
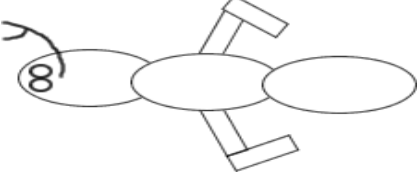

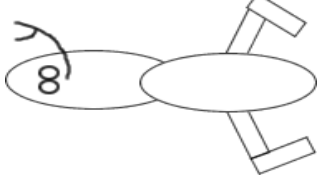

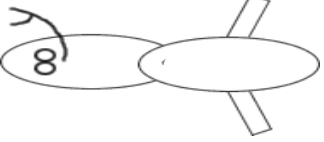


# Cladogram

## Activity

Description of Species	Picture
<p><b>Species 1:</b>                      The organism has a single antenna that is branched (like a Y). It has two eyes positioned on top of the head of a non-segmented body.</p>	
<p><b>Species 2:</b>                      Fossils of this species date back 8,000 years ago. This organism has branched antennae and three body segments, and the middle segment has fleshy appendages with a bendable joint.</p>	
<p><b>Species 3:</b>                      The organism has a branched antenna (like a Y); its body is divided into two segments; and eyes are positioned on top of a head.</p>	
<p><b>Species 4:</b>                      This organism has branched antennae, two body segments and eyes positioned on top of a head; and fleshy appendages on the last segment have a bendable joint.</p>	
<p><b>Species 5:</b>                      Fossils of this species date back 50,000 years ago. The organism has a single antenna, two eyes positioned on top of a head, and a non-segmented body.</p>	
<p><b>Species 6:</b>                      This organism has branched antennae, two body segments, eyes positioned on the top of the head, and small flesh appendages on the last segment.</p>	

# Cladogram

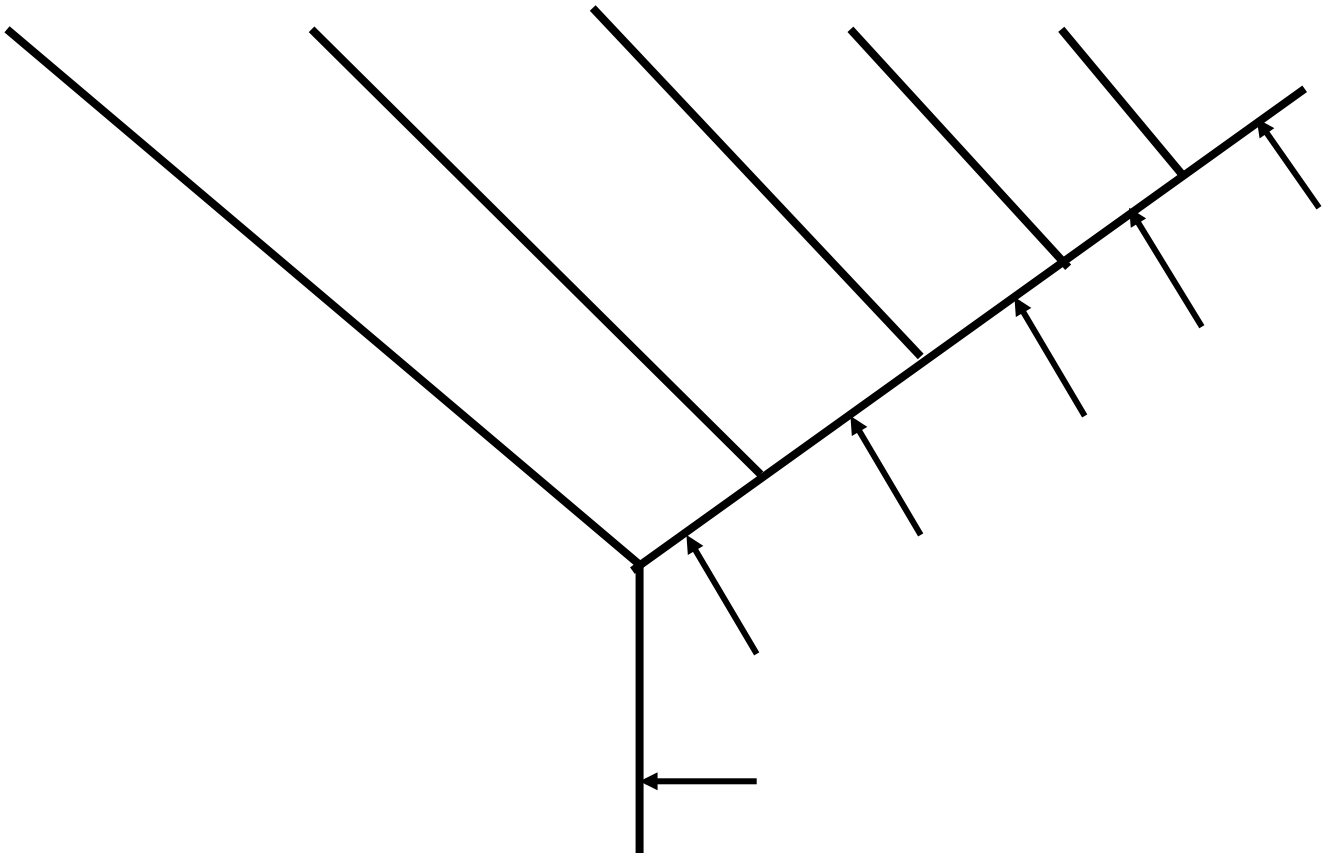
## Activity, continued

In cladistics, similar characteristics that come from a common ancestor are used to divide organisms into groups. A cladogram will begin by grouping organisms based on a characteristic displayed by all the members of the group. The larger group or clade will contain increasingly smaller groups (clades) that share the traits of the clades before them. They also exhibit distinct changes as the organism evolves. All descendants to the right of a branch point share that new feature; none of the creatures to the left do.

- From the organisms shown on page 1, determine features that are shared among those organisms and those that are unique. Use this information to fill out the table below.

Species	Two Eyes	Non-branched or Branched Antennae	Number of Body Segments	No Legs, Legs, and/or Jointed Legs
1				
2				
3				
4				
5				
6				

- Use the characteristics (morphologies) in your data table to determine the positioning of the species on the cladogram you will create. You will draw organisms that are ancestral on the left of the cladogram and more recently evolved organisms toward the right.
- Include on your cladogram the following:
  - Determine where you think each species should be placed.
  - Write the species number on the branch where you believe it belongs.
  - Label the arrows along the bottom of the tree with the characteristic that is shared with the clade above or to the right of it.



4. On your cladogram, circle the clade of organisms with two body segments. A clade is a grouping that includes a common ancestor and all of its descendants (living and extinct).
5. Once your cladogram is complete, pair with another student and share your cladograms. If there are points to be argued and discussed, complete the protocol to make a final cladogram to turn in with this activity.