

**Lesson 2: Comparative Anatomy**

**Name:** \_\_\_\_\_

The paired sets of statements in the chart below provide contrasting descriptions of various body parts and lifestyles of the Asian and African elephants. Match each description with its corresponding elephant by placing an “x” in the column beneath its name. Repeat for the mammoth. In the last column, enter the kind of elephant (Asian or African) matching the trait or lifestyle most similar to that of the mammoth.

Note: To identify which elephant model is which, remember that female Asian elephants had either very small tusks or none at all, but BOTH male and female African elephants had tusks.

Body Part	Description	African Elephant	Asian Elephant		Mammoth	Similar Elephant
Ear Size	Larger					
Ear Size	Smaller					
Back shape	Convex or straight					
Back Shape	Concave					
Head Shape	Crumpled front to back					
Head Shape	Not crumpled front to back					
Number of Toes	Front Legs - 5; Rear Legs - 4					
Number of Toes	Front Legs - 4; Rear Legs - 3					
End of Trunk	Two fingered					
End of Trunk	Single-fingered					
Food	Mostly grass					
Food	Mostly leaves					
Lower Lip	Short and round					
Lower Lip	Long and tapered					
Trunk	More rings					
Trunk	Less rings					
Head Shape	Humped structures on top					
Head Shape	No humped structures on top					
Belly Shape	Slanted downward front to back					
Belly Shape	Nearly straight front to back					
Head Shape	Top of head is rounded with no lengthy upward dent					
Head Shape	Top of head has long ridge from front to back					
Body height	Highest point, excluding the head, is on the shoulder					
Body height	Highest point, excluding the head, is on the back					

1. From your observations, did the Asian or African elephant appear to have more in common with the mammoth? \_\_\_\_\_

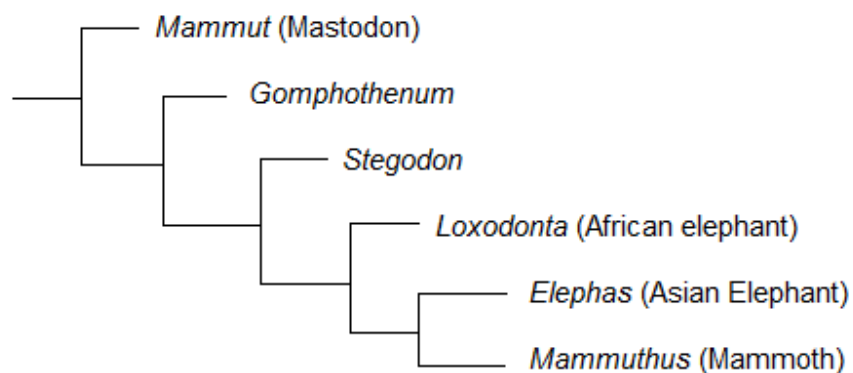
2. Did you find that one of the elephants always met the same criteria as those of the mammoth?

\_\_\_\_\_

3. You may have anticipated that all the descriptions would match only one of the two elephants, but you most likely found this not to be true. Does this observation in any way invalidate the results of the activity?  
\_\_\_\_\_

4. Explain your reasoning for your response to question number. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Why were no comparisons made between the tails of the mammoth and those of the elephants? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



Proboscidean Clade

6. Paleontologists have devised charts referred to as “cladograms,” as illustrated above, which reveal the phylogenetic relationships of specific species of organisms and indicating points of evolutionary diversification. Explain how the “Proboscidean Clade” above reveals the observation that mammoths are more closely related to Asian elephants than African elephants.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

7. According to the cladogram, are mastodons more closely related to African elephants or mammoths?  
\_\_\_\_\_

Explain. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_