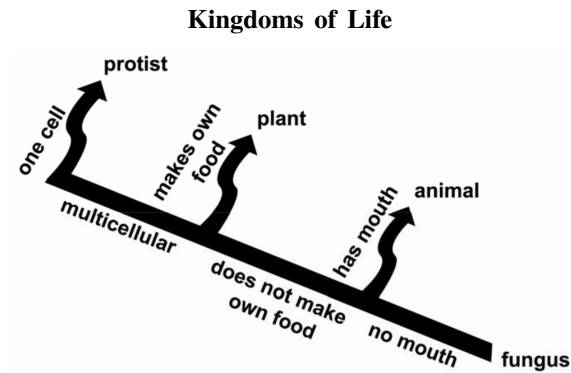


Cladograms and Phylogeny

Name: _____

Date: _____

1. Use this key to answer the question.



This key is used to classify certain kinds of living organisms into kingdoms.

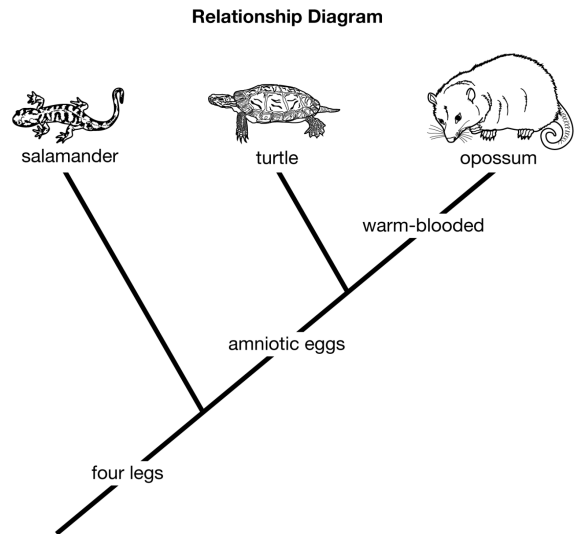
According to the key, which kind of organism is multicellular, doesn't make its own food, and doesn't have a mouth?

- A. a protist
- B. a plant
- C. an animal
- D. a fungus

2. Which of the following statements *best* explains why the chestnut-sided warbler, *Dendroica pensylvanica*, and the cerulean warbler, *Dendroica cerulea*, are classified as closely related species?

- A. They eat the same types of insects.
- B. They have similar DNA sequences.
- C. They show similarities in their nesting behaviors.
- D. They live in the same types of woodland habitats.

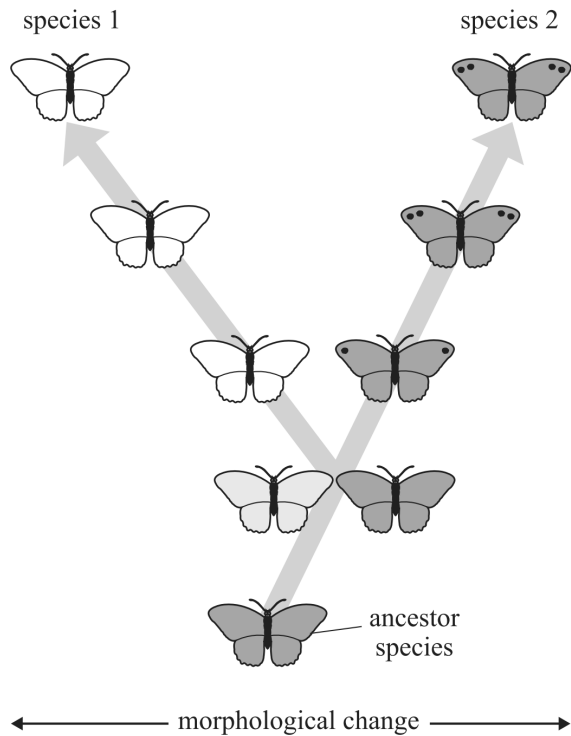
3. Use the relationship diagram below to answer the question.



Which statement most accurately describes a relationship between two animals in the relationship diagram?

- A. The turtle and opossum have amniotic eggs.
- B. The turtle and salamander have amniotic eggs.
- C. The turtle and opossum are warm-blooded.
- D. The turtle and salamander are warm-blooded.

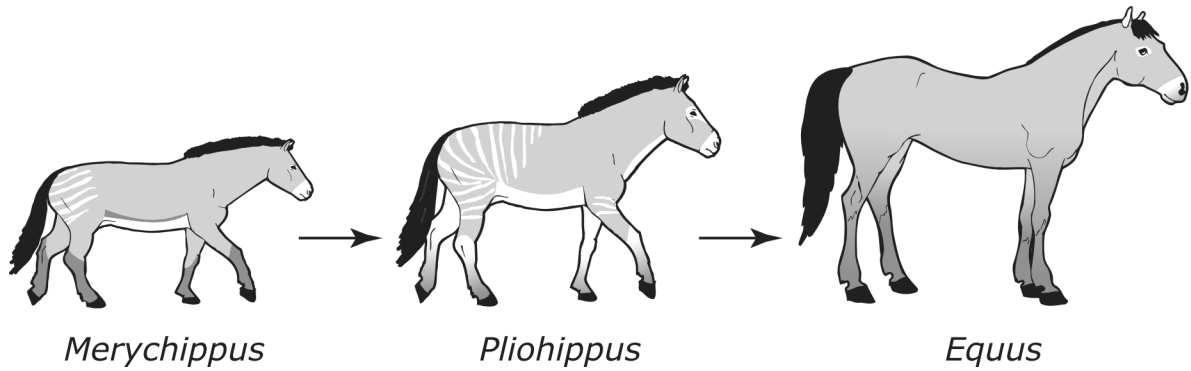
4. The illustration below shows the morphological change of two species.



Which statement explains why species 1 and species 2 are different?

- A. An individual changed itself to suit the environment.
- B. Natural selection can cause gradual speciation changes.
- C. Interbreeding of species 2 results in no genetic mutations.
- D. Extinction of ancestor species occurs as a result of interbreeding.

5. The modern horse (*Equus*) and two of its direct ancestors are shown in the diagram below.

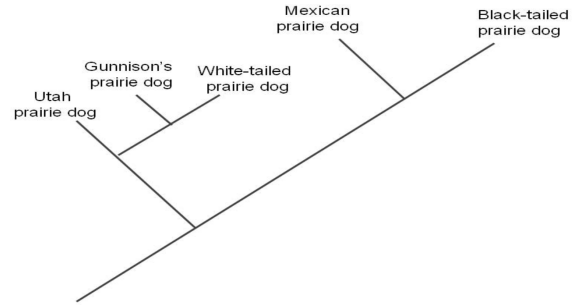


Which statement *best* explains how changes occurred leading from one species to the next?

- A. Individuals of each species adapted to differences in environmental conditions.
- B. Individuals of each species learned traits and passed them on to the offspring.
- C. Sudden environmental changes caused each species to develop in one generation.
- D. Small structural changes in each species were passed on to offspring over many generations.

6. Which is the *best* evidence of an evolutionary relationship between two organisms?
- A. similarity in behavior
 - B. similarity in DNA
 - C. similarity in habitat
 - D. similarity in niche

7. The figure below shows the classification of several types of prairie dogs.



Which of the following statements is *best* supported by the classification in this figure?

- A. The Utah prairie dog was the ancestor of the Gunnison's prairie dog.
 - B. The White-tailed prairie dog evolved from the Black-tailed prairie dog.
 - C. The Mexican prairie dog and the Utah prairie dog share a common ancestor.
 - D. The Mexican prairie dog is the closest relative of the White-tailed prairie dog.
8. Skeletal structures are common between two animals of different species. These structures probably exist because both species
- A. have a common food source.
 - B. live in the same environment.
 - C. have survived until the present time.
 - D. are related to a common ancestor.

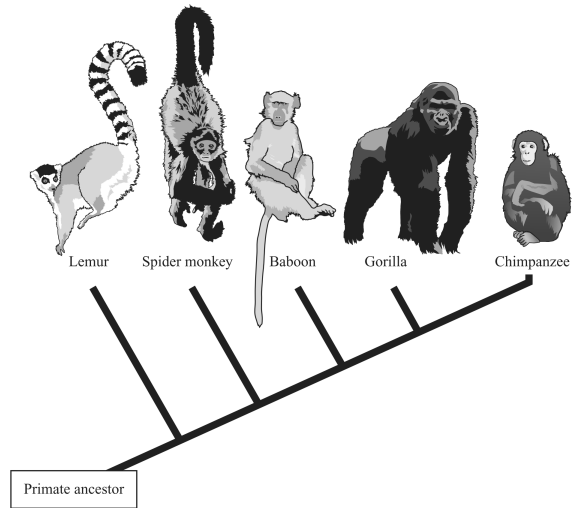
9. Which statement describes the *best* evidence that two species share a recent common ancestor?
- A. The species are about the same size.
 - B. The species eat the same type of food.
 - C. The species live in the same ecosystem.
 - D. The species have similar DNA sequences.

10. Sharks and turtles have many similarities in their proteins.

What does this suggest about these animals?

- A. They have the same number of chromosomes.
- B. They have identical DNA sequences.
- C. They have a common ancestor.
- D. They are becoming more alike.

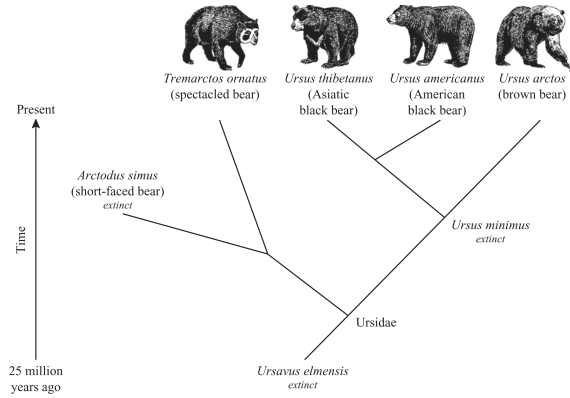
11. The diagram below shows the evolutionary relationship of several primates.



Based on the diagram, which of the following statements is true?

- A. Lemurs were the most recent to evolve.
- B. Gorillas evolved directly from chimpanzees.
- C. Spider monkeys and lemurs evolved at the same time.
- D. Gorillas and baboons evolved from a common ancestor.

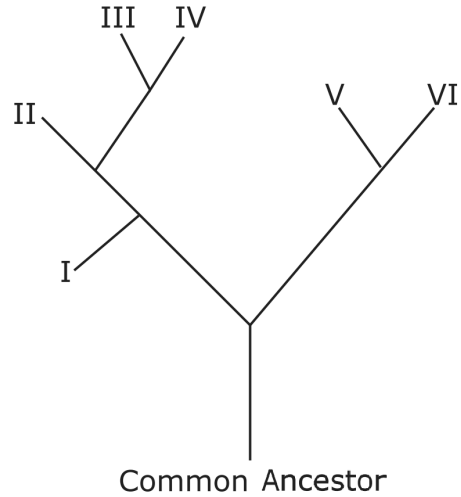
12. A student researching bears found the chart below in a textbook. The chart shows the



Which of the following conclusions is *best* supported by the data given in this chart?

- A. Modern bears evolved from species that are now extinct.
- B. The short-faced bear was the ancestor of the Asiatic black bear.
- C. Present day bear species are more closely related than their ancestors were.
- D. Natural selection favored the brown bear over the American black bear.

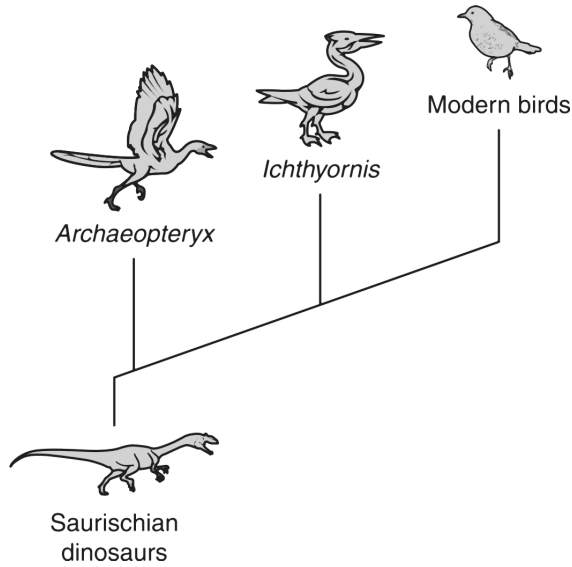
13. This diagram shows a cladogram of six species based on amino acid similarities.



Which two species are the *most closely* related?

- A. I and II
- B. II and IV
- C. I and V
- D. V and VI

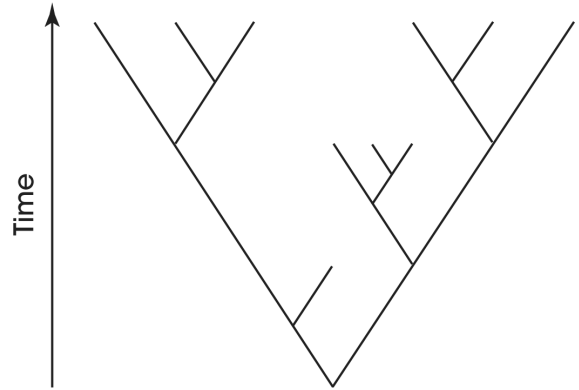
14. The diagram below shows one example of an evolutionary line for birds.



Which conclusion does the information in the diagram *best* support?

- A. *Ichthyornis* is still living today.
- B. All of these organisms evolved at the same time.
- C. Most bird fossils found today are Saurischian dinosaurs.
- D. *Archaeopteryx* and modern birds have a common ancestor.

15. The following diagram is found in an evolutionary biology textbook.



This branching tree diagram is most likely used to represent the theory that suggests

- A. new species arise throughout time following rounds of mass extinction.
 - B. all species share a common ancestor and that change occurs through time.
 - C. speciation occurs very quickly with long periods of no change in between.
 - D. all species originated during the same period and some have subsequently gone extinct.
16. The theory that all living organisms share a common ancestry is supported by evidence that they all
- A. have similar cellular chemical processes.
 - B. obtain and use energy in the same ways.
 - C. have cells with strong membranes.
 - D. have circulatory systems to distribute oxygen and carbon dioxide.

17. Which of the following provides the *most conclusive* evidence that organisms of two different species share a common ancestor?

- A. They live in the same ecosystem.
- B. They reproduce at the same time.
- C. They have similar DNA sequences.
- D. They have similar body movements.

18. Frogs, lizards, and birds all have a similar arrangement of bones in their limbs. Which of the following does this similarity *most likely* indicate about these animals?

- A. They move in the same way.
- B. They have a common ancestry.
- C. They evolved at the same time.
- D. They are comparable in size as adults.

19. Some scientists use molecular evidence to study evolution. One type of molecular evidence is the amino acid sequence of particular proteins in various species.

Which of the following *best* describes what the study of these sequences reveals about the species?

- A. The more similar the sequences are, the faster the species will coevolve.
- B. The more similar the sequences are, the more closely related the species are.
- C. The longer the sequences are, the earlier the species evolved in geologic history.
- D. The longer the sequences are, the more adapted the species are to their environments.

20. A researcher is comparing amino acid sequences for the protein hemoglobin from several primate species. What does the degree of similarity in sequences among the primate species indicate about these species?

- A. how closely related they are
- B. how frequently they interbreed
- C. how rapidly they can evolve in the future
- D. how efficient their circulatory systems are

Cladograms and Phylogeny 8/23/2019

- | | | | |
|---------|---|---------|---|
| 1. | | 15. | |
| Answer: | D | Answer: | B |
| Points: | 1 | Points: | 1 |
| 2. | | 16. | |
| Answer: | B | Answer: | A |
| Points: | 1 | Points: | 1 |
| 3. | | 17. | |
| Answer: | A | Answer: | C |
| Points: | 1 | Points: | 1 |
| 4. | | 18. | |
| Answer: | B | Answer: | B |
| Points: | 1 | Points: | 1 |
| 5. | | 19. | |
| Answer: | D | Answer: | B |
| Points: | 1 | Points: | 1 |
| 6. | | 20. | |
| Answer: | B | Answer: | A |
| Points: | 1 | Points: | 1 |
| 7. | | | |
| Answer: | C | | |
| Points: | 1 | | |
| 8. | | | |
| Answer: | D | | |
| Points: | 1 | | |
| 9. | | | |
| Answer: | D | | |
| Points: | 1 | | |
| 10. | | | |
| Answer: | C | | |
| Points: | 1 | | |
| 11. | | | |
| Answer: | D | | |
| Points: | 1 | | |
| 12. | | | |
| Answer: | A | | |
| Points: | 1 | | |
| 13. | | | |
| Answer: | D | | |
| Points: | 1 | | |
| 14. | | | |
| Answer: | D | | |
| Points: | 1 | | |