

Evolution

Multiple Choice

Identify the choice that best completes the statement or answers the question.

- _____ 1. A species is a group of similar organisms that
 - a. can mate with each other and produce fertile offspring.
 - b. can live together on an island.
 - c. can migrate to an island from the mainland.
 - d. all have exactly the same traits.
- _____ 2. What did Darwin infer from his observations of organisms in South America and the Galápagos Islands?
 - a. The organisms on the Galápagos Islands were virtually identical to mainland organisms.
 - b. A small number of different plant and animal species had come to the mainland from the Galápagos Islands.
 - c. The organisms on the Galápagos Islands were completely unrelated to mainland organisms.
 - d. A small number of different plant and animal species had come to the Galápagos Islands from the mainland.
- _____ 3. What did Darwin observe about finches in the Galápagos Islands?
 - a. Their feathers were adapted to match their environment.
 - b. Their beaks were adaptations related to the foods the finches ate.
 - c. They had identical phenotypes in all locations.
 - d. They had identical genotypes in all locations.
- _____ 4. A trait that helps an organism survive and reproduce is called a(n)
 - a. mutation.
 - b. selection.
 - c. adaptation.
 - d. variation.
- _____ 5. The gradual change in a species over time is called
 - a. mutation.
 - b. evolution.
 - c. migration.
 - d. variation.
- _____ 6. Darwin concluded that organisms on the Galápagos Islands
 - a. had changed over time.
 - b. had remained the same.
 - c. were the result of selective breeding.
 - d. had no variations.
- _____ 7. Differences between members of the same species are called
 - a. predators.
 - b. selections.
 - c. traits.
 - d. variations.

- _____ 8. What is the role of genes in evolution?
 - a. Only genes can be acted on by natural selection.
 - b. Parents with recessive genes die from overproduction.
 - c. The genes of most surviving parents have only dominant alleles.
 - d. Only traits that are controlled by genes can be acted on by natural selection.
- _____ 9. The marbled murrelet, an endangered seabird in California, is dependent upon sequoia forests and trees for survival. What might happen to the marbled murrelet population if the sequoia population went extinct?
 - a. The population of marbled murrelet would remain the same.
 - b. The population of marbled murrelet would increase.
 - c. The marbled murrelet would go extinct.
 - d. The marbled murrelet would be placed on the threatened species list.
- _____ 10. Which term refers to a species creating more offspring than can possibly survive?
 - a. natural selection
 - b. overproduction
 - c. evolution
 - d. variation
- _____ 11. How does natural selection lead to evolution?
 - a. Stronger offspring kill weaker members of the species.
 - b. Helpful variations accumulate among surviving members of the species.
 - c. Overproduction provides food for stronger members of the species.
 - d. Environmental changes favor weaker members of the species.
- _____ 12. Which term refers to similar structures that related species have inherited from a common ancestor?
 - a. DNA sequences
 - b. developmental organisms
 - c. homologous structures
 - d. punctuated equilibria
- _____ 13. If two organisms look very similar during their early stages of development, this is evidence that the organisms
 - a. are not related.
 - b. evolved from different ancestors.
 - c. have exactly the same DNA.
 - d. evolved from a common ancestor.
- _____ 14. How do most fossils form?
 - a. An insect becomes trapped in amber.
 - b. An entire organism becomes frozen in ice.
 - c. A dead organism becomes buried in sediment.
 - d. A dead organism becomes buried in tar.
- _____ 15. How do remains become petrified fossils?
 - a. A sedimentary rock becomes a cast.
 - b. Molds and casts fill with sediment.
 - c. Minerals replace all or part of an organism.
 - d. Sediment replaces all or part of an organism.
- _____ 16. Which of the following is most likely to become preserved as a fossil?

- a. a leaf
- b. a worm
- c. a jellyfish
- d. a clam shell

- _____ 17. Which of these is LEAST likely to be learned by studying animal fossils?
- a. the approximate age of the fossils
 - b. how the animals changed over time
 - c. what type of skin the animals had when they were living
 - d. whether the animals were invertebrates or vertebrates
- _____ 18. Which of these is one of the main ways that a new species forms?
- a. Cross-breeding occurs within the species.
 - b. A group is separated from the rest of the species.
 - c. Competition occurs between members of the species.
 - d. Mutations occur in the alleles of members of the species.
- _____ 19. A branching tree is
- a. a diagram showing how scientists think different groups of organisms are related.
 - b. a species of tree that is not closely related to other tree species.
 - c. a drawing that shows where different animals live in a tree.
 - d. a homologous structure that many plants have.
- _____ 20. Scientists combine evidence from fossils, body structures, early development, DNA, and protein structures to
- a. determine what bones an animal has in its forelimbs.
 - b. determine the evolutionary relationships among species.
 - c. decide which fossils are older than others.
 - d. determine whether an organism will have gills during its early development.
- _____ 21. Why do scientists think related species have similar body structures and development patterns?
- a. The species inherited many of the same genes from each other.
 - b. The species inherited many of the same proteins from each other.
 - c. The species inherited all of the same genes from a common ancestor.
 - d. The species inherited many of the same genes from a common ancestor.
- _____ 22. What is taxonomy?
- a. the scientific study of how living things are classified
 - b. the name of Aristotle's classification system
 - c. the process used by geologists to classify rocks
 - d. the process of observing an organism's behavior
- _____ 23. Why do scientists organize living things into groups?
- a. so they can find them in the wild more easily
 - b. so that the organisms are easier to study
 - c. so they can make sense of the variety of rocks on Earth
 - d. so products from living things can be easily found in groceries
- _____ 24. An organism's scientific name consists of
- a. its class name and its family name.
 - b. its kingdom name and its phylum name.
 - c. its genus name and its species name.
 - d. its phylum name and its species name.

- _____ 25. The more classification levels that two organisms share,
a. the closer together on Earth they live.
b. the easier it is to tell them apart.
c. the more characteristics they have in common.
d. the more distantly related they are.
- _____ 26. Which group of organisms includes only multicellular heterotrophs?
a. protists
b. bacteria
c. plants
d. animals
- _____ 27. Which domain(s) include(s) only prokaryotes?
a. Bacteria and Archaea
b. Bacteria only
c. Archaea only
d. Eukarya only
- _____ 28. Which kingdoms include both unicellular and multicellular organisms?
a. fungi and plants
b. fungi and protists
c. protists and animals
d. protists and plants
- _____ 29. What are fossils?
a. molds and casts of organisms that live today
b. drawings of ancient animals and other organisms
c. footprints or burrows of small animals that live today
d. the preserved remains or traces of organisms that lived in the past
- _____ 30. The two most important factors contributing to the diversity of species are
a. genetic diversity and different environments.
b. genetic diversity and extinction.
c. punctuated equilibria and genetic similarities.
d. diverse DNA proteins and fossils.

Modified True/False

Indicate whether the statement is true or false. If false, change the identified word or phrase to make the statement true.

- _____ 31. Gradual change in a species over time is called adaptation. _____
- _____ 32. Through natural selection, harmful variations gradually accumulate in a species.

- _____ 33. An empty space called a cast is formed when an organism buried in sediments dissolves.

- _____ 34. Fossils in lower layers of rock are usually older than fossils in higher layers.

- _____ 35. When some members of a species become isolated, they are less likely to form a new species.

- _____ 36. The more similar the DNA sequences of two species are, the more closely related the species are.

- _____ 37. If a disease were introduced into the cheetah population, it could threaten the survival of the species because they have genetic diversity. _____
- _____ 38. In the name *Acer rubrum*, the word *rubrum* designates the species. _____
- _____ 39. Each genus of organisms is divided into classes. _____
- _____ 40. Archaea and Bacteria are two domains of eukaryotes. _____

Completion

Complete each statement.

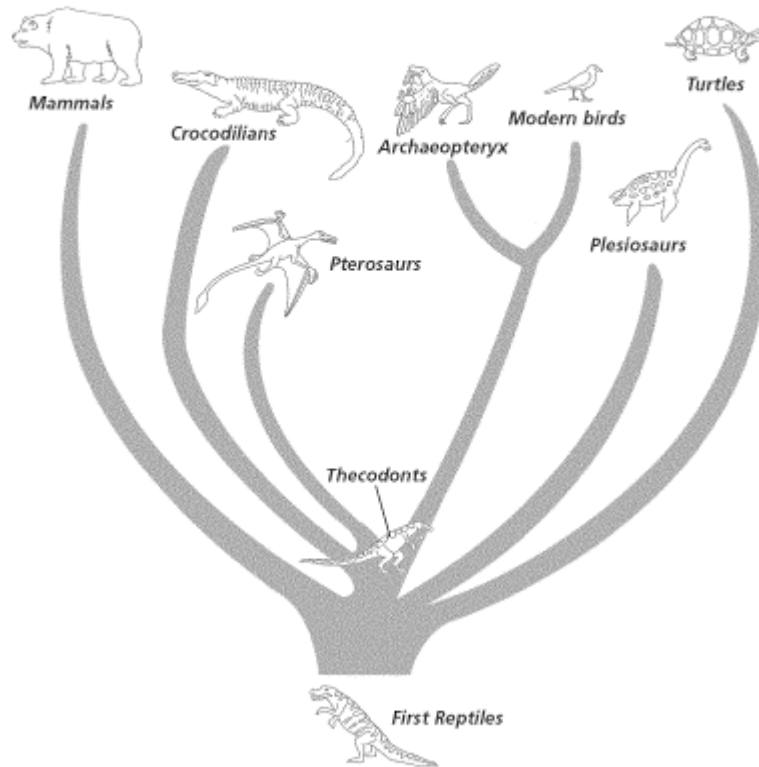
41. Organisms belonging to the same _____ can usually mate and produce fertile offspring.
42. The harmless viceroy butterfly looks like the poisonous monarch butterfly. This _____ enables the viceroy butterfly to survive.
43. A(n) _____ is a well-tested concept that explains a wide range of observations.
44. In the process of natural selection, the organisms that are best suited to their environments are most likely to survive and _____.
45. Natural selection is affected by _____, or traits that are different in members of the same species.
46. The only traits that can be acted upon by natural selection are those that are controlled by _____.
47. The forelimbs of a bird and a mammal are examples of _____ structures.
48. Similarities in the early development of chickens and opossums suggest that these animals share a common _____.
49. Most fossils are found in _____ rock.
50. When minerals replace bone, a(n) _____ fossil forms.
51. Proteins can be used to determine how closely related organisms are because amino acid sequences are determined by the _____ that makes up an organism's genes.
52. The process of grouping things based on similarities is called _____.
53. The scientific names of the puma (*Felis concolor*), house cat (*Felis domesticus*), and marbled cat (*Felis marmorata*) indicate that they all belong to the same _____.
54. _____ developed a naming system that grouped organisms on the basis of their observable features.

55. In the modern classification system used by biologists, the broadest level of organization is called a(n) _____.
56. An owl and a bat share the same kingdom and phylum; an owl and a robin share the same kingdom, phylum, and class. The owl and _____ have more characteristics in common.
57. The _____ kingdom is the only kingdom of eukaryotes that contains both autotrophs and heterotrophs and both unicellular and multicellular organisms.
58. A new _____ can form when a group of individuals become isolated from the main group.
59. Scientists show how groups of organisms may be related by placing them on a diagram called a(n) _____.
60. The theory of _____ states that species evolve quickly over a relatively short time.

Short Answer

Use the diagram to answer each question.

Branching Tree of Vertebrates



61. Did birds evolve from the gliding reptiles called pterosaurs? Explain your reasoning.
62. Are modern birds more closely related to *Archaeopteryx* or to the first reptiles?
63. Would you expect the DNA of crocodilians to be more similar to the DNA of modern birds or the DNA of turtles? Explain your reasoning.
64. Are pterosaurs more closely related to turtles or to crocodilians? Explain your answer.
65. Name the common ancestor of pterosaurs and crocodilians.
66. List two ancestors of *Archaeopteryx*.

Use the diagram to answer each question.

Table of Classification Labels

Classification Level	Aardwolf	Gray Wolf	Coyote	Lion	Blue Whale
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Kingdom	Animalia	Animalia	Animalia	Animalia	Animalia
Phylum	Chordata	Chordata	Chordata	Chordata	Chordata
Class	Mammalia	Mammalia	Mammalia	Mammalia	Mammalia
Order	Carnivora	Carnivora	Carnivora	Carnivora	Cetacea
Family	Hyaenidae	Canidae	Canidae	Felidae	Balenopteridae
Genus	<i>Proteles</i>	<i>Canis</i>	<i>Canis</i>	<i>Panthera</i>	<i>Balaenoptera</i>
Species	<i>Proteles cristatus</i>	<i>Canis lupus</i>	<i>Canis latrans</i>	<i>Panthera leo</i>	<i>Balaenoptera musculus</i>

67. What classification groups do all of the organisms in the table have in common?
68. Which of the organisms in the table is least similar to the others? Explain.
69. Which of the organisms in the table is (are) most similar to a tiger (*Panthera tigris*)? Explain.
70. In what two ways are the organisms in the table similar to organisms in the plant kingdom?
71. Based on their kingdoms, what are the shared characteristics of the organisms in the table?
72. Which two species in this table are most similar to each other?

Essay

73. A horse and a donkey can mate with each other. Their offspring, called a mule, is not fertile. Do horses and donkeys belong to the same species? Explain your answer.
74. How did studying selective breeding help Darwin develop his theory of evolution?
75. A scientist collects wild rabbits that live at sea level and moves them to the mountains. One year later, the scientist discovers that the same rabbits have larger lungs, which help them breathe the thin mountain air. The scientist returns the rabbits to sea level. Will the offspring of the rabbits have larger-than-normal lungs? Explain.
76. Explain how a group of organisms that is separated from the rest of its species can evolve different traits.
77. Species A and species B are shown on the same branch of a branching tree. Species C is shown on a separate branch. All three species came from a common ancestor. What can you state about the similarities of the DNA of species A, B, and C?
78. Use an example to explain why the common names of organisms are sometimes confusing. How can using scientific names help avoid the confusion?
79. A person tells you that two organisms belong to the same family but to different classes. Can that information be correct? Explain.
80. Suppose a species lived in an environment that changed very little over millions of years. Which theory about how fast evolution occurs would most likely explain the evolution of that species? Explain your answer.

Evolution

Answer Section

MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: L1
OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.
STA: S 7.3 BLM: knowledge
2. ANS: D PTS: 1 DIF: L1
OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.
STA: S 7.3.b BLM: knowledge
3. ANS: B PTS: 1 DIF: L2
OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.
STA: S 7.3.b BLM: comprehension
4. ANS: C PTS: 1 DIF: L1
OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.
STA: S 7.3.a BLM: knowledge
5. ANS: B PTS: 1 DIF: L1
OBJ: CaLS.7.1.2 State how Darwin explained differences between similar species.
STA: S 7.3.a BLM: knowledge
6. ANS: A PTS: 1 DIF: L2
OBJ: CaLS.7.1.2 State how Darwin explained differences between similar species.
STA: S 7.3.b BLM: comprehension
7. ANS: D PTS: 1 DIF: L1
OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.
STA: S 7.3.a BLM: knowledge
8. ANS: D PTS: 1 DIF: L1
OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.
STA: S 7.3.a BLM: knowledge
9. ANS: C PTS: 1 DIF: L3
OBJ: CaLS.7.3.4 Explain what causes the extinction of species. STA: S 7.3.a
BLM: synthesis
10. ANS: B PTS: 1 DIF: L2
OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.
STA: S 7.3.a BLM: comprehension
11. ANS: B PTS: 1 DIF: L1
OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.
STA: S 7.3.a BLM: knowledge
12. ANS: C PTS: 1 DIF: L1
OBJ: CaLS.7.2.1 State evidence that supports the theory of evolution.
STA: S 7.3.c BLM: knowledge
13. ANS: D PTS: 1 DIF: L2
OBJ: CaLS.7.2.1 State evidence that supports the theory of evolution.
STA: S 7.3.c BLM: comprehension

14. ANS: C PTS: 1 DIF: L1
OBJ: CaLS.7.2.2 Describe how fossils form. STA: S 7.4.e
BLM: knowledge
15. ANS: C PTS: 1 DIF: L1
OBJ: CaLS.7.2.2 Describe how fossils form. STA: S 7.4.e
BLM: knowledge
16. ANS: D PTS: 1 DIF: L2
OBJ: CaLS.7.2.2 Describe how fossils form. STA: S 7.4.e
BLM: application
17. ANS: C PTS: 1 DIF: L2
OBJ: CaLS.7.2.3 Explain what scientists learn from fossils. STA: S 7.4.e
BLM: comprehension
18. ANS: B PTS: 1 DIF: L2
OBJ: CaLS.7.3.2 Explain how new species form. STA: S 7.3.a
BLM: comprehension
19. ANS: A PTS: 1 DIF: L2
OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.
STA: S 7.3.d BLM: comprehension
20. ANS: B PTS: 1 DIF: L1
OBJ: CaLS.7.3.3 Explain how scientists infer evolutionary relationships among species.
STA: S 7.3.b BLM: knowledge
21. ANS: D PTS: 1 DIF: L2
OBJ: CaLS.7.3.3 Explain how scientists infer evolutionary relationships among species.
STA: S 7.3.b BLM: comprehension
22. ANS: A PTS: 1 DIF: L1
OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d
BLM: knowledge
23. ANS: B PTS: 1 DIF: L1
OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d
BLM: knowledge
24. ANS: C PTS: 1 DIF: L1
OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d
BLM: knowledge
25. ANS: C PTS: 1 DIF: L1
OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.
STA: S 7.3.d BLM: knowledge
26. ANS: D PTS: 1 DIF: L1
OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.
STA: S 7.3.d BLM: knowledge
27. ANS: A PTS: 1 DIF: L1
OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.
STA: S 7.3.d BLM: knowledge
28. ANS: B PTS: 1 DIF: L2
OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.
STA: S 7.3.d BLM: comprehension

29. ANS: D PTS: 1 DIF: L1
OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.
STA: S 7.4.e BLM: knowledge
30. ANS: A PTS: 1 DIF: L2
OBJ: CaLS.7.3.1 Identify factors that have contributed to the diversity of species.
STA: S 7.3.a BLM: comprehension

MODIFIED TRUE/FALSE

31. ANS: F, evolution
- PTS: 1 DIF: L1
OBJ: CaLS.7.1.2 State how Darwin explained differences between similar species.
STA: S 7.3.b BLM: knowledge
32. ANS: F, helpful
- PTS: 1 DIF: L2
OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.
STA: S 7.3.a BLM: comprehension
33. ANS: F, mold
- PTS: 1 DIF: L2 OBJ: CaLS.7.2.2 Describe how fossils form.
STA: S 7.3.a BLM: comprehension
34. ANS: T PTS: 1 DIF: L1
OBJ: CaLS.7.2.3 Explain what scientists learn from fossils. STA: S 7.4.e
BLM: knowledge
35. ANS: F, more
- PTS: 1 DIF: L1 OBJ: CaLS.7.3.2 Explain how new species form.
STA: S 7.3.a BLM: knowledge
36. ANS: T PTS: 1 DIF: L1
OBJ: CaLS.7.3.3 Explain how scientists infer evolutionary relationships among species.
STA: S 7.3.a BLM: knowledge
37. ANS: F, lack
- PTS: 1 DIF: L3
OBJ: CaLS.7.3.1 Identify factors that have contributed to the diversity of species.
STA: S 7.3.d BLM: application
38. ANS: T PTS: 1 DIF: L2
OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d
BLM: application
39. ANS: F, phylum
- PTS: 1 DIF: L2
OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.

- STA: S 7.3.d BLM: comprehension
40. ANS: F, prokaryotes

PTS: 1 DIF: L1
OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.
STA: S 7.3.d BLM: knowledge

COMPLETION

41. ANS: species

PTS: 1 DIF: L1
OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.
STA: S 7.3.a BLM: knowledge
42. ANS: adaptation

PTS: 1 DIF: L2
OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.
STA: S 7.3.a BLM: application
43. ANS: scientific theory

PTS: 1 DIF: L1
OBJ: CaLS.7.1.2 State how Darwin explained differences between similar species.
STA: S 7.3.b BLM: knowledge
44. ANS: reproduce

PTS: 1 DIF: L1
OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.
STA: S 7.3.a BLM: knowledge
45. ANS: variations

PTS: 1 DIF: L1
OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.
STA: S 7.3.a BLM: knowledge
46. ANS: genes

PTS: 1 DIF: L2
OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.
STA: S 7.3.a BLM: comprehension
47. ANS: homologous

PTS: 1 DIF: L2
OBJ: CaLS.7.2.1 State evidence that supports the theory of evolution.
STA: S 7.3.c BLM: comprehension
48. ANS: ancestor

- PTS: 1 DIF: L2
 OBJ: CaLS.7.2.1 State evidence that supports the theory of evolution.
 STA: S 7.3.c BLM: application
 49. ANS: sedimentary
- PTS: 1 DIF: L2 OBJ: CaLS.7.2.2 Describe how fossils form.
 STA: S 7.4.e BLM: comprehension
 50. ANS: petrified
- PTS: 1 DIF: L1 OBJ: CaLS.7.2.2 Describe how fossils form.
 STA: S 7.4.e BLM: knowledge
 51. ANS: DNA
- PTS: 1 DIF: L2
 OBJ: CaLS.7.3.3 Explain how scientists infer evolutionary relationships among species.
 STA: S 7.3.a BLM: comprehension
 52. ANS: classification
- PTS: 1 DIF: L1
 OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d
 BLM: knowledge
 53. ANS: genus
- PTS: 1 DIF: L2
 OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d
 BLM: application
 54. ANS: Linnaeus
- PTS: 1 DIF: L1
 OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d
 BLM: knowledge
 55. ANS: domain
- PTS: 1 DIF: L1
 OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.
 STA: S 7.3.d BLM: knowledge
 56. ANS: robin
- PTS: 1 DIF: L2
 OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.
 STA: S 7.3.d BLM: application
 57. ANS: protist
- PTS: 1 DIF: L2

- OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.
STA: S 7.3.d BLM: knowledge
58. ANS: species
- PTS: 1 DIF: L2 OBJ: CaLS.7.3.2 Explain how new species form.
STA: S 7.3.a BLM: comprehension
59. ANS: branching tree
- PTS: 1 DIF: L1
OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.
STA: S 7.3.d BLM: knowledge
60. ANS: punctuated equilibria
- PTS: 1 DIF: L2
OBJ: CaLS.7.2.3 Explain what scientists learn from fossils. STA: S 7.3.a
BLM: comprehension

SHORT ANSWER

61. ANS:
No, birds did not evolve from pterosaurs. Birds and pterosaurs are on different branches of the branching tree.
- PTS: 1 DIF: L2
OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.
STA: S 7.3.d BLM: analysis
62. ANS:
Modern birds are more closely related to *Archaeopteryx* than to the first reptiles.
- PTS: 1 DIF: L2
OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.
STA: S 7.3.d BLM: analysis
63. ANS:
The DNA of crocodilians should be more similar to the DNA of modern birds. The diagram indicates that the common ancestor of crocodilians and modern birds was more recent than the common ancestor of crocodilians and turtles.
- PTS: 1 DIF: L2
OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.
STA: S 7.3.d BLM: analysis
64. ANS:
Pterosaurs are more closely related to crocodilians. They share a more recent common ancestor than do pterosaurs and turtles.
- PTS: 1 DIF: L2

OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.
STA: S 7.3.d BLM: analysis

65. ANS:

Thecodonts were the common ancestor of pterosaurs and crocodilians.

PTS: 1 DIF: L2

OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.
STA: S 7.3.d BLM: analysis

66. ANS:

The ancestors were thecodonts and the first reptiles.

PTS: 1 DIF: L2

OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.
STA: S 7.3.d BLM: analysis

67. ANS:

The groups in common are kingdom, phylum, and class.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.
STA: S 7.3.d BLM: analysis

68. ANS:

The blue whale is least similar. All of the others are in the same order, but the blue whale is in a different order.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.
STA: S 7.3.d BLM: analysis

69. ANS:

The lion is most similar to a tiger, because both are members of the same genus. The gray wolf and coyote belong to different genera, the aardwolf belongs to a different family, and the whale belongs to a different order.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.
STA: S 7.3.d BLM: analysis

70. ANS:

All are multicellular and eukaryotes.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.
STA: S 7.3.d BLM: analysis

71. ANS:

All of the organisms are heterotrophs and multicellular.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.3 List characteristics used to classify organisms into domains and kingdoms.

STA: S 7.3.d BLM: analysis

72. ANS:

The coyote (*Canis latrans*) and the gray wolf (*Canis lupus*) are the most similar species in the table.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.

STA: S 7.3.d BLM: analysis

ESSAY

73. ANS:

No, horses and donkeys do not belong to the same species. Two organisms belong to the same species only if they can mate and produce fertile offspring.

PTS: 1 DIF: L2

OBJ: CaLS.7.1.1 Describe important observations Darwin made on his voyage.

STA: S 7.3.a BLM: application

74. ANS:

Darwin observed that animals with a desired characteristic could be produced by allowing only those individuals with the characteristic to mate. He thought that a process similar to selective breeding might occur in nature.

PTS: 1 DIF: L2

OBJ: CaLS.7.1.2 State how Darwin explained differences between similar species.

STA: S 7.3.b BLM: comprehension

75. ANS:

The offspring probably will not have larger lungs. Their environment, not their genes, produced the larger lungs of the rabbits kept in the mountains. Only traits that are controlled by genes can be acted upon by natural selection and passed on to offspring. (If the larger-lung trait were controlled by genes, the rabbits would have shown the trait before being moved to the mountains.)

PTS: 1 DIF: L3

OBJ: CaLS.7.1.3 Explain how natural selection leads to evolution.

STA: S 7.3.a BLM: application

76. ANS:

The organisms are not able to mate with members of the rest of the species. The longer they remain isolated, the more likely they are to evolve different traits.

PTS: 1 DIF: L2

OBJ: CaLS.7.3.2 Explain how new species form.

STA: S 7.3.a BLM: comprehension

77. ANS:

All three species have similar DNA because they came from a common ancestor. The DNA of A and B is more similar than the DNA of A and C or the DNA of B and C.

PTS: 1 DIF: L2

OBJ: CaLS.7.5.1 Explain how a branching tree diagram shows evolutionary relationships.

STA: S 7.3.d BLM: application

78. ANS:

The same organism may have different common names in different areas. For example, the same animal may be called a woodchuck, groundhog, or whistlepig. An organism has only one scientific name, though, so all scientists will use the same name for it.

PTS: 1 DIF: L3

OBJ: CaLS.7.4.1 Explain why biologists classify organisms. STA: S 7.3.d

BLM: synthesis

79. ANS:

No, that information cannot be correct. A family is a subgroup of one order, and an order is a subgroup of one class. Therefore, any two organisms that belong to the same family must also belong to the same class.

PTS: 1 DIF: L2

OBJ: CaLS.7.4.2 Relate the levels of classification to the relationships between organisms.

STA: S 7.3.d BLM: application

80. ANS:

Gradualism would most likely explain the evolution of that species. If the environment changed very little, a species that was already adapted to the environment would not feel much pressure from natural selection to evolve. Therefore, its evolution would be slow and gradual.

PTS: 1 DIF: L2

OBJ: CaLS.7.2.3 Explain what scientists learn from fossils. STA: S 7.4.e

BLM: application