

### Phylum Arthropoda

#### General Characteristics

1. **Exoskeleton** – UNIQUE CHARACTER
  - Secreted
  - Ecdysis (molting) to grow
2. Segmented body
3. Jointed appendages
4. Bilateral symmetry
5. Open circulatory system
  - Coelomate (body cavity)
  - Protostome (head first from gastrulation)

- In terms of numbers, distribution, and diversity, they are the most successful phylum of animals, and are divided into several subphyla and classes:

Subphyla **Chelicerata** includes:

**Class Merostomata**

Horseshoe crabs

### Class Arachnida:

Scorpions  
Spiders  
Ticks and Mites

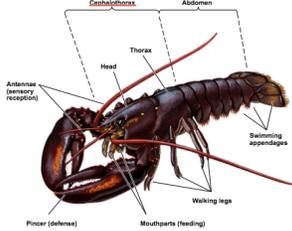
- Most arachnids are terrestrial and carnivorous

Spiders, scorpions, ticks, mites  
65,000 species

- **two body regions: cephalothorax, abdomen**
- **eight legs**
- no antennae
- Mouth parts are chelicerae (modified appendages) which in spiders are fangs

### Crustaceans (technically a subphylum)

- Classes include crabs, shrimps, lobsters, barnacles, isopods. 44,000 species
- 2 body regions
- 2 pairs of antennae
- 5 or more pairs of legs
- Primarily aquatic, few terrestrial



### Millipede vs Centipede

**Diploids**

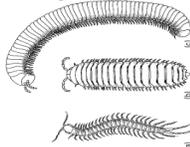
Millipedes  
10,000 species

- two pairs of legs per segments, first four segments have 1 pair legs
- one pair of antennae
- well-defined head
- usually cylindrical

**Chilopods**

Centipedes  
2,800 species

- one pair of legs per segment
- well-defined head
- first pair of legs modified for envenomation  
**POISON!!!**
- flattened top to bottom



### Class Insecta are the most diverse group of organisms

- Insects are the most numerous and successful arthropods. Grasshoppers, butterflies, beetles, ants, etc. 1,000,000 described world species.

They have

- a three-part body consisting of
  - head, thorax, and abdomen
  - Some adults have one or two pairs of wings attached to the thorax (some have none)
- 2 antennae
- lateral compound eyes
- 6 legs attached to the thorax (which has 3 segments)
  - wings (most, but not all insects)
- **Indirect Development** The development of many insects includes metamorphosis

