tracheae

**Major Classes:**
- Merostomata (horseshoe crabs)
- Arachnida (spiders, scorpions, mites & ticks)
- Pycnogonida (sea spiders)

**Subphylum Crustacea:** (crabs, shrimp, crayfish, barnacles, pill bugs, water fleas)
- body plan: cephalothorax, abdomen, tail
- compound eyes
- two pairs of antennae
- mandibles for feeding
- branched (biramous) appendages
- respiration by gills
- only subphylum that is mostly aquatic

**Major Classes:**
- Malacostraca (shrimp, crab, pill bugs, amphipods)
- Branchiopoda (water fleas, brine shrimp, fairy shrimp)
- Maxillipoda (copepods, seed shrimp, barnacles)

**Subphylum: Hexapoda** (beetles, flies, bugs, crickets, mayflies, dragonflies, moths, wasps, etc.)
- body plan: head, thorax, abdomen
- compound eyes
- single pair of antennae
- mandibles for feeding
- three pairs of unbranched legs
- two pairs of wings
- respiration by tracheae
- includes only invertebrates that can fly

**Major Groups:**
- Apterygota (wingless insects; springtails, silverfish)
- Pterygota (flying insects; dragonflies, butterflies, etc)