

Study Island

Copyright © 2017 Edmentum - All rights reserved.

Generation Date: **04/06/2017**

Generated By: **Aron Zender**

Title: **EOC Review - Diversity & Interdependence of Life**

1. The red-cockaded woodpecker is an endangered species living in the southeastern U.S. Two of the primary factors contributing to the species' decline in numbers are...

- 1) Old pine trees required for nesting sites have been clearcut and logged by humans.
- 2) Humans have suppressed wildfires, which normally clear out other kinds of trees (hardwoods) from the understory. These hardwoods disrupt the woodpeckers' habitat and prevent new pines from growing.

How could humans manage fire as part of a multi-step plan to restore the stability of the red-cockaded woodpecker's ecosystem?

- A. Use controlled fires to clear out understory growth and help new pines grow.
 - B. Install irrigation systems to help prevent fires in the understory.
 - C. Use controlled fires to burn only the pine trees so the understory trees can grow.
 - D. Use controlled fires to clear all the old pine trees and understory growth.
-

2. What is the term that describes the size of a population that can be supported by a given ecosystem?

- A. ecosystem balance
 - B. life support balance
 - C. carrying capacity
 - D. recycling capacity
-

3. Thomas sees the rabbit shown in the image below near the edge of a forest.



Based on the chart below, what species of rabbit does Thomas most likely see?

| | Coat Color | Underbelly | Tail | Legs |
|---|---------------------------------|--------------------|-------------------------------------|-------------------------|
| Sumatran Rabbit <i>Nesolagus netscheri</i> | gray with brown stripes | white | small and bright red | small and gray |
| Riverine Rabbit <i>Bunolagus monticularis</i> | brown with black stripe on face | cream | large, woolly, and solid brown | short and brown |
| Mountain Cottontail <i>Sylvilagus nuttallii</i> | grayish brown | white | large and gray with white underside | small and reddish brown |
| Volcano Rabbit <i>Romerolagus diazi</i> | dark brown with yellow tips | dark brownish gray | almost nonexistent | small and dark brown |

- A. mountain cottontail
- B. volcano rabbit
- C. riverine rabbit
- D. Sumatran rabbit

4. Technology Enhanced Questions are not available in Word format.

5. The process by which non-biodegradable pollutants become more concentrated near the top of a food chain is called _____.

- A. biological dilution
- B. biological magnification
- C. conservation of pollutants
- D. biogenesis

6. The table below shows data for a population of fish in a pond.

| Fish | Body Color | # of fins | Scales? | Tail shape |
|------|------------|-----------|---------|------------|
| A | silver | 4 | yes | fan |
| B | pink | 4 | yes | flat |
| C | black | 4 | yes | fan |
| D | orange | 4 | yes | flat |
| E | orange | 4 | yes | fan |
| F | silver | 4 | yes | flat |

Which of the above characteristics would be most helpful in developing a classification system for the fish?

- A. body color and number of fins
 - B. presence of scales and tail shape
 - C. body color and tail shape
 - D. number of fins and presence of scales
-

7. The amount of life that can be supported in a particular ecosystem is limited by which of the following?

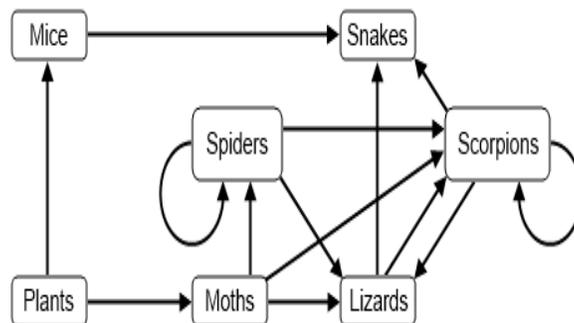
- I. energy
- II. water
- III. minerals
- IV. oxygen

- A. I and II only
 - B. I, II, III, and IV
 - C. II, III, and IV only
 - D. II and IV only
-

8. A population of meerkats increased in number over a period of one year. Which of the following could be an explanation for this?

- A. The death rate was greater than the birth rate.
 - B. The birth rate and the death rate were equal.
 - C. The rate of immigration was greater than the rate of emigration.
 - D. The rate of immigration was equal to the rate of emigration.
-

9. Examine the following desert food web.



What would happen to the flow of energy if all the plants were removed?

- A. Snakes would have to eat more lizards and scorpions.
- B. None of the organisms in the food web would survive.
- C. Scorpions would have to eat more lizards and spiders.
- D. The mice population would increase.

10. The following table presents information about four different species. Three of them are closely related.

| Name: | Raccoon | Coati | Ring-tailed lemur | Ring-tailed cat |
|------------|---|---|---|---|
| Photo: |  |  |  |  |
| Native to: | North America | South America | Madagascar | North America |
| Tail: | about half as long as the rest of the body | about as long as the rest of the body | longer than the rest of the body | longer than the rest of the body |
| Paws: | dexterous digits with claws | non-retractable claws | opposable thumbs and flat nails | semi-retractable claws |
| Ankles: | can rotate ankles by 180° | can rotate ankles by 180° | can rotate ankles less than 90° | can rotate ankles by 180° |

Which of these animals is not closely related to the other three?

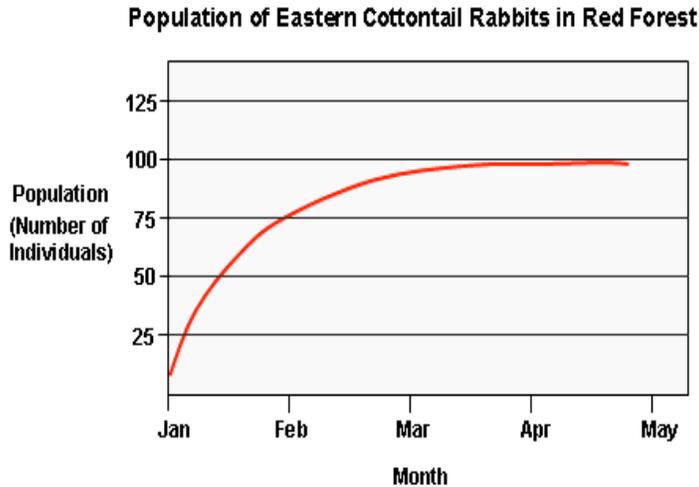
- A. the ring-tailed lemur
- B. the coati
- C. the ring-tailed cat
- D. the raccoon

11. To refine the process of evolutionary classification, many biologists now prefer a method that utilizes diagrams such as the one pictured below.

This diagram is an example of a _____.

- A. phylogenetic tree
- B. periodic property
- C. morphological tree
- D. topographical map

12. In January, a small number of eastern cottontail rabbits were introduced into Red Forest. The population curve of the rabbits is shown below.



According to the information shown in the graph, what is the carrying capacity for eastern cottontail rabbits in Red Forest?

- A. 15
- B. 125
- C. 75
- D. 100

13. Technology Enhanced Questions are not available in Word format.

14. If sunlight were suddenly limited in an ecosystem, what might result?

- A. Plants will die, but animal diversity in that ecosystem will increase.
- B. Plants and animals will flourish because the ecosystem is not so hot.
- C. Nothing will change.
- D. There will be less chemical energy available in that particular ecosystem.

15. Janice sees the flower shown in the image below in a garden.



Based on the chart below, what species of plant does Janice most likely see?

| | Flower Color | Flower Shape | Leaves |
|--|--|--|--|
| Common Daffodil <i>Narcissus pseudonarcissus</i> | yellow | six pointed petals around a trumpet-shaped center | straight, long, and narrow leaves that come from base of plant |
| Tiger Lily <i>Lilium lancifolium</i> | yellow to red with brownish purple spots | narrow petals that bend backward on an erect stem | small and pointed |
| Bokhara Tulip <i>Tulipa linifolia</i> | red | six petals that are rounded at their base and come to a point at tip | long, bent leaves that come from base of plant |
| White Trillium <i>Trillium grandiflorum</i> | white with yellow center | three petals that are pointed at tip and curve outward | large, wide leaves with pointed tips |

- A. Bokhara tulip
- B. common daffodil
- C. white trillium
- D. tiger lily

16.

Classification of Photosynthetic Organisms

| Trait | Green Algae | Angiosperm | Gymnosperm | Fern |
|-----------------------------------|-------------|------------|------------|------|
| Has true roots, stems, and leaves | No | Yes | Yes | Yes |
| Produces seeds in cones | No | No | Yes | No |
| Produces seeds in fruit | No | Yes | No | No |
| Produces spores | No | No | No | Yes |

Dr. Musgrove finds a new species of plant. The plant has true roots, stems, and leaves and reproduces by producing seeds inside cones.

Based on the table above, the new plant species most likely belongs to which of the following classification groups?

- A. green algae
 - B. fern
 - C. gymnosperm
 - D. angiosperm
-

17. The red-cockaded woodpecker is an endangered species living in the southeastern U.S. Two of the primary factors contributing to the species' decline in numbers are...

- 1) Old pine trees required for nesting sites have been clearcut and logged by humans.
- 2) Humans have suppressed wildfires, which normally clear out other kinds of trees (hardwoods) from the understory. These hardwoods disrupt the woodpeckers' habitat and prevent new pines from growing.

Which of the following would be an important part of a multi-step plan to restore the stability of the red-cockaded woodpecker's ecosystem?

- A. Encourage planting of understory hardwoods.
 - B. Prevent logging of pine trees, but encourage pine clearcutting.
 - C. Install irrigation systems to help prevent fires in the understory.
 - D. Limit further logging and clearcutting of pine trees.
-

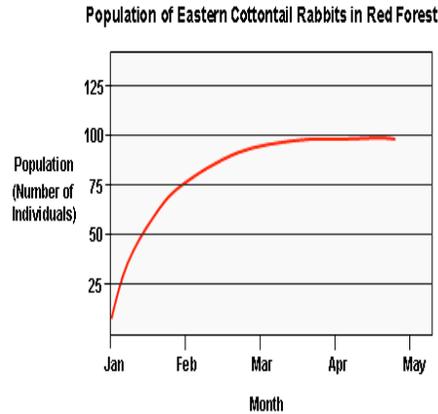
Use the dichotomous key below to answer the question.



18. What is the genus and species of the animal that belongs to the family Canidae and is not domesticated?

- A. *Canis, C. latrans*
 - B. *Felis, F. catus*
 - C. *Panthera, P. leo*
 - D. *Canis, C. lupus*
-

19. In January, a small number of eastern cottontail rabbits were introduced into Red Forest. The population curve of the rabbits is shown below.



According to the graph, the population of the rabbits increased rapidly at first, then leveled off in late March.

Which of the following is the most likely explanation for why the population of eastern cottontail rabbits did not continue to increase rapidly?

- A. Increased rainfall in the spring caused fresh water supplies in Red Forest to become more plentiful.
- B. As the population of eastern cottontail rabbits in Red Forest increased, food resources became scarce.
- C. The number of predators of eastern cottontail rabbits decreased.
- D. Eastern cottontail rabbits in a distant forest ecosystem experienced severe disease.

- | | |
|--|-----------------------------|
| 1. Radial symmetry or asymmetry | go to number 2 |
| Bilateral symmetry | go to number 4 |
| 2. Very porous surface | Phylum <i>Porifera</i> |
| Nonporous surface | go to number 3 |
| 3. Has tube feet | Phylum <i>Echinodermata</i> |
| Has tentacles | Phylum <i>Cnidaria</i> |
| 4. Individuals are smaller than 0.5 mm | Phylum <i>Ectoprocta</i> |
| Individuals are bigger than 0.5 mm | go to number 5 |
| 5. Gelatinous | go to number 6 |
| Nongelatinous | go to number 7 |
| 6. Has comb plates | Phylum <i>Ctenophora</i> |
| Has siphons | Phylum <i>Chordata</i> |

- | | |
|--|-------------------------------|
| 7. Segmented | go to number 8 |
| Not segmented | go to number 9 |
| 8. Has an exoskeleton and jointed appendages | Phylum <i>Arthropoda</i> |
| No exoskeleton or jointed appendages | Phylum <i>Annelida</i> |
| 9. Has a foot, radula, arms and/or shell | Phylum <i>Mollusca</i> |
| Does not have a foot, radula, arms or shell | Phylum <i>Platyhelminthes</i> |

20. Marissa is walking along the beach and finds an unknown organism on the shore. It has no symmetry, a nonporous surface, and tentacles. In which phylum can the organism be classified?

- A. *Ctenophora*
 - B. *Ectoprocta*
 - C. *Cnidaria*
 - D. *Arthropoda*
-

21. The flow chart below indicates the hierarchical levels of the Linnaean classification system.

Kingdom → Phylum → Class → Order → Family → Genus → Species

Which of the following organisms most likely share the most structural characteristics?

- A. Two organisms that are classified within the same Class, but different Orders.
 - B. Two organisms that are classified within the same Phylum, but different Classes.
 - C. Two organisms that are classified within the same Genus, but different Species.
 - D. Two organisms that are classified within the same Kingdom, but different Phyla.
-

22. White-tailed deer are considered to be an overpopulated species in the central United States. Which of these events probably contributed the most to white-tailed deer exceeding their carrying capacity?

- A. a large increase in available grassland
- B. a decrease in natural predation of white-tailed deer
- C. the occurrence of a genetic mutation that prevented breeding

- D. the water supply in the habitat remained steady
-

23.

Classification of Photosynthetic Organisms

| Trait | Green Algae | Angiosperm | Gymnosperm | Fern |
|-----------------------------------|-------------|------------|------------|------|
| Has true roots, stems, and leaves | No | Yes | Yes | Yes |
| Produces seeds in cones | No | No | Yes | No |
| Produces seeds in fruit | No | Yes | No | No |
| Produces spores | No | No | No | Yes |

Dr. Musgrove finds a new species of plant. The plant has true roots, stems, and leaves and reproduces by producing spores.

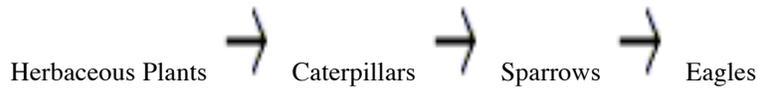
Based on the table above, the new plant species most likely belongs to which of the following classification groups?

- A. gymnosperm
- B. green algae
- C. angiosperm
- D. fern
-

24. A biologist studying alpine wildflowers notices that two populations of similar species are able to occupy the same niches. However, species A is mostly found at lower altitudes, while species B is mostly found at higher altitudes. What has most likely caused the realized niches of these two wildflower populations to be smaller than their fundamental niches?

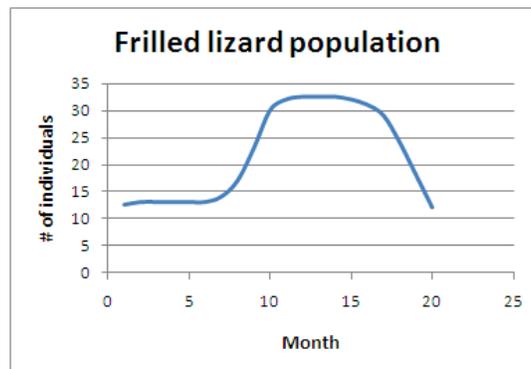
- A. Species A is capable of growing faster than species B.
- B. The species are involved in a mutualistic relationship.
- C. Competition has restricted the ranges of both species.
- D. Species B requires fewer resources than species A.
-

25. In the following food chain, what would happen if insecticides were applied to the ecosystem, killing all the caterpillars?



- A. The sparrows and eagles may become overpopulated.
- B. The sparrows may starve if they cannot find another food source, causing the subsequent possible starvation of the eagles.
- C. The sparrows will be forced to feed on the herbaceous plants rather than the caterpillars, leaving the sparrows more vulnerable to the eagles.
- D. The herbaceous plants may become underpopulated.

26. The graph below shows the population data for frilled lizards in an ecosystem.



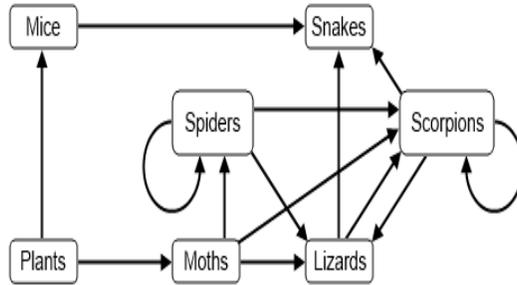
A dingo is a type of wild dog that feeds on frilled lizards. Which segment of the above population curve shows dingoes feeding on the frilled lizards least actively?

- A. months 10 to 15
- B. months 7 to 10
- C. months 1 to 5
- D. months 15 to 20

27. Marissa is walking along the beach and finds an unknown organism on the shore. It has bilateral symmetry, a nongelatinous, nonsegmented body that is bigger than 0.5 mm, and a shell. In which phylum can the organism be classified?

- A. *Porifera*
- B. *Mollusca*
- C. *Cnidaria*
- D. *Chordata*

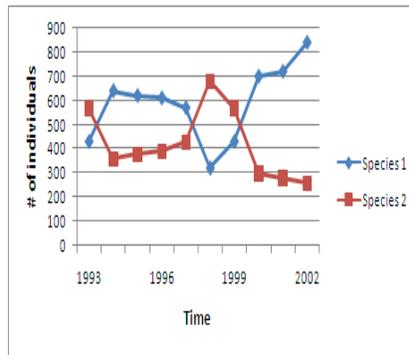
28. Examine the following desert food web.



What would happen to the flow of energy if all the mice were removed?

- A. Scorpions would have to eat more lizards and spiders.
 - B. None of the organisms in the food web would survive.
 - C. There would be less moths available for spiders to eat.
 - D. Snakes would have to eat more lizards and scorpions.
-

29. The graph below shows population data for two species.



What can be said about the relationship between species 1 and species 2?

- A. The populations of species 1 and species 2 stay the same over the time period shown.
 - B. When the population of species 1 increases, the population of species 2 decreases.
 - C. The population of species 1 is not influenced by the population of species 2.
 - D. When the population of species 1 increases, the population of species 2 increases.
-

30. Janice sees the flower shown in the image below in a garden.



Based on the chart below, what species of plant does Janice most likely see?

| | Flower Color | Flower Shape | Leaves |
|--|--|--|--|
| Common Daffodil <i>Narcissus pseudonarcissus</i> | yellow | six pointed petals around a trumpet-shaped center | straight, long, and narrow leaves that come from base of plant |
| Tiger Lily <i>Lilium lancifolium</i> | yellow to red with brownish purple spots | narrow petals that bend backward on an erect stem | small and pointed |
| Bokhara Tulip <i>Tulipa linifolia</i> | red | six petals that are rounded at their base and come to a point at tip | long, bent leaves that come from base of plant |
| White Trillium <i>Trillium grandiflorum</i> | white with yellow center | three petals that are pointed at tip and curve outward | large, wide leaves with pointed tips |

- A. common daffodil
 - B. white trillium
 - C. Bokhara tulip
 - D. tiger lily
-

31. Scientists use a standardized taxonomic system to separate organisms into hierarchical groups based on similarities and differences in their structural and genetic characteristics.

Which of the following best explains why a standardized classification system is important to the scientific community?

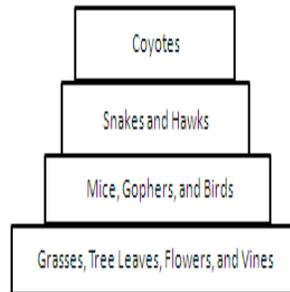
- A. It prevents people who are not scientists from studying and identifying organisms.
 - B. It provides a detailed evolutionary history of all the known organisms on Earth.
 - C. It allows scientists to group organisms based on their personal preference.
 - D. It allows different kinds of organisms to be easily identified based on their characteristics.
-

32. Many types of sea stars eat mussels and other shellfish. Suppose an oil spill causes thousands of mussels in an area to die. How will this most likely affect the area's sea star population?

- A. The sea star population will decrease in size.
- B. The sea star population will increase in size.
- C. The sea star population will not be affected.

- D. The sea star population will adapt to feed on algae and other microorganisms.
-

33. A non-biodegradable pollutant is present in the food chain below.



Which type of organism will have the highest concentration of the pollutant as a result of biological magnification?

- A. coyotes
 B. tree leaves
 C. snakes
 D. mice
-

34. In 1982, there were only 23 California condors left in the wild. As a conservation effort, several organizations worked together to breed condors at a local zoo.

Many techniques were utilized to increase the California condor population. For example, workers removed eggs from condor nests in order to encourage females to lay replacement eggs. These eggs were then placed in incubators, hatched, and raised at the zoo using adult look-alike puppets.

In the early 1990's, the condors raised by conservationists were reintroduced in the wild in California. As of February 2010, there were 184 California condors in the wild.

The reintroduction of California condors is an example of a successful population increase of an endangered species through _____.

- A. genetic engineering
 B. captive breeding
 C. natural selection
 D. asexual reproduction
-

35. Janice sees the flower shown in the image below in a garden.



Based on the chart below, what species of plant does Janice most likely see?

| | Flower Color | Flower Shape | Leaves |
|--|--|--|--|
| Common Daffodil <i>Narcissus pseudonarcissus</i> | yellow | six pointed petals around a trumpet-shaped center | straight, long, and narrow leaves that come from base of plant |
| Tiger Lily <i>Lilium lancifolium</i> | yellow to red with brownish purple spots | narrow petals that bend backward on an erect stem | small and pointed |
| Bokhara Tulip <i>Tulipa linifolia</i> | red | six petals that are rounded at their base and come to a point at tip | long, bent leaves that come from base of plant |
| White Trillium <i>Trillium grandiflorum</i> | white with yellow center | three petals that are pointed at tip and curve outward | large, wide leaves with pointed tips |

- A. tiger lily
- B. common daffodil
- C. Bokhara tulip
- D. white trillium

36. Technology Enhanced Questions are not available in Word format.

37. The flow chart below indicates the hierarchical levels of the Linnaean classification system.

Kingdom → Phylum → Class → Order → Family → Genus → Species

Organism A, Organism B, and Organism C are all classified within the Phylum Chordata. Organism A and Organism B can be further classified into Class Mammalia. Organism C, on the other hand, can be further classified into Class Aves.

Which of the following is most likely true about the organisms discussed in the paragraph above?

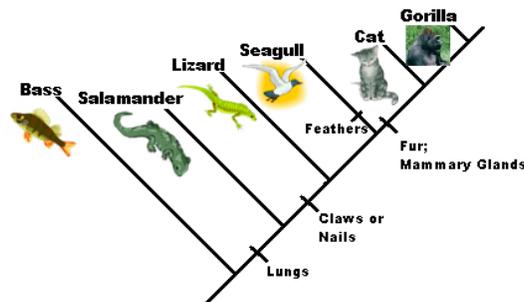
- A. Organism A and Organism B share more structural characteristics with one another than they do with Organism C.
- B. Organism B and Organism C share more behavioral characteristics with one another than they do with Organism A.

with Organism A.

C. Organism A, Organism B, and Organism C all have the exact same structural and behavioral characteristics.

D. Organism A, Organism B, and Organism C do not share any structural characteristics with one another.

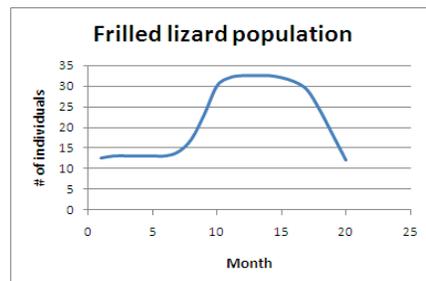
38. Cladistic diagrams, or cladograms, can be used to show evolutionary relationships. An example of a cladistic diagram appears below.



According to the diagram, which of the following animals is most closely related to the lizard?

- A. gorilla
- B. cat
- C. bass
- D. salamander

39. The graph below shows the population data for frilled lizards in an ecosystem.



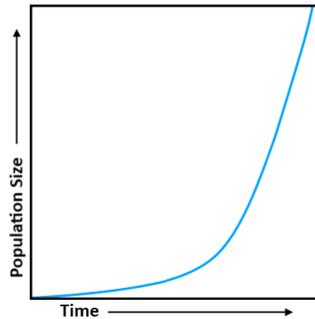
A dingo is a type of wild dog that feeds on frilled lizards. Which segment of the above population curve shows dingoes feeding on the frilled lizards most actively?

- A. months 1 to 5
- B. months 10 to 15
- C. months 7 to 10

D. months 15 to 20

40.

The graph below shows a population of yeast cells (*Candida albicans*) over time.



Based on the information presented in the graph, which statement about this population is most likely true?

- A. The death rate of the yeast cell population is decreasing over time.
 - B. Reproduction of the yeast cells is affected by limited resources.
 - C. The yeast cell population has reached a steady state condition.
 - D. The yeast cells are able to reproduce without constraints.
-

Use the following key to answer the question.

| | | |
|-----|----------------------------------|---|
| #1. | Larger than 1.5 inches | go to #2 |
| | Smaller than 1.5 inches | go to #3 |
| #2. | Larger than 6 inches | Cane Toad (<i>Bufo marinus</i>) |
| | Smaller than 6 inches | go to #3 |
| #3. | Skin is smooth | Green Tree Frog (<i>Litoria caerulea</i>) |
| | Skin has warts | go to #4 |
| #4. | Triangle between the eyes | Northern Cricket Frog (<i>Acris crepitans</i>) |
| | No triangular mark on head | go to #5 |
| #5. | Stripe on back from head to tail | Western Toad (<i>Bufo boreas</i>) |
| | X-shaped mark on back | Spring Peeper (<i>Pseudacris crucifer</i>) |

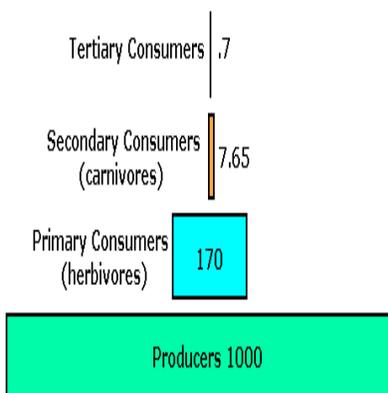
41.



The frog pictured above is larger than 1.5 inches and smaller than 6 inches. Use this information, along with the dichotomous key shown and your own observations from the picture, to determine the frog's species name.

- A. *Bufo boreas*
 - B. *Acris crepitans*
 - C. *Bufo marinus*
 - D. *Litoria caerulea*
-

42. The energy pyramid below shows a possible amount of energy, in kilocalories, available in the organisms at each trophic level in an ecosystem.



According to the law of conservation of energy, energy can neither be created nor destroyed. If this is true, why is there less energy in the top of the energy pyramid than there is in the bottom of the energy pyramid?

- A. The law of conservation of energy does not apply to ecosystems.
- B. The extra energy in the bottom is slower to reach the top.
- C. Organisms in the top of the energy pyramid use up energy the fastest.
- D. Energy is lost between each trophic level as heat.

43. Every member of a particular rodent species is found within a population living in a forest ecosystem. These rodents eat a variety of plants and live in hardwood trees. Their population growth is limited by the amount of space they have available.

Human construction in the area is steadily reducing the habitat of the rodent species. Which of the following will most likely occur if the species' habitat continues to be destroyed?

- A. The species will experience population growth.
 - B. The limiting factor of the population will change.
 - C. The population will use less resources and stay the same size.
 - D. The species will eventually become extinct.
-

44.

The following data table summarizes the number of differences in amino acid sequences found for four different species.

**Amino Acid Dissimilarities
for Beta Hemoglobin Protein**

| | A | B | C | D |
|---|---|---|---|---|
| A | | 8 | 3 | 5 |
| B | | | 0 | 1 |
| C | | | | 5 |
| D | | | | |

Based on the data table, which two species are most closely related?

- A. species B and species C
 - B. species B and species D
 - C. species C and species D
 - D. species A and species B
-

45. The growth rate of a population is the amount by which a population's size changes in a given time. Suppose the immigration rate and death rate in the population are equal, but the emigration rate exceeds the birth rate. Which of the following descriptions would fit this population's growth rate?

- A. The growth rate would be a negative number.
- B. The growth rate would be exponential.
- C. The growth rate would equal zero.

- D. The growth rate would be a positive number.
-

46. Populations of typical prey animals, such as deer, might exceed the carrying capacity of an ecosystem if top predators, such as mountain lions, are removed.

Without the mountain lions, increased numbers of deer may reduce the food supply available to other herbivores, such as field mice and crickets. As a result, populations of mice and crickets might decline, causing a similar decline in species that feed on these organisms.

This example implies that properly functioning predator/prey relationships

- A. harm all of the organisms in an ecosystem.
- B. result in food shortage for the entire ecosystem.
- C. maintain balance within an ecosystem.
- D. can throw an ecosystem out of balance.
-

47. The diagram below shows a food chain.

Grass → Rabbit → Weasel → Fox → Fungi

Which population would most likely increase if the weasel was removed from the food chain?

- A. fox
- B. fungi
- C. rabbit
- D. grass
-

48. The images below display two phylogenetic trees of humans. The first figure is based on anatomical similarities and early fossil evidence. The second is based on molecular analysis of albumin proteins and further investigation of morphology.

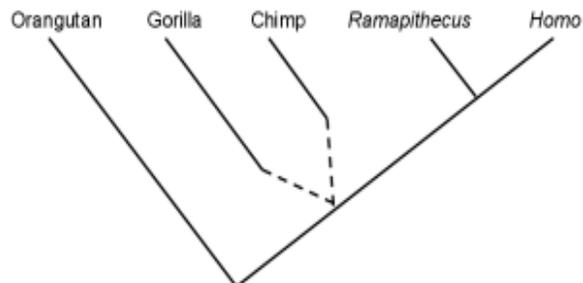


Figure 1. Phylogeny based on morphology and early paleontological evidence.

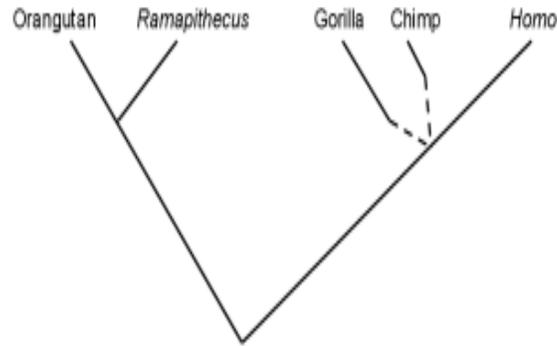


Figure 2. Phylogeny based on molecular analysis.

Ramapithecus, now considered part of the *Sivapithecus* genus, is an extinct primate.

How does the phylogeny based on molecular analysis compare to the original phylogeny based on anatomical similarities?

- A. Molecular analysis supports much of the original phylogeny and helps to clarify certain relationships.
- B. There is no correlation between phylogenies based on anatomical similarities and those based on molecular evidence.
- C. The phylogeny based on anatomical similarities is far more reliable than the one based on molecular analysis.
- D. Phylogenies based entirely on molecular analysis are far more reliable and should replace morphological analysis.

49. Technology Enhanced Questions are not available in Word format.

50. Technology Enhanced Questions are not available in Word format.

51. Technology Enhanced Questions are not available in Word format.

52. How long can a healthy ecosystem remain stable?

- A. hundreds or thousands of years

- B. about fifty years
 - C. five to ten years
 - D. one year
-

53. Fur seals and sea lions have similar body shapes and features. Based on their anatomy, they seem to have a relatively recent common evolutionary ancestor.

What further evidence would best substantiate that the two animals have a recent common ancestor?

- A. The animals have very similar sequences in their DNA.
 - B. Both animals live in the Pacific Ocean.
 - C. Ten million year old fossils are found of both animals.
 - D. The animals are members of different taxonomic kingdoms.
-

54. The main predators of field mice in a certain ecosystem are rattlesnakes and foxes. Suppose humans begin building neighborhoods in the ecosystem, driving out many of the indigenous rattlesnakes and foxes. What will most likely happen to the field mice's population?

- A. The population will increase in size.
 - B. The population will not be affected by the change.
 - C. The population will decrease in size.
 - D. The population will occupy an entirely new niche.
-

55. Technology Enhanced Questions are not available in Word format.

56. Technology Enhanced Questions are not available in Word format.

57. How do ecosystems respond to natural disasters such as fires and floods?

- A. They are transformed into ecosystems with all new organisms.
 - B. They become wastelands where nothing can live.
 - C. They return to their pre-disaster state within one or two years.
 - D. They recover in stages, gradually returning to the original system.
-

58. Each of the four mammals shown below lives in the ocean. Only two of them are closely related.



Manatee:

Swims using two front flippers and its tail. Cannot leave the water and travel on land.

Breathes air using nostrils on the snout.



California Sea Lion:

Swims using four flippers. Can use all four flippers to walk on land.

Breathes air using nostrils on the snout.



Pacific White-Sided Dolphin:

Swims using two front flippers and its tail. Cannot leave the water and travel on land.

Breathes air using a blowhole on top of the head.



Pygmy Sperm Whale:

Swims using two front flippers and its tail. Cannot leave the water and travel on land.

Breathes air using a blowhole on top of the head.

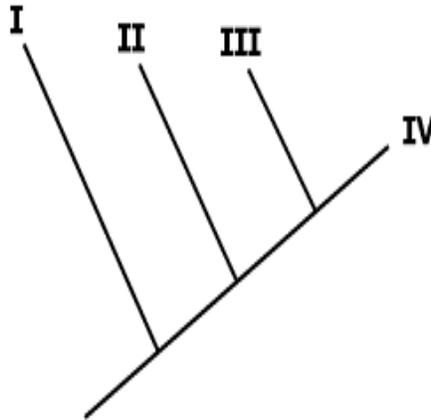
Which of the above mammals are the most closely related to each other?

- A. the dolphin and the whale
- B. the dolphin and the manatee
- C. the manatee and the whale
- D. the manatee and the sea lion

59. Technology Enhanced Questions are not available in Word format.

60. A cladogram is a diagram that shows the evolutionary history of a species. Each fork on the diagram represents the divergence of two species from a common ancestor. The fewer forks that separate any two species, the more closely related the species are.

The cladogram below shows the evolutionary history of four different species. Time progresses from the bottom of the cladogram to the top. This means that the fork closest to the bottom represents the earliest divergence of two species. The fork closest to the top represents the most recent divergence.



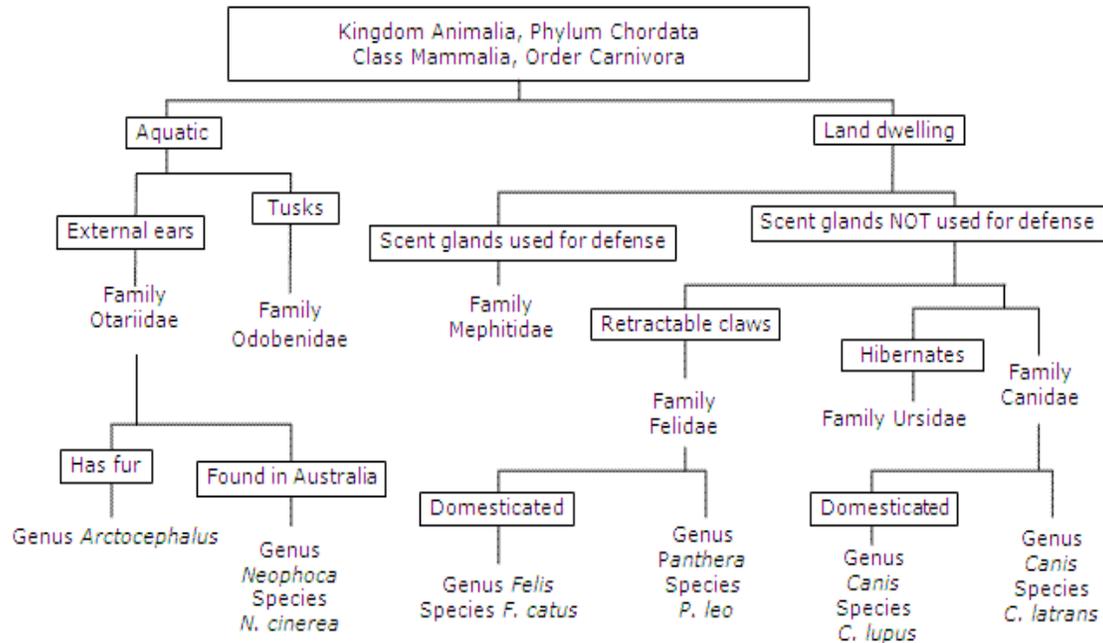
Based on the diagram above, which two species most likely share the most genetic similarities?

- A. species I and species IV
 - B. species III and species IV
 - C. species II and species IV
 - D. species I and species III
-

61. Recently, a Florida biologist discovered a sea slug that exhibits both plant and animal traits. Through which process will the sea slug be grouped with similar organisms?

- A. evolution
 - B. speciation
 - C. classification
 - D. natural selection
-

Use the dichotomous key below to answer the question.



62. What is the genus and species of the animal that has retractable claws and is domesticated?

- A. *Panthera, P. leo*
- B. *Neophoca, N. cinerea*
- C. *Canis, C. lupus*
- D. *Felis, F. catus*

Use the following key to answer the question.

| | | |
|-----|----------------------------------|---|
| #1. | Larger than 1.5 inches | go to #2 |
| | Smaller than 1.5 inches | go to #3 |
| #2. | Larger than 6 inches | Cane Toad (<i>Bufo marinus</i>) |
| | Smaller than 6 inches | go to #3 |
| #3. | Skin is smooth | Green Tree Frog (<i>Litoria caerulea</i>) |
| | Skin has warts | go to #4 |
| #4. | Triangle between the eyes | Northern Cricket Frog (<i>Acris crepitans</i>) |
| | No triangular mark on head | go to #5 |
| #5. | Stripe on back from head to tail | Western Toad (<i>Bufo boreas</i>) |

X-shaped mark on back

Spring Peeper
(*Pseudacris crucifer*)

63. Which of the following statements would best describe *Pseudacris crucifer*?

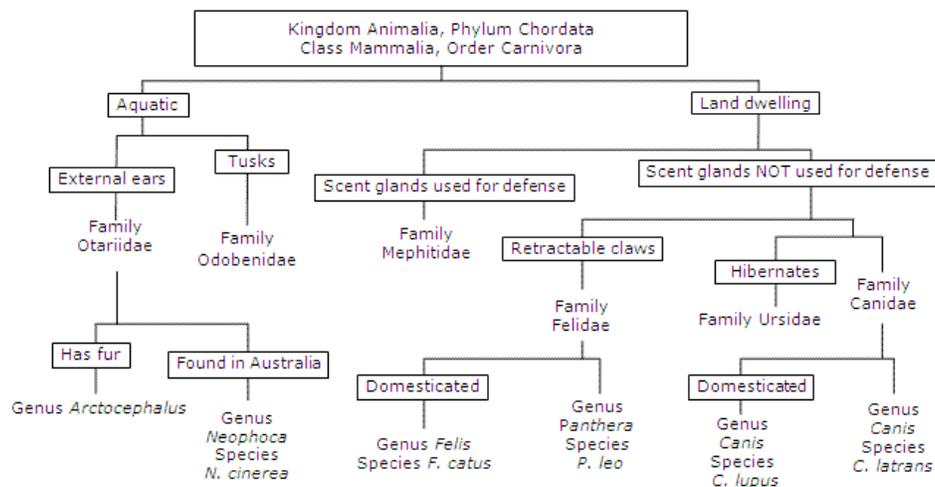
- A. smaller than 1.5 inches, warts, triangle between the eyes, stripe on back from head to tail
- B. larger than 1.5 inches, smaller than 6 inches, smooth skin, triangle between the eyes
- C. larger than 1.5 inches, smaller than 6 inches, warts, no triangular mark on head, X-shaped mark on back
- D. larger than 1.5 inches, larger than 6 inches, warts, X-shaped mark on back

64. What does it mean to say that two different species of organisms are closely related?

- A. They live in the same habitat.
- B. They have a common evolutionary ancestor.
- C. They have the same preferences in diet.
- D. They have the same parents.

65. Technology Enhanced Questions are not available in Word format.

Use the dichotomous key below to answer the question.



66. What is the family of the animal that is land-dwelling and uses scent glands for defense?

- A. *Odobeniadae*
 - B. *Ursidae*
 - C. *Mephitiadae*
 - D. *Otariidae*
-

67. Technology Enhanced Questions are not available in Word format.

68.

Classification of Photosynthetic Organisms

| Trait | Green Algae | Angiosperm | Gymnosperm | Fern |
|-----------------------------------|-------------|------------|------------|------|
| Has true roots, stems, and leaves | No | Yes | Yes | Yes |
| Produces seeds in cones | No | No | Yes | No |
| Produces seeds in fruit | No | Yes | No | No |
| Produces spores | No | No | No | Yes |

Dr. Musgrove finds a new species of plant. The plant has true roots, stems, and leaves and reproduces by producing seeds inside fruit.

Based on the table above, the new plant species most likely belongs to which of the following classification groups?

- A. gymnosperm
 - B. green algae
 - C. fern
 - D. angiosperm
-

69. Theoretically, living organisms are capable of producing populations of infinite size. However, this never occurs because population sizes are limited by _____.

- A. environmental conditions
- B. the availability of resources
- C. organism interactions and behaviors
- D. all of these

70. What is the family of the animal that is aquatic and has tusks?

- A. *Mephitidae*
 - B. *Felidae*
 - C. *Odobeniidae*
 - D. *Ursidae*
-

71. Technology Enhanced Questions are not available in Word format.

72. Which type of pollutant is more concentrated near the top of a food chain?

- A. thermal pollutants
 - B. biodegradable pollutants
 - C. nutrient pollutants
 - D. non-biodegradable pollutants
-

73. In order to identify various species, scientists give organisms two-word names. The first word refers to the organism's genus while the second word refers to the organism's species.

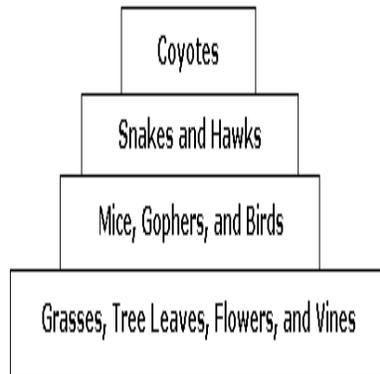
For example, the entire dog species is known as *Canis lupus*. What is the name for this system of identification?

- A. naming species
 - B. taxonomical organization
 - C. binomial nomenclature
 - D. classification hierarchy
-

74. A particular environment has plenty of water, oxygen, and minerals, but it cannot recycle organic waste and dead organisms. What will happen to the organisms in this environment over time?

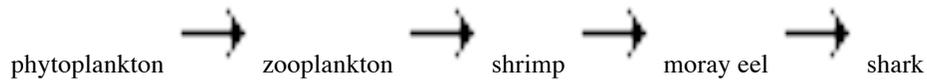
- A. A large number of organisms will be maintained by the environment.
 - B. No form of life will be supported by the environment.
 - C. A decreasing number of organisms will be supported by the environment.
 - D. An increasing number of organisms will be supported by the environment.
-

75. Examine the food pyramid below. What would be the consequences of placing a large amount of rodent poison in this ecosystem?

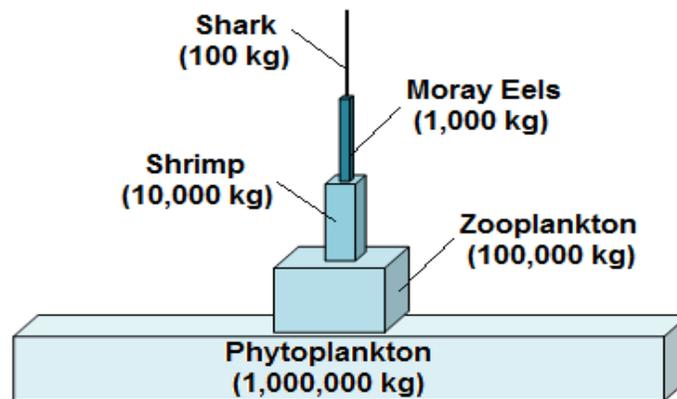


- A. The animals in the third level would all starve.
- B. The animals in the second level would all be killed.
- C. There would be no affect on this ecosystem.
- D. The top two levels of the pyramid would shrink.

76. There are many ways in which energy can flow through an aquatic ecosystem. One way is as follows:



This flow of energy can also be represented by a biomass pyramid.



How is each trophic level of the biomass pyramid related to the adjacent trophic levels?

- A. Each trophic level contains one-tenth as much biomass as the level below it and ten times as much biomass as the level above it.
- B. As the trophic levels progress from phytoplankton to sharks, there is a decrease in the amount of

biomass but an increase in the amount of available energy.

- C. biomass as the level above it.

- D. of individual organisms and the biomass.
-

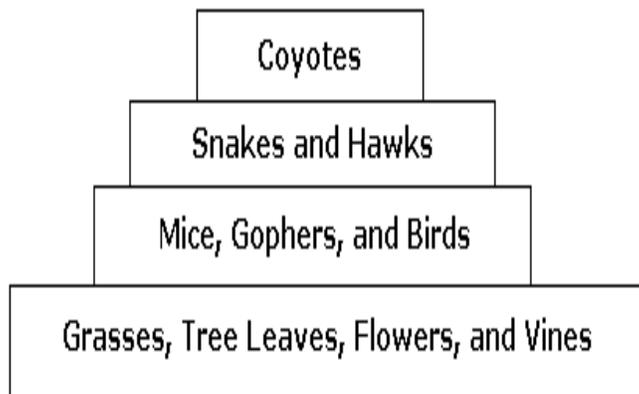
77. The growth rate of a population is the amount by which a population's size changes in a given time. In which of the following ways are immigration and birth rate similar in regards to a population's growth rate?

- A. Both immigration and births subtract individuals from a population.
- B. Neither immigration nor births occur if a population has limiting factors.
- C. Both immigration and births add individuals to a population.
- D. Neither immigration nor births occur when a population has reached its carrying capacity.
-

78. In the 1700s, Swedish biologist Carl Linnaeus developed a system of classifying organisms in which every organism was given a scientific name that consisted of its species name and genus name. How did Linnaeus's work help future scientists?

- A. It encouraged scientists to publish their results in journals so that other scientists could learn from their work.
- B. It allowed scientists to clearly communicate with each other about different organisms.
- C. It provided scientists with a system in which they could use an organism's genetic code in order to classify it.
- D. It caused scientists to rethink their previous classifications of organisms in the kingdom Fungi.
-

79. Examine the energy pyramid below. How does the first level affect the carrying capacity of the ecosystem?



- A. The number of producers in a community does not have any affect on carrying capacity.
- B. The more producers that are present in the first level, the lower the carrying capacity is for the subsequent levels.
- C. The amount of energy in the first level determines how many animals can be supported on the subsequent levels.
- D. The number of producers in an ecosystem is equal to the carrying capacity of consumers.
-

80. Technology Enhanced Questions are not available in Word format.

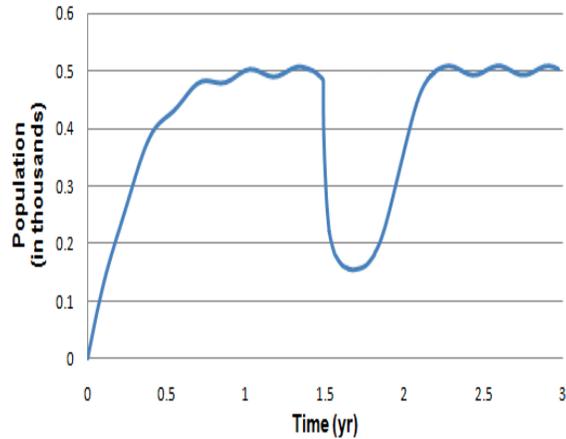
81. When animals share many classification designations, the animals have a high degree of relatedness. Which species are the most closely related according to the dichotomous key shown above?

- A. *C. lupus* and *C. latrans*
- B. *C. latrans* and *N. cinerea*
- C. *N. cinerea* and *P. leo*
- D. *F. catus* and *C. lupus*
-

82. Scientists often use cellular evidence in order to classify or group organisms. Which of the following is the best way to distinguish very simple organisms, such as bacteria, from more complex organisms, such as protists, plants, and animals?

- A. by mode of nutrition, such as autotrophic versus heterotrophic
- B. by cell type, such as prokaryotic versus eukaryotic
- C. by cell number, such as unicellular versus multicellular
- D. by type of cellular reproduction, such as mitosis versus meiosis
-

83. The graph below shows the number of wild mice living in a grassland ecosystem over a period of three years.



What is the most likely explanation for the change in population that occurred at 1.5 years?

- A. Food sources suddenly became more scarce.
- B. A severe hurricane passed through the area.
- C. A prolonged drought killed much of the grass.
- D. A new predator species moved into the area.

84. Technology Enhanced Questions are not available in Word format.

85. There are three kinds of mammals. Mammals that lay eggs are called *monotremes*. Mammals who do not lay eggs but carry their young in a pouch after they are born are called *marsupials*. Mammals who neither lay eggs nor carry their young in pouches after birth are called *placental* mammals. Placental mammals are more closely related to each other than they are to monotremes or marsupials.

| | | |
|---|----------------|------------------------------------|
|  | Name: | Armadillo |
| | Native to: | America |
| | armor: | made of bone |
| | reproduces by: | giving live birth (placental) |
| | eats: | insects with a long, sticky tongue |

The following table presents information about some other animals. Only one of them is closely related to the Armadillo.

| Name: | Numbat | Echidna | Anteater | Box Turtle |
|------------|---|---|--|---|
| Photo: |  |  |  |  |
| Native to: | Australia | Australia | America | America |
| Armor: | none | spines made of the same | none | made of bone |

| | | | | |
|-----------------------|---------------------------------------|------------------------------------|------------------------------------|---|
| | | material as human fingernails | | |
| Reproduces by: | carrying young in a pouch (marsupial) | laying eggs (monotreme) | giving live birth (placental) | laying eggs |
| Eats: | insects with a long, sticky tongue | insects with a long, sticky tongue | insects with a long, sticky tongue | plants and some insects with its sharp beak |

Which of these animals is most closely related to the armadillo?

- A. echidna
 - B. anteater
 - C. box tortoise
 - D. numbat
-

86. Which of the following statements is true of all organisms in every environment?

- A. They are able to produce their own food.
 - B. They avoid interaction as much as possible.
 - C. They must compete for essential resources.
 - D. They must consume other organisms for energy.
-

87. Technology Enhanced Questions are not available in Word format.

88. Technology Enhanced Questions are not available in Word format.

Use the following key to answer the question.

| | | |
|-----|---------------------------|--|
| #1. | Larger than 1.5 inches | go to #2 |
| | Smaller than 1.5 inches | go to #3 |
| #2. | Larger than 6 inches | Cane Toad (<i>Bufo marinus</i>) |
| | Smaller than 6 inches | go to #3 |
| #3. | Skin is smooth | Green Tree Frog (<i>Litoria caerulea</i>) |
| | Skin has warts | go to #4 |
| #4. | Triangle between the eyes | Northern Cricket Frog |

| | | |
|-----|----------------------------------|---|
| | | (<i>Acris crepitans</i>) |
| | No triangular mark on head | go to #5 |
| #5. | Stripe on back from head to tail | Western Toad (<i>Bufo boreas</i>) |
| | X-shaped mark on back | Spring Peeper (<i>Pseudacris crucifer</i>) |

89. What is the species name of a frog that is between 1.5 and 6 inches long, has warts on its skin, and has a triangular mark between its eyes?

- A. *Litoria caerulea*
 - B. *Bufo boreas*
 - C. *Acris crepitans*
 - D. *Pseudacris crucifer*
-

90. Every member of a particular species is found within a certain population living in a desert. The growth of this population is limited by the availability of water in the ecosystem. The population has many food sources available to it.

This species might become extinct if

- A. a new food source was introduced to the ecosystem.
 - B. a disease eliminated one of the population's food sources.
 - C. a long drought caused water to become scarce.
 - D. food became the limiting factor for the population.
-

91. Technology Enhanced Questions are not available in Word format.

Answers

1. A
2. C
3. A
4. --
5. B
6. C
7. B
8. C
9. B
10. A

11. A
12. D
13. --
14. D
15. A
16. C
17. D
18. A
19. B
20. C
21. C
22. B
23. D
24. C
25. B
26. B
27. B
28. D
29. B
30. B
31. D
32. A
33. A
34. B
35. B
36. --
37. A
38. D
39. D
40. D
41. A
42. D
43. D
44. A
45. A
46. C
47. C
48. A
49. --
50. --
51. --
52. A
53. A
54. A
55. --
56. --
57. D
58. A
59. --
60. B
61. C
62. D
63. C
64. B
65. --
66. C

67. --
68. D
69. D
70. C
71. --
72. D
73. C
74. C
75. D
76. A
77. C
78. B
79. C
80. --
81. A
82. B
83. B
84. --
85. B
86. C
87. --
88. --
89. C
90. C
91. --