**Arthropods**

Jointed foot

**Defining Characteristics**

1. Segmented & specialized parts
   - nearly identical
   - such as wings, antennae, gills, pincers, claws

2. Jointed limbs
   - easy locomotion
   - support the body

3. Exoskeleton
   - made of chitin
   - protection prevents dehydration

4. Well developed Nervous system
   - head w/ brain & nerve cord
   - sense organs (eyes, bristles, & antennae)

<table>
<thead>
<tr>
<th>Subphylum</th>
<th>Centipedes</th>
<th>Millipedes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Myriapoda</td>
<td>1 pair legs</td>
<td>2 pair legs</td>
</tr>
<tr>
<td>Chilopoda</td>
<td>1 pair body</td>
<td>2 pair legs</td>
</tr>
<tr>
<td>Diplopoda</td>
<td>1 pair head</td>
<td>2 pairs</td>
</tr>
</tbody>
</table>

One pair legs/segment
- one pair antennae
- hard head
- pair mandibles
- mouth parts
for chewing & piercing food
Crustaceans
- Shrimp
- Barnacles
- Crabs
- Lobster

\[\text{Most live in } H_2O\]
- gills
- mandibles
- 2 compound eyes
- eyes on eye stalks
- 2 pairs of antennae

Arachnids
- Spiders
- Ticks & Scorpions

- cephalothorax = head + thorax
- most have 4 pair (8) legs
- no antennae
- no mandibles
- instead have chelicerae (claw-like)
- simple eyes
- ticks = parasites
Insects
- Beetles, mosquitoes, bees, ants, flies
- Most abundant group
- All have 3 main body parts: Head, thorax, abdomen
- Live everywhere except oceans
- Most helpful: pollinators
- Some pests

Complete Metamorphosis
egg → larva → pupae → adult

Incomplete Metamorphosis
egg → nymph → adult

~ 12% of insects