



Name: _____ Date: _____ Group: _____

Part I. Evidence of a Common Ancestor

Researchers compare DNA and RNA base sequences, in addition to anatomy, to determine closely related species. Below is a table that depicts amino acid sequences for 3 difference species—species A, B, and C. Use this information to answer the questions that follow.

Species A	a v l l g m f a s y t h k k s d c t c r
Species B	v v l l f p w d c y t r k r s e c t c h
Species C	a v l l g f f a w y t h r k s d c t c r

1. How many differences in amino acid sequences are there between species A and species B?
2. How many differences in amino acid sequences are there between species B and species C?
3. How many differences in amino acid sequences are there between species A and species C?
4. Draw a phylogenic tree that best represents the possible evolutionary relationship between species A, B, and C.
5. Name 3 animals that could match this phylogenic tree.



Researchers compare DNA and RNA base sequences, in addition to anatomy, to determine closely related species. Below is a table that depicts amino acid sequences for 6 difference species—species A, B, C, D, E, and F. Use this information to answer the questions that follow.

Species A	a v l l g m f a s y t h k k s d c t c r l g l f p
Species B	l p f l g f g l s y t q k t y e c d c r l m l f w
Species C	a v l l g m f p c y t t k k s d s d c r l g l f p
Species D	a b l l g m f p s y t t k k s d s d t r l g l f p
Species E	a b l l g m f p s y t h k k s d s t c r l g l f p
Species F	a b l l g m f h s y t h k k s d c t c r l g l f p
Species G	l p f l g v g m s y t r k r s e c d c t l f l f w

6. Complete the table below that cites the number of differences between each of the species.

	A	B	C	D	E	F	G
A							
B							
C							
D							
E							
F							
G							

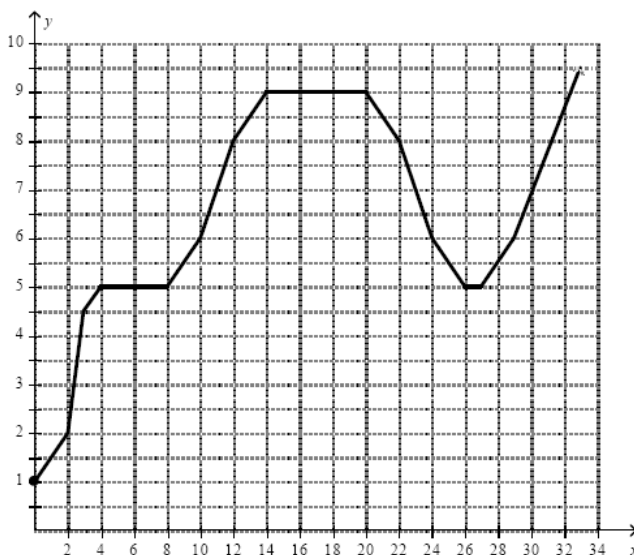
7. Create a phylogenic tree that depicts the relationships among species A – G.



Part III. Rates & Patterns of Evolution

The fossil record reflects that the rates and patterns of evolution are not constant over geologic time. Species can change very little for long periods of time (evolutionary stasis); they can change very little for a long time, then undergo dramatic change over a relatively short period of time, followed by another long period of little change (punctuated equilibrium); or they can change gradually and sequentially (gradualism).

Use the graph below to answer questions a-k.



- What is the domain of this graph?
- What is the range of this graph?
- When is the species population increasing?
- When is this species population decreasing?
- When is the species population constant?
 - When is the species population at its maximum? How many members does the population have at this time?
 - When is the species population at its minimum? How many members does the population have at this time?
- What is the average rate of change on the interval 2 million years to 20 million years?
- On what interval (over what years) does this population go through evolutionary stasis?
- On what interval (over what years) does this population go through punctuated equilibrium?
- On what interval (over what years) does this population go through gradualism?