

NAME: _____ DATE: _____ PER: _____

USING DNA AS EVIDENCE OF EVOLUTION: RELATEDNESS OF ORGANISMS

Directions: The diagram below shows a small portion of the DNA for the same gene in three animals - a mouse, a baleen whale, and a chicken. Use the diagram to determine whether a mouse is more closely related to a baleen whale or a chicken.

Animal	Sequence of Bases in Section of Hoxc8
Mouse	CAGAAATGCTACTTTTATGGCCCTGTTTGTCTCCCTGCTC
Baleen whale	CCGAAATGCCCTTTTATGGGCTGTGTTCCTCCCTGCC
Chicken	AAAAAATGCCCTTTTACAGTCTGTGTTCCTCTCTA

1. CALCULATE: What percentage of the nucleotides in the baleen whale's DNA are different from those of the mouse? (*Hint: First count the number of DNA nucleotides in one entire sequence. Then, count the nucleotides in the whale DNA that differ from those in the mouse DNA. Finally, divide the number of nucleotides that are different by the total number of nucleotides, and multiply the result by 100.*)

2. CALCULATE: What percentage of the nucleotides in the chicken are different from those of the mouse?

3. DRAW CONCLUSIONS: Do you think a mouse is more closely related to a baleen whale or to a chicken? **Explain your answer.**