

Name: _____

Class/Period: _____

Assignment: Chapter 28 Origin of Life & Evidence of Evolution Teacher: Krebs

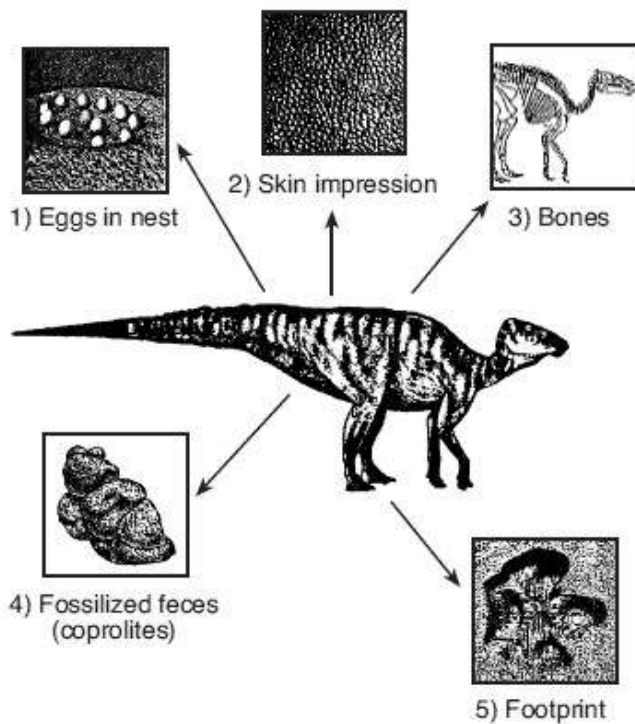
1 When comparing characteristics of two organisms, which evidence would be considered the strongest for supporting a possible evolutionary relationship?

- 1 The two organisms are the same color.
- 2 The two organisms are the same height.
- 3 The two organisms produce many of the same proteins.
- 4 The two organisms are found in the same locations.

2 Fossils provide evidence that

- 1 life on Earth millions of years ago was more complex than life is today
- 2 the changes that will occur in species in the future are easy to predict
- 3 many species of organisms that lived long ago are now extinct
- 4 most species of organisms that lived long ago are exactly the same today

3 The diagram below represents a variety of fossil types, which can be found in many rocks.



Source: Audesir, Audesir, Byers,
Biology: Life on Earth, Prentice Hall, 2002

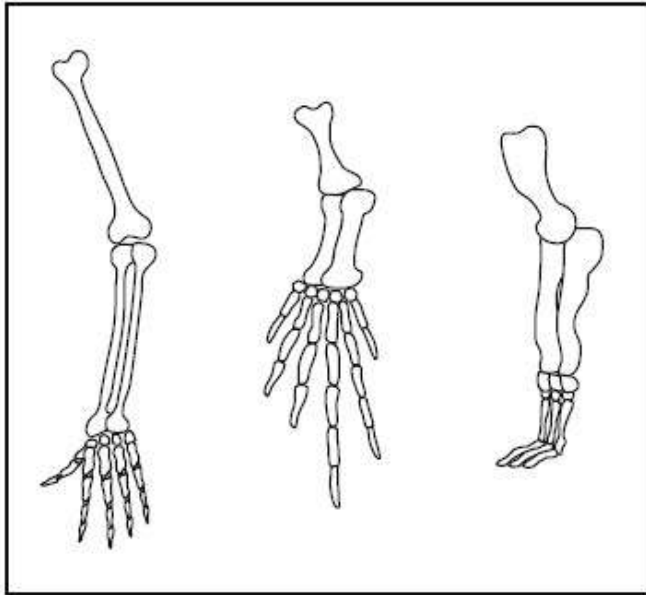
These fossils can be best used to provide information that could be used in a study of

- 1 evolutionary relationships
- 2 dynamic equilibrium
- 3 selective breeding
- 4 cell specialization

4 According to the fossil record, which statement is accurate?

- 1 Most of the species that have lived on Earth no longer exist.
- 2 Most of the species that have lived on Earth still exist today.
- 3 Fossils of species that never existed can be found.
- 4 Fossils of species that never existed, but will exist in the future, can be found.

5 The diagram below represents the bone arrangements in the front limbs of three different species of mammals.



The similarities and differences in these limbs suggest that all three species developed from the same ancestor, but

- 1 produced different numbers of offspring
- 2 lived in different time periods
- 3 adapted to different habitats
- 4 migrated to similar habitats

6 Many scientists suggest that billions of years ago, life on Earth began with

- 1 simple, single-celled organisms
- 2 simple, multicellular organisms
- 3 complex, single-celled organisms
- 4 complex, multicellular organisms

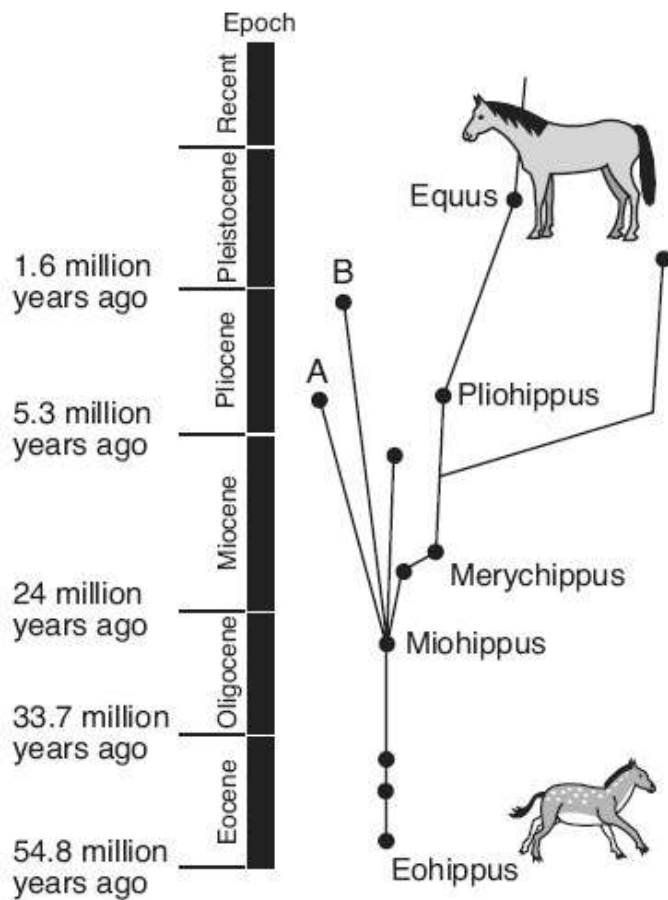
7 The heterotroph hypothesis is a theory about the beginning of life. Water and some chemicals were used to produce the most primitive (simple) life forms on Earth. The chemicals were probably:

- 1 nitrogen, carbon dioxide, and oxygen
- 2 hydrogen, methane, and ammonia
- 3 carbon monoxide, ammonia, and oxygen
- 4 hydrogen, oxygen, and nitrogen

- 8** According to the heterotroph hypothesis, what part did ultraviolet light, heat and lightning take in the formation of the first organic molecules?
- 1 They metabolized inorganic substances.
 - 2 They synthesized radioactive materials.
 - 3 They provided energy sources.
 - 4 They digested dissolved particles.
- 9** According to one theory, autotrophs developed after heterotrophs partly because the primitive environment of the Earth lacked
- 1 methane
 - 2 water
 - 3 carbon dioxide
 - 4 solar radiation
- 10** Which observation could best be used to indicate an evolutionary relationship between two species?
- 1 They have similar base sequences.
 - 2 They have similar fur color.
 - 3 They inhabit the same geographic regions.
 - 4 They occupy the same niche.

Figure 1

Base your answer to the question on the diagram below, which represents possible relationships between animals in the family tree of the modern horse, and on your knowledge of biology.

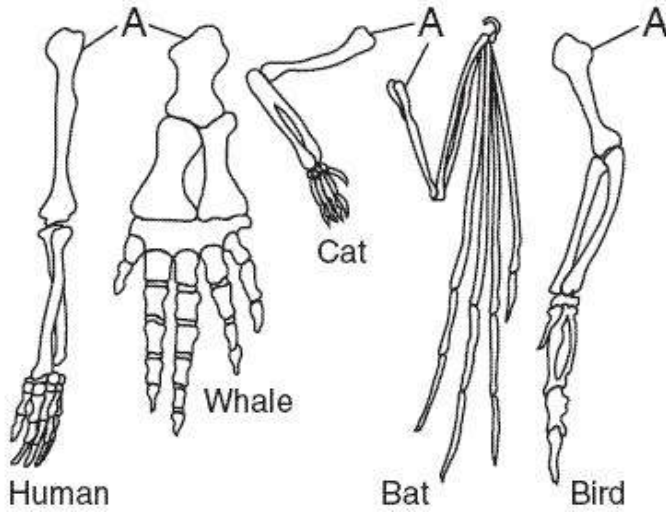


Refer to Figure 1 and answer the following Question:

One possible conclusion that can be drawn regarding ancestral horses *A* and *B* is that

- 1 *A* was better adapted to changes that occurred during the Pliocene Epoch than was *B*
- 2 the areas that *B* migrated to contained fewer varieties of producers than did the areas that *A* migrated to
- 3 competition between *A* and *B* led to the extinction of *Pliohippus*
- 4 the adaptive characteristics present in both *A* and *B* were insufficient for survival

12 Base your answer to the question on the diagram below and on your knowledge of biology.



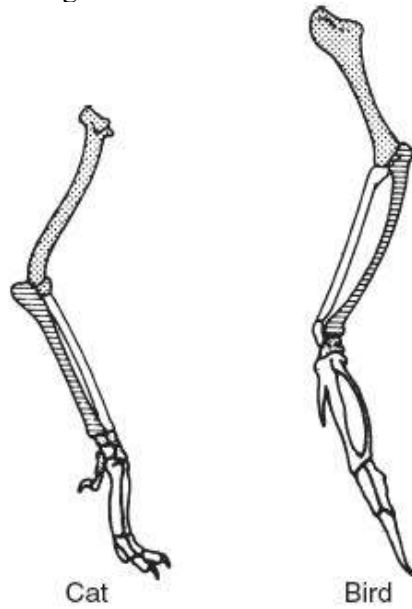
The similarities of the bones labeled *A* provide evidence that

- 1 the organisms may have evolved from a common ancestor
- 2 all species have one kind of bone structure
- 3 the cells of the bones contain the same type of mutations
- 4 all structural characteristics are the same in animals

13 Scientists hypothesize that cabbage, broccoli, cauliflower, and radishes developed along a common evolutionary pathway. Which observation would best support this hypothesis?

- 1 Fossils of these plants were found in the same rock layer.
- 2 Chloroplasts of these plants produce a gas.
- 3 These plants live in the same environment.
- 4 These plants have similar proteins.

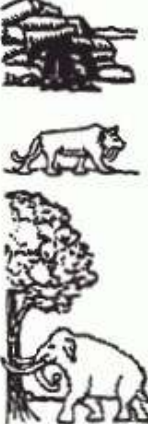
14 The diagram below shows the bones in the forelimbs of two different vertebrate species.



The position and structure of these bones could best be used to make inferences about the

- 1 food preferences of these vertebrate species
- 2 intelligence of these vertebrate species
- 3 history of these vertebrate species
- 4 reproductive behavior of these vertebrate species

15 Information related to the organisms found on Earth during various geological time periods is represented in the chart below.

Common Organisms				
Time	4.6 (?) Billion Years Ago	600 Million Years Ago	200 Million Years Ago	60 Million Years Ago
Era	Precambrian (Simple Multicellular Organisms and First Protists)	Paleozoic (Age of Amphibians, Fishes, and Invertebrates)	Mesozoic (Age of Reptiles)	Cenozoic (Age of Mammals)
Past —————→ Present				
Geologic Time				

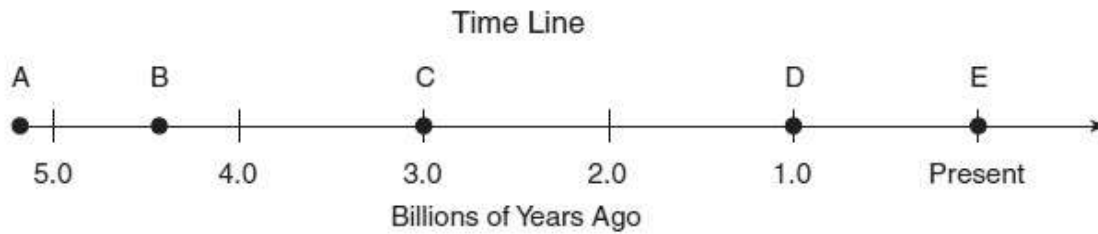
Which statement concerning the first appearance of the organisms over the time period represented in this chart is most likely correct?

- 1 Life on Earth has remained the same.
- 2 Life on Earth has changed from primitive organisms to more complex organisms.
- 3 Life on Earth began with complex organisms and changed to more complex organisms.
- 4 Life on Earth has changed rapidly.

16 The presence of some similar structures in all vertebrates suggests that these vertebrates

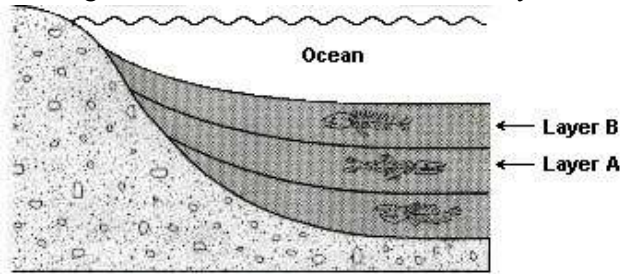
- 1 all develop at the same rate
- 2 evolved from different animals that appeared on Earth at the same time
- 3 all develop internally and rely on nutrients supplied by the mother
- 4 may have an evolutionary relationship

- 17 According to the interpretation of the fossil record by many scientists, during which time interval shown on the time line below did increasingly complex multicellular organisms appear on Earth?



- 1 *A to B*
 - 2 *B to C*
 - 3 *C to D*
 - 4 *D to E*
- 18 The first life-forms to appear on Earth were most likely
- 1 complex single-celled organisms
 - 2 complex multicellular organisms
 - 3 simple single-celled organisms
 - 4 simple multicellular organisms
- 19 The process of structural modification over a long period of time that helps to explain the diversity of living things is known as
- 1 metamorphosis
 - 2 succession
 - 3 migration
 - 4 evolution
- 20 Evolution refers to change over a long period of time in
- 1 a fossil
 - 2 a population
 - 3 a rock
 - 4 an embryo
- 21 Which phrase best defines evolution?
- 1 an adaptation of an organism to its environment
 - 2 a sudden replacement of one community by another
 - 3 a geographic or reproductive isolation of organisms
 - 4 a process of change in organisms over a period of time

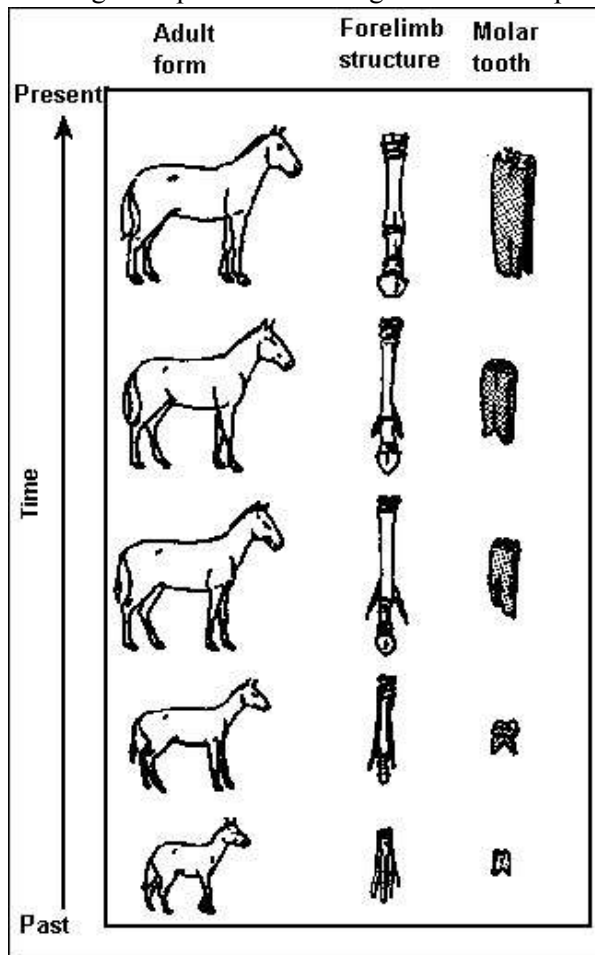
- 22 The diagram shows an undisturbed sedimentary strata at the bottom of an ocean.



The fossils found in layer *B* resemble the fossils found in layer *A*. This similarity suggests that

- 1 the fossils in layer *B* were formed before the fossils in layer *A*
 - 2 modern forms of life may have evolved from earlier forms of life
 - 3 vertebrate fossils are found only in sediments
 - 4 the fossils in layer *A* must be more complex than the fossils in layer *B*
- 23 The embryos of fish, chickens, and pigs have gill slits and a tail. The presence of these features suggests that
- 1 all these animals can swim
 - 2 pigs developed from chickens
 - 3 these animals may have had a common ancestor
 - 4 gill slits and tails are required for embryotic development
- 24 Biologically similar organisms have similar DNA and proteins. This statement supports the concept of
- 1 diversity in species
 - 2 acquired characteristics
 - 3 use and disuse
 - 4 organic evolution

25 The diagram represents some stages in the development of the modern horse, according to evolutionary theory.

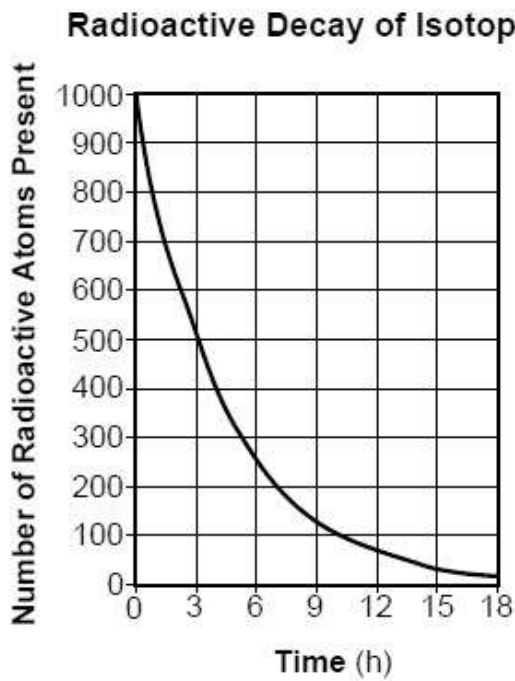


The diagram is based on the

- 1 examination of homologous fossilized structures of primitive horses
- 2 biochemical analysis of growth hormones of primitive horses
- 3 examination of the embryological structures of the modern horse
- 4 biochemical analysis of the DNA structure of the modern horse.

Figure 2

Base your answer to the question on the graph below and on your knowledge of Earth science. The graph shows the number of radioactive Isotope *X* atoms present as a sample of the isotope undergoes radioactive decay.

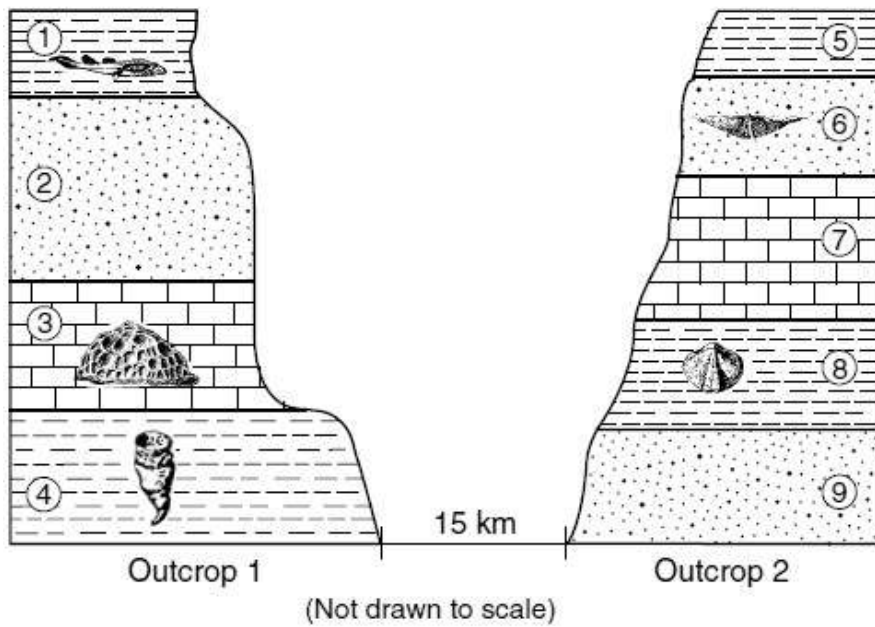


Refer to Figure 2 and answer the following Question:

Based on the graph, what is the approximate number of radioactive atoms of Isotope *X* that are present when 8 hours of decay has occurred?

- 1 90
- 2 115
- 3 155
- 4 200

- 27 The cross sections below represent two bedrock outcrops 15 kilometers apart. Numbers 1 through 9 indicate rock layers. Some layers contain index fossils. No overturning of rock layers has occurred.



Which layers most likely formed during the same geologic time period?

- 1 1 and 8
 - 2 2 and 9
 - 3 3 and 7
 - 4 4 and 5
- 28 The change in life-forms in the fossil record from less complex organisms to more complex organisms over time is best explained by
- 1 extinction
 - 2 evolution
 - 3 dynamic equilibrium
 - 4 original horizontality

Answer Key for : Chapter 28 Origin of Life & Evidence of Evolution

1 => 3 2 => 3 3 => 1 4 => 1 5 => 3 6 => 1 7 => 2 8 => 3 9 => 3 10 => 1 11 => 4
12 => 1 13 => 4 14 => 3 15 => 2 16 => 4 17 => 4 18 => 3 19 => 4 20 => 2 21 => 4
22 => 2 23 => 3 24 => 4 25 => 1 26 => 3 27 => 3 28 => 2