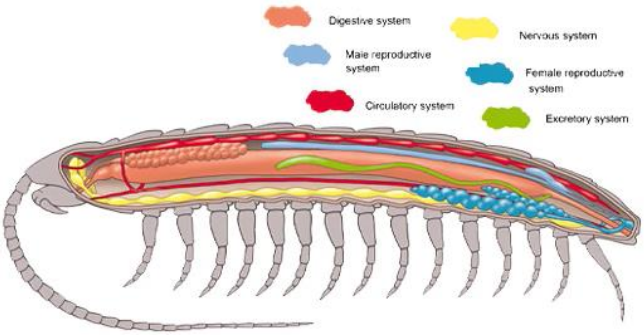
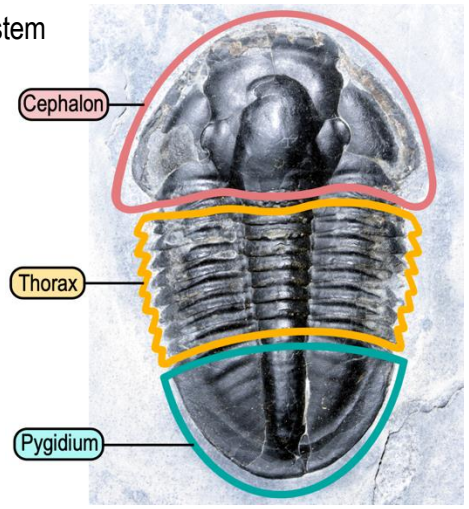
CONCEPT: ECDYSOZOANS

- ***Ecdysozoan*** – protostome animals that grow incrementally by shedding their outer layer
    - ***Cuticle*** – tough external coat, called an exoskeleton if hardened
    - Molting (ecdysis) – shedding of the cuticle, followed by the body swelling with fluid and growing
- ***Arthropods*** – massive phyla of animals that have segmented bodies, exoskeletons, and jointed appendages
    - ***Exoskeleton*** – mostly made of chitin, and reinforced with calcium carbonate in crustaceans
    - Tagmata – grouping of body segments, like head, thorax, and abdomen
    - Changes in *Hox* genes allowed for great diversity in form and function, leading to the success of arthropods
    - Main body cavity is called the ***hemocoel***, they have an open circulatory system

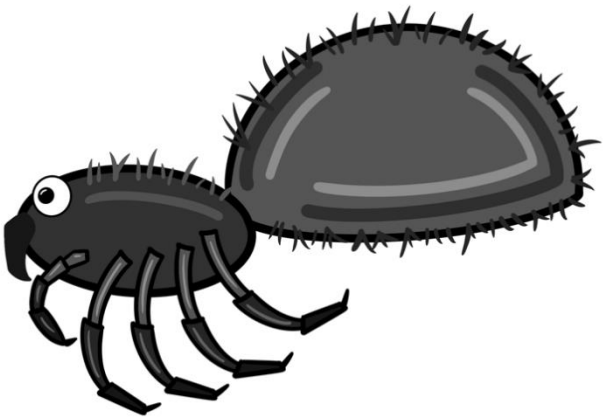
EXAMPLE:





- ***Chelicerata*** – have claw feeding appendages called chelicerae, lack antennae, and have simple eyes
    - Include horseshoe crabs, sea spiders, scorpions, ticks, mites, and spiders
    - ***Arachnids***, like spiders, are the largest group of chelicerata
        - Two tagmata: cephalothorax (head and throax) and abdomen
        - Have pedipalps, chelicerae, and 4 pairs of walking legs
        - Reproduce sexually via internal fertilization using the pedipalps

EXAMPLE:



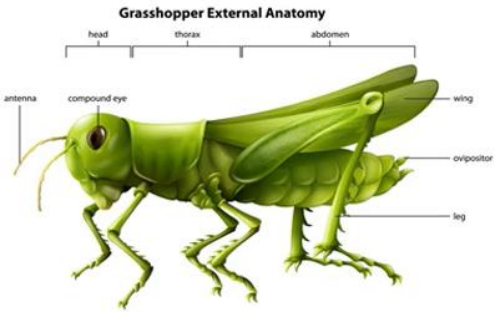
CONCEPT: ECDYSOZOANS

- ***Myriapods*** – have segmented bodies with legs coming from each segment, include millipedes and centipedes
- ***Crustaceans*** – live in aquatic and terrestrial environments, have 19 appendages, and 2 pairs of antennae
    - □ Include lobsters, crabs, crayfish, shrimp, and barnacles
    - □ Two tagmata: cephalothorax and abdomen
        - Many crustaceans have a carapace, an exoskeleton shell covering the cephalothorax
    - □ Small species perform gas exchange across part of the cuticle, large species have gills

EXAMPLE:

- ***Hexapoda*** (insects) – mostly terrestrial organisms that have 3 pairs of walking legs on thorax, many have wings
    - □ Three tagmata: head, thorax, and abdomen
    - □ Compound eye – eye with many lenses
    - □ Have open circulatory system characterized by openings in the cuticle called spiracles that lead to tracheal tubes
    - □ Most reproduce sexually, with internal fertilization

EXAMPLE:



- Complete metamorphosis – larval stage that is morphologically distinct from adult form
    - □ Larva feed until they become pupa, then emerge as adults
        - Generally larva are designed for feeding, and adults for mating
- Incomplete metamorphosis – juveniles, called nymphs, appear similar to adults, though potentially lacking certain features

EXAMPLE:

CONCEPT: ECDYSOZOANS

- ***Nematodes*** – bilateral, unsegmented worms (roundworms) with a pseudocoelom that exhibit sexual dimorphism
    - ***Sexual dimorphism*** – male and female of a species differ in form
    - Body covered in cuticle that is periodically shed as it grows

EXAMPLE: