

Ecology Practice Test (27%)

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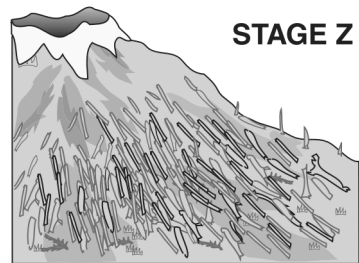
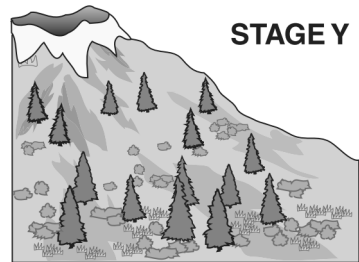
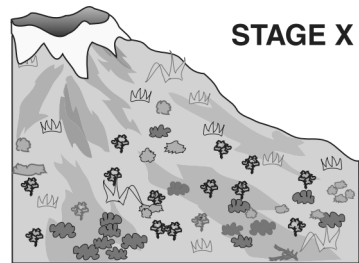
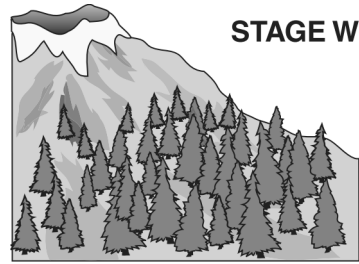
1. Which of the following *best* describes the use of population models in biology?

- A. They are generally easy to construct.
- B. They can represent reality precisely.
- C. They are used when no observations have been made.
- D. They can help predict outcomes.

2. After a volcanic eruption has covered an area with lava, which of the following is the *most* likely order of succession in the repopulation of the area?

- A. lichens → grasses → shrubs → trees
- B. mosses → grasses → lichens → trees
- C. grasses → trees → mosses → lichens
- D. shrubs → grasses → trees → lichens

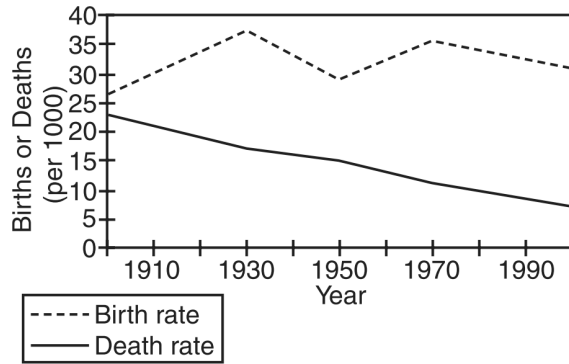
3.



When the Mount St. Helens volcano erupted, the blast covered much of the surrounding area with ash. Based on the diagram above, which list shows the sequence of secondary succession that followed that eruption?

- A. X, Y, Z, W
- B. Z, X, Y, W
- C. W, Y, X, Z
- D. Z, Y, W, X

4. The graph below shows the birth rate and death rate for a population during the 1900s.



From 1900 to 2000, the population has

- A. increased.  
 B. decreased.  
 C. stayed the same.  
 D. increased until 1930, then decreased.
5. Complete burning of plant material returns carbon primarily to the
- A. herbivores.                      B. water.  
 C. vegetation.                      D. atmosphere.

6. Which of these organisms are most helpful in preventing Earth from being covered with the bodies of dead organisms?

- A. herbivores  
 B. producers  
 C. parasites and viruses  
 D. fungi and bacteria

7. Which of these organisms would *most* likely be found at the top of an energy pyramid?

- A. clams                                      B. sardines  
 C. sharks                                      D. kelp

8. Which of these organisms would *most* likely be found at the bottom of a biomass pyramid?

- A. giant squids                              B. sand sharks  
 C. sea cucumbers                              D. green algae

9. Fossil evidence suggests that a number of members of one fish species from an ancient lake in Death Valley, California, became several isolated species. Each of these new species lived in a different pond. Which of the following *best* explains the cause of this speciation?
- A. episodic isolation
  - B. temporal isolation
  - C. geographic isolation
  - D. behavioral isolation

10. Numbers of Representative Species

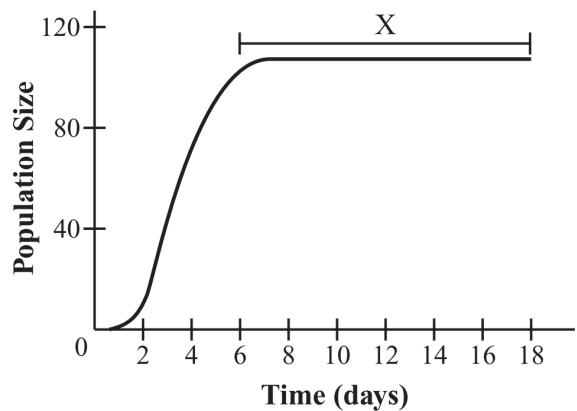
Era	Period	Dinosaurs	Turtles	Crocodylians	Snakes	Lizards
Cenozoic	Quaternary		■	■	■	■
	Tertiary		■	■	■	■
Mesozoic	Cretaceous	■	■	■	■	■
	Jurassic	■	■	■	■	■
	Triassic	■	■	■	■	■
Paleozoic	Permian	■	■	■	■	■
	Pennsylvanian	■	■	■	■	■
	Mississippian	■	■	■	■	■
	Devonian	■	■	■	■	■
	Silurian	■	■	■	■	■
	Ordovician	■	■	■	■	■
	Cambrian	■	■	■	■	■
	(Pre-Cambrian)	■	■	■	■	■

According to this information, which group demonstrated the greatest biodiversity during the Cretaceous period?

- A. dinosaurs
- B. crocodylians
- C. snakes
- D. lizards

11. If a paleontologist finds fossils of many different species existing in the same area at approximately the same time, the paleontologist can conclude that the ecosystem in this area had a high degree of
- A. climatic variation.
  - B. episodic speciation.
  - C. biological diversity.
  - D. geographic isolation.

12. The graph below shows population growth for paramecia kept under laboratory conditions for 18 days.



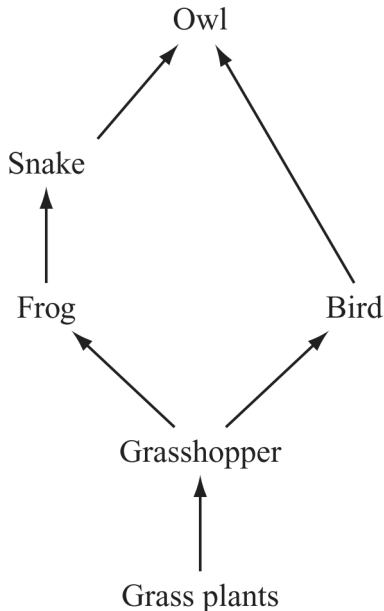
Which of the following statements explains what is happening in the region of the curve labeled “X”?

- A. The population’s birthrate is zero.
- B. The paramecia are in water that is too warm.
- C. The paramecia have used up their food supply.
- D. The population’s birthrate equals the death rate.

13. Cellular respiration, decomposition, combustion, and photosynthesis are processes that drive which of the following cycles in ecosystems?

- A. the carbon cycle
- B. the nitrogen cycle
- C. the phosphorus cycle
- D. the water cycle

14. A partial food web is shown below.



Which of the following will *most likely* happen if the frog population decreases?

- A. Owls will have no source of food.
- B. The snake population will increase.
- C. Birds will have less competition for food.
- D. The grasshopper population will go extinct.

15. Spines and thorns on plants look similar, and both provide protection from herbivores. However, not all plants with spines or thorns have descended from a recent common ancestor. Spines are modified leaves, and thorns are modified stems.

Which of the following statements *best* describes how this information provides evidence for evolution?

- A. It shows that different organisms sometimes look alike.
- B. It shows that herbivores are the strongest selection force on organisms.
- C. It shows that a variety of structures can be effective in protecting an organism from herbivores.
- D. It shows that environmental pressures can cause unrelated organisms to change in similar ways.

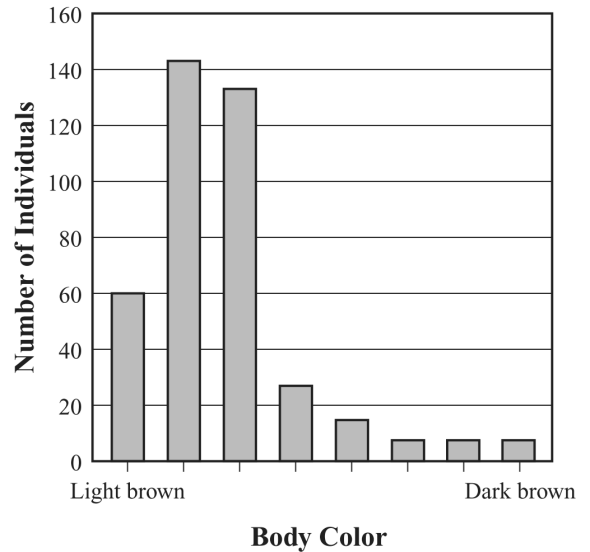
16. Which of the following *most likely* results in a decrease in a blackbird population?

- A. birth
- B. emigration
- C. immigration
- D. mutualism

17. Which of the following roles do nitrogen-fixing bacteria serve in the nitrogen cycle?
- A. They concentrate nitrogen in the atmosphere.
  - B. They absorb nitrogen from the wastes of animals.
  - C. They convert nitrogen into a form that plants can use.
  - D. They release nitrogen from the bodies of decaying organisms.

18. In contrast to web-building spiders, hunting spiders spend most of their time on the ground hunting prey. In a population of hunting spiders, a range of body colors from light brown to dark brown is observed. The graph below shows the distribution of body color in this particular spider population.

**Distribution of Body Color  
in Hunting Spider Population**



- a) Describe the most likely appearance of the ground on which the spiders live and hunt. Explain your answer.  
  
Suppose the spiders' main prey begins to dwell primarily on dark vegetation rather than on the ground.
- b) What will most likely happen to the distribution of body color in the spider population over the next 50 years? Make a graph to show the expected distribution, and explain your answer.

19. In Asia, human population growth and land development have fragmented forest habitats. Because of this fragmentation, tigers have become geographically isolated in small populations, and the tigers repeatedly mate within the same small population of tigers.

Which of the following is the *most likely* impact this isolation will have on tiger populations?

- A. Genetic diversity of each tiger population will decrease, threatening survival.
- B. Adaptation of each tiger population to its present environment will occur rapidly.
- C. The tigers in each population will breed more often, increasing population size.
- D. The tigers in each population will mate with closely related species to maximize breeding success.

20. The ecological relationship between a hawk and a rabbit is the same type of relationship as that between

- A. a tick and a deer.
- B. a frog and an insect.
- C. a mouse and a chipmunk.
- D. a bee and a flowering plant.

21. In which of the following ways do producers in an ecosystem obtain energy?

- A. by consuming other producers
- B. by living parasitically on animals
- C. by using sunlight to make sugars
- D. by breaking down dead organisms

22. Two populations of fruit flies both belong to the genus *Drosophila*. The fruit flies are able to successfully mate within their own populations, but males from one population are unable to mate and produce offspring with females from the other population.

Based on this information, which of the following statements could describe the fruit flies in the two populations?

- A. They are classified as different orders.
- B. They are classified in different classes.
- C. They are classified as different species.
- D. They are classified in different kingdoms.

23. Which of the following *best* explains why tropical insects may be at greater risk for extinction from global warming than insects from higher latitudes?

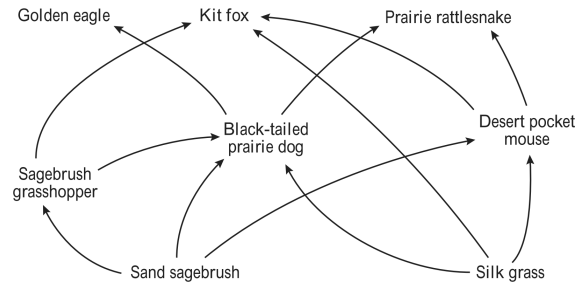
- A. Many tropical insects lay eggs year-round.
- B. Tropical insects include more pollinator species.
- C. Many tropical insects are herbivores rather than carnivores.
- D. Tropical insects have narrower ranges of tolerance for temperature changes.

24. Every year, monarch butterflies from Canada and the United States spend the winter in central Mexico. The dry and mild climate in Mexico allows the monarch butterflies to survive the winter.

One winter, a week of storms caused freezing temperatures and 43 cm of snow in Mexico. What was the *most likely* impact of these storms on the monarch butterflies?

- A. Monarch butterflies died in large numbers.
- B. Monarch butterflies immediately migrated back to the United States.
- C. Monarch butterflies did not migrate from Canada and the United States the next year.
- D. Monarch butterflies evolved several new adaptations to survive the winter in Mexico.

25. Part of a desert food web is diagrammed below.



Which of the following will *most likely* result if all of the primary consumers are removed from this ecosystem?

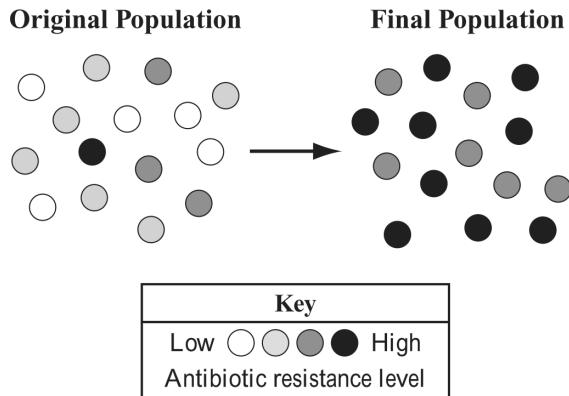
- A. Prairie rattlesnakes will become herbivores.
- B. Golden eagle and kit fox populations will decrease.
- C. Sagebrush grasshoppers will consume soil bacteria.
- D. Silk grass and sand sagebrush populations will decrease.

26. About 70 years ago, cane toads were introduced to Australia. The toads are toxic to some species of snakes, such as *Dendrelaphis punctulatus*. The longer an individual snake is, the greater its chance of survival after eating a cane toad.

Which of the following did scientists *most likely* observe in the *D. punctulatus* snake population as a result of the presence of the cane toads?

- A. The entire population was killed by the toads.
- B. The entire population became resistant to the toads.
- C. The average body length in the population increased.
- D. The average body length in the population decreased.

27. Antibiotic resistance can vary within a population of bacteria. The diagram below represents the changes in a population of bacteria as a result of exposure to an antibiotic over time.



The changes in the population are *most likely* the result of which of the following?

- A. exponential growth    B. genetic crosses  
C. immigration            D. natural selection
28. When locust populations grow too large for an area, the individual locusts are crowded and food becomes scarce. In response to these conditions, some of the locusts leave the area and find a new habitat.

Which of the following terms *best* applies to the response of the locusts that leave for the new habitat?

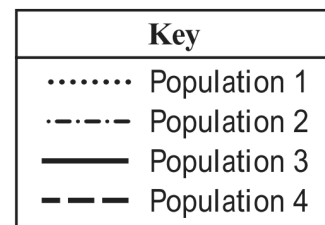
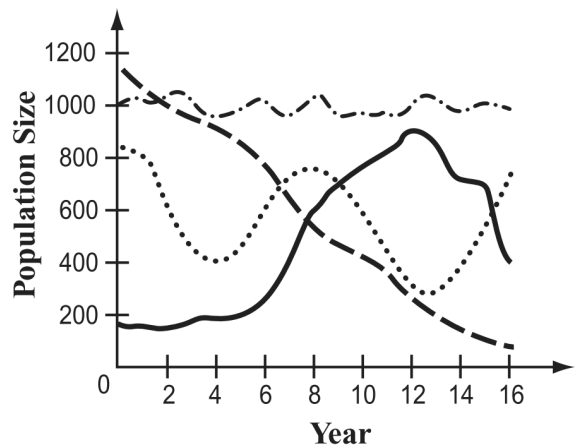
- A. commensalism            B. emigration  
C. hibernation              D. mutualism

29. In the past 100 years, levels of atmospheric carbon dioxide have increased as the result of the burning of fossil fuels. Other processes in the carbon cycle have absorbed some of the carbon released by this combustion.

Which of the following *most likely* have absorbed excess carbon released by combustion?

- A. animals                      B. glaciers  
C. plants                        D. rocks

30. The graph below shows changes in the sizes of four animal populations over a 16-year period.



In which population was birthrate most likely greater than death rate from year 8 to year 12?

- A. population 1                B. population 2  
C. population 3                D. population 4



31. Which of the following elements is *most* common in the tissues of plants?

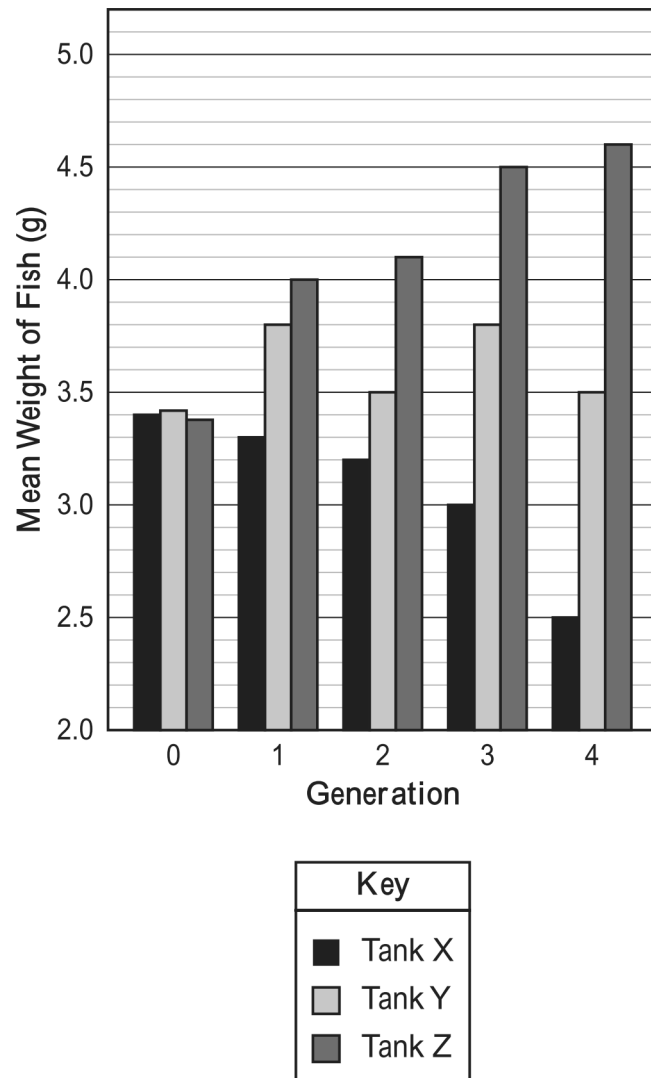
A. hydrogen

B. iron

C. potassium

D. sodium

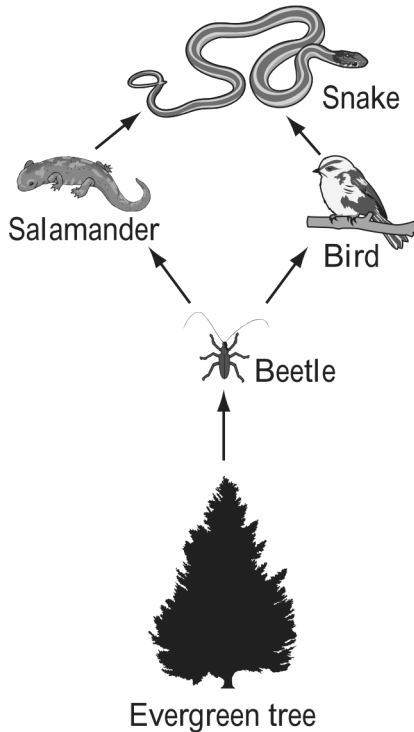
32. To investigate selective pressures on fish populations, researchers set up three identical tanks, labeled X, Y, and Z. Each tank contained 1000 fish of the same species. Before the fish reproduced each generation, the researchers removed fish from some of the tanks. The graph below shows the changes in the mean weight of the fish in each tank over four generations.



Based on the graph, what did the researchers *most likely* do to tank Z each generation?

- A. The researchers removed the 900 smallest fish.      B. The researchers removed the 900 largest fish.  
 C. The researchers removed 900 fish at random.      D. The researchers removed none of the fish.

33. A small part of a food web for a forest ecosystem is shown below.



- Classify each of the five organisms in the food web as a producer, a primary consumer, a secondary consumer, or a tertiary consumer.
- Identify the type of ecological relationship between salamanders and birds in this food web.
- Suppose there is a significant decrease in the bird population. Based on the relationships in the food web, explain why it would be difficult for ecologists to predict what would happen to the size of the salamander population.

34. Carbon can combine with many different elements but frequently combines with oxygen, hydrogen, and nitrogen to form organic molecules. Which statement *best* explains why carbon is able to form a large number of different molecules?

- Carbon forms only ionic bonds.
- Carbon can form only ring structures.
- Carbon can form four covalent bonds.
- Carbon forms small, simple structures.

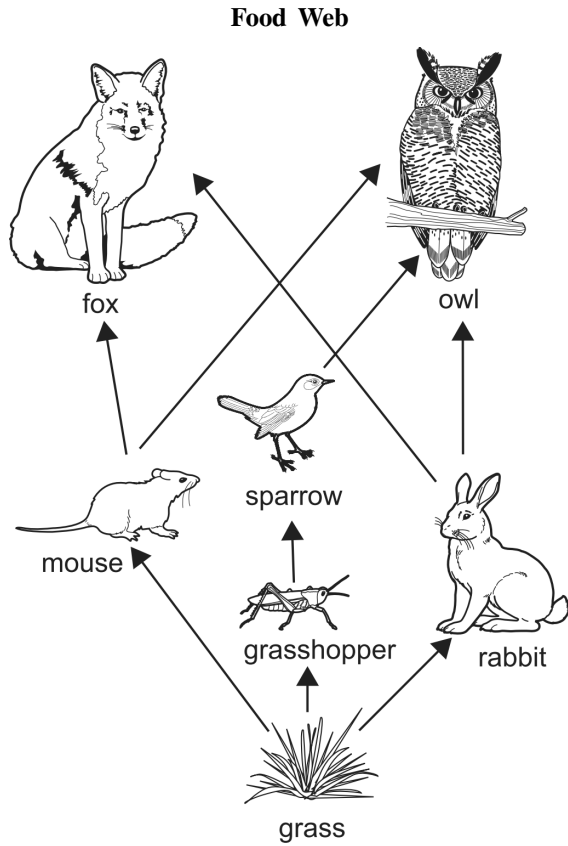
35. Tadpoles grown in ponds with high densities of tadpoles have lower survival and growth rates than tadpoles grown in ponds with lower densities of tadpoles. Which interaction between tadpoles grown in high-tadpole-density ponds would *most likely* cause the decreased survival and growth rates?

- symbiosis
- mutualism
- competition
- commensalism

36. Which set of ecological organization levels is *most likely* to contain the largest variety of species?

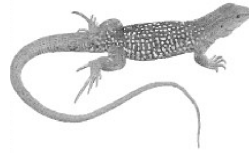
- multiple biomes in a biosphere
- multiple ecosystems in a biome
- multiple individuals in a population
- multiple populations in a community

37. Which energy transfer *most likely* occurs between organisms in the food web?



- A. from owl to fox
- B. from rabbit to fox
- C. from sparrow to grass
- D. from mouse to grasshopper

38. The Canyon spotted whiptail and the Sonoran spotted whiptail are lizard species that live in the same desert. The Canyon spotted whiptail is composed of males and females that reproduce sexually. The Sonoran spotted whiptail is an all-female species that reproduces asexually.



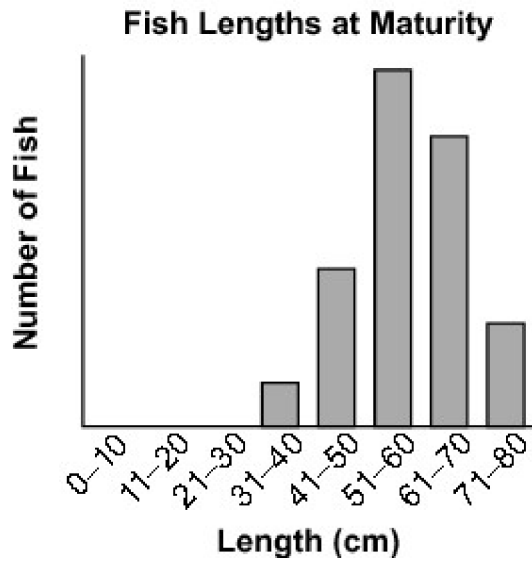
Canyon Spotted Whiptail



Sonoran Spotted Whiptail

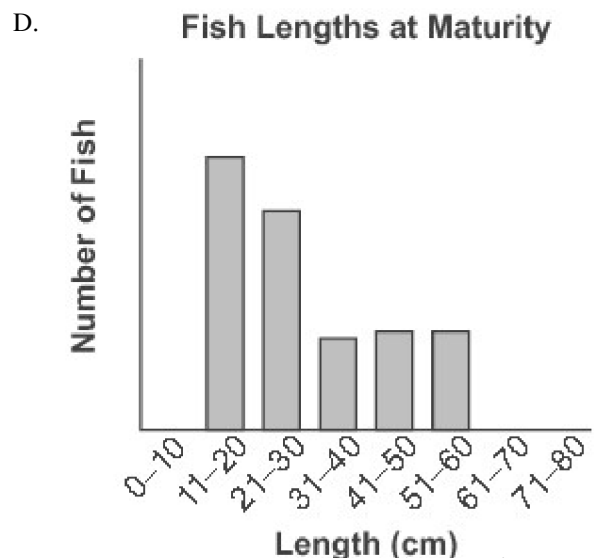
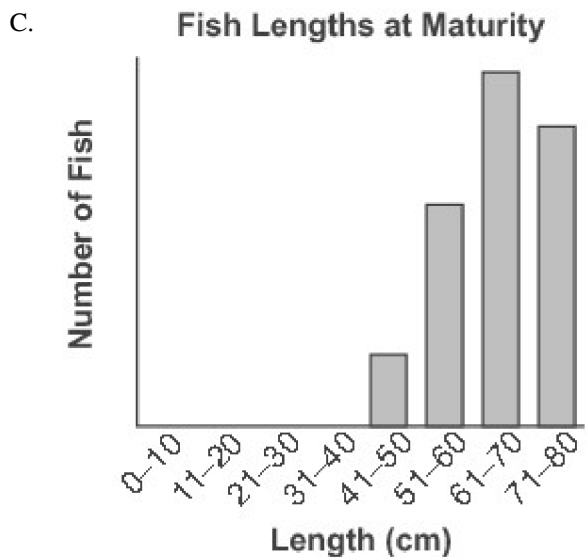
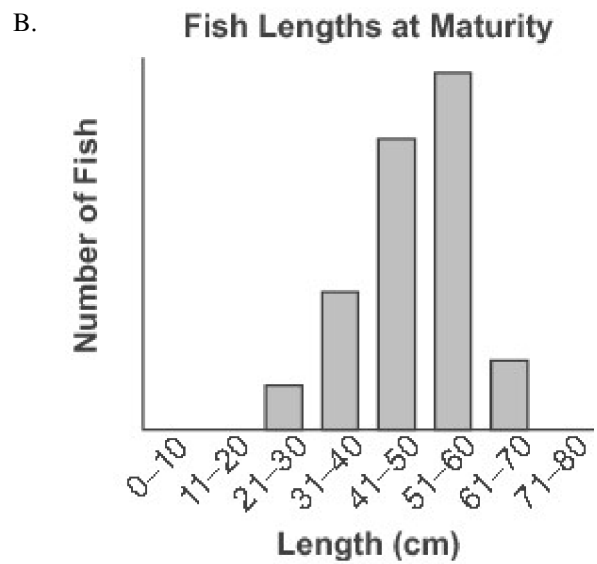
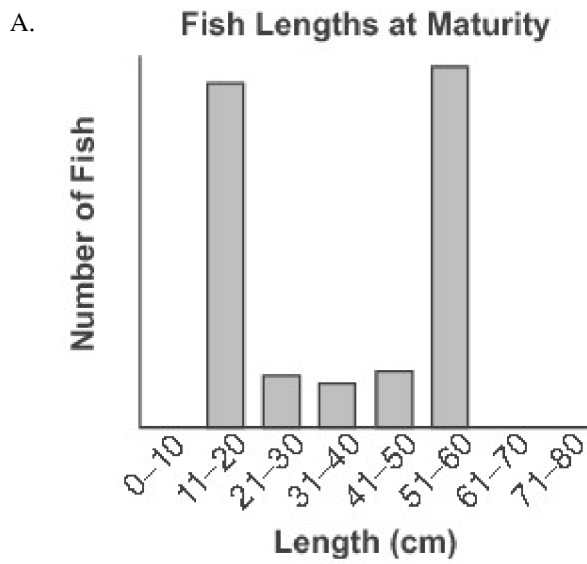
Which lizard species is more likely to survive a drastic sudden change in climate?

- A. Sonoran spotted whiptail because all members of the species can reproduce
- B. The Sonoran spotted whiptail because their genetic similarities will keep the species stable
- C. The Canyon spotted whiptail because their genetic differences improve their chances of adapting
- D. The Canyon spotted whiptail because species with male and female members produce more offspring



The graph shows the length distribution at maturity for a population of fish. Policy makers are enacting regulations that will require releasing all fish that are under 60 centimeters (cm) long back into the water.

Which graph *best* predicts how the fish population will change after ten generations as a result of this regulation?



40. Which is an example of an abiotic factor in a pond environment?

- A. the water
- B. a frog
- C. a grasshopper
- D. a snake

41. Which is an example of a biotic factor that would limit the size of a deer herd?

- A. populations of predators
- B. severe summer drought
- C. lack of oxygen at high altitudes
- D. heavy winter snowfalls

42. Which is a biotic factor that affects the size of a population in the specific ecosystem?

- A. the average temperature of the ecosystem
- B. the number and kinds of soil minerals in the ecosystem
- C. the number and kinds of predators in the ecosystem
- D. the concentration of oxygen in the ecosystem

43. Which is an abiotic factor that could affect the survival of organisms in their environment?

- A. algae present in the water
- B. inorganic substances in the substratum
- C. earthworms present in the soil
- D. bacteria of decay in the soil

44. In a forest ecosystem, the abiotic factors include

- A. light, temperature, and plants
- B. animals, water, and soil
- C. minerals, oxygen, and protists
- D. water, soil, and temperature

45. An example of a biotic factor in a pond community is

- A. annual rainfall
- B. interspecies competition
- C. mineral concentration
- D. temperature change

46. Contamination of the soil, atmosphere, and water by humans is partially the result of the use of
- A. wildlife management
  - B. reforestation programs
  - C. chemical biocides
  - D. pollution controls

47. Erosion resulting from loss of topsoil due to poor farming techniques may be prevented by
- A. overgrazing pasturelands
  - B. removing trees, shrubs, and herbs
  - C. overcropping farm fields
  - D. overcropping plowed fields

Use this information to answer the following question(s).

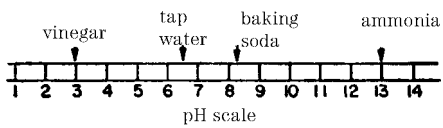
Acid rain is a serious environmental problem in large areas of Canada and the northeastern United States, including New York State. It is partly created as rain “washes out” sulfur and nitrogen pollutants from the air. Acid rain alters the fundamental chemistry of sensitive freshwater environments and results in the death of many freshwater species. The principal sources of this pollution have been identified as smokestack gases released by coal-burning facilities located mainly in the midwestern United States.

“Unpolluted” rain normally has a pH of 5.6. Acid rain, however, has been measured at pH values as low as 1.5, which is more than 10,000 times more acidic than normal. Commonly, acid rain has a pH range of 3 to 5, which changes the acidity level of the freshwater environment into which it falls. The effect of the acid rain depends upon the environment’s ability to neutralize it. Evidence is accumulating, however, that many environments are adversely affected by the acid rain. As a result, the living things within lakes and streams that cannot tolerate the increasing acidity gradually die off.

There are many environmental problems that result from acid rain. Most of these problems center around the food web upon which all living things, including humans, depend. If freshwater plants, animals, and protists are destroyed by the acid conditions, then terrestrial predators and scavengers dependent on these organisms for food are forced to migrate or starve. These changes in a food web can eventually affect the human level of food consumption.



48. The accompanying scale shows the pH of four common household substances. Acid rain has a pH closest to that of which of these substances?



- A. ammonia                      B. tap water  
C. baking soda                D. vinegar
49. Acid rain is generally considered a negative aspect of human involvement with the ecosystem. As such, it would most correctly be classified as a type of
- A. biological control  
B. conservation of resources  
C. technological oversight  
D. land use management
50. A strain of fish that could survive under conditions of increased acidity could best be obtained by
- A. binary fission  
B. vegetative propagation  
C. selective breeding  
D. budding

51. Which food chain includes organisms that would most immediately be affected by acid rain?
- A. grass → rabbit → fox → decay bacteria  
B. algae → aquatic insect → trout → otter  
C. shrub → mouse → snake → hawk  
D. tree → caterpillar → bird → lynx
52. Which illustrates the human population's increased understanding and concern for ecological interrelationships?
- A. importing organisms in order to disrupt existing ecosystems  
B. allowing the air to be polluted only by those industries that promote technology  
C. removing natural resources from the Earth at a rate equal to or greater than the needs of an increasing population  
D. developing animal game laws in order to limit the number of organisms that may be killed each year
53. Humans have been responsible for some of the negative changes that occur in nature because they
- A. have controlled the use of chemical biocides  
B. have passed laws to preserve the environment  
C. are able to conserve scarce resources  
D. are able to modify their physical environment

54. A fungicide was used to kill the mushrooms in a lawn. Some mushrooms were not affected by the fungicide. The resistant mushrooms reproduced. The resistance of some of the mushrooms to the fungicide was
- A. caused by the existence of mutations
  - B. transmitted to the mushrooms from the fungicide
  - C. transferred through the food web
  - D. developed in response to the fungicide
55. A poor land use practice that usually leads to the loss of soil nutrients is
- A. reforestation
  - B. recycling
  - C. overcropping
  - D. sewage control
56. Which pollutant is produced by the burning of coal and oil and can result in the production of acid rain?
- A. phosphate
  - B. sulfur dioxide
  - C. lead
  - D. hydrogen chloride
57. DDT accumulates in the fatty tissues of animals and is transferred along food chains. Its concentration increases along each link of a food chain. Which of the following organisms would accumulate the highest concentration of DDT in a given food chain?
- A. rabbit (a herbivore)
  - B. corn (a producer)
  - C. field mouse (a primary consumer)
  - D. owl (a predator)
58. The release of the pollutant sulfur dioxide ( $\text{SO}_2$ ) into the atmosphere may seriously affect aquatic plants and animals by forming
- A. acid rain
  - B. phosphate
  - C. DDT
  - D. nuclear waste
59. Which human activity has probably contributed most to lake acidification in the Adirondack region?
- A. passage of environmental protection laws
  - B. reforestation projects in lumbered areas
  - C. production of sulfur and nitrogen air pollutants
  - D. use of biological insect controls

60. African elephant tusks consist of high-quality ivory. In recent years, the elephant population in certain African wildlife preserves has decreased. This decrease is most likely due to

- A. air pollution
- B. human exploitation
- C. biocide use
- D. importation of Japanese beetles

61. Endangered peregrine falcons have been bred in captivity and released in areas where pigeons and rodents are abundant. This activity is an example of

- A. conservation of resources and exploitation
- B. overhunting and biological control
- C. species preservation and use of biocides
- D. species preservation and biological control

62. An example of a human activity that has had a positive effect on the environment is the

- A. disruption of natural habitats through urbanization
- B. exploitation of rare South American birds
- C. use of reforestation to control erosion
- D. uncontrolled hunting of endangered species of animals

## **Decomposition of the Ozone Layer**

The Earth has long been protected from the harmful radiations of the Sun by a layer of the atmosphere known as the ozone layer. This layer absorbs ultraviolet light. Recent evidence indicates that this protective layer is starting to decompose and “holes” are being formed.

The first “hole” was observed in 1983 over Antarctica. Now there is evidence of a second “hole” over Norway. It is believed that the atmosphere has had an annual ozone loss of three percent.

Some scientists believe that the “holes” are linked to the use of certain chemicals such as chlorofluorocarbons (CFC’s). CFC’s are found in some aerosol sprays, refrigerants, and even in styrofoam. When CFC’s are exposed to sunlight, chlorine is released from the CFC’s. This chlorine acts as a catalyst in the breakdown of ozone. Other scientists believe that the “holes” are related to solar activity, changing weather patterns, and volcanic activity.

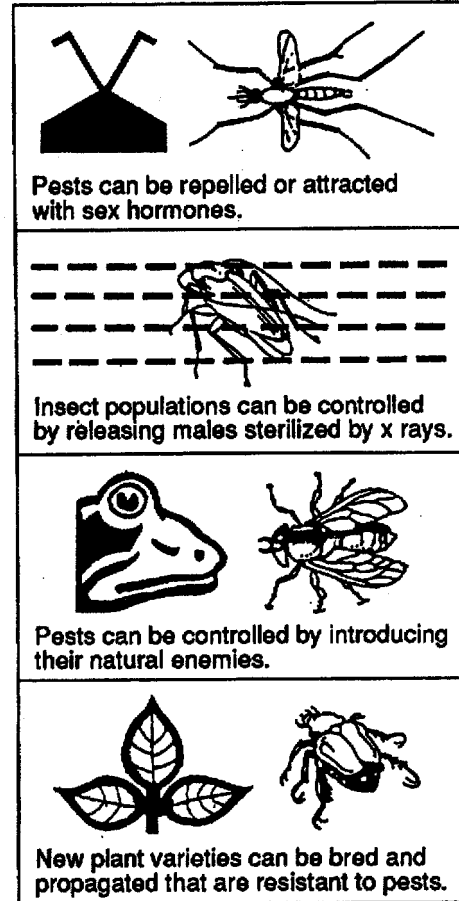
Whatever the cause, scientists agree that the potential dangers are significant. The Environmental Protection Agency (EPA) estimates that a one percent drop in global ozone could cause an additional 20,000 cases of skin cancer in the United States. Increases in ultraviolet radiation could also increase the mutation rate in plants, animals, and micro-organisms, endangering the existence of some life forms.

63. Based on the reading passage, which statement can be made about the decomposition of the ozone layer?
- A. The decomposition is due to very reactive oxygen.
  - B. The decomposition rate is increasing three percent every ten years.
  - C. "Holes" in the ozone layer are caused by ozone decomposition.
  - D. All scientists agree on the cause of the decomposition of the ozone layer.
64. Which human activity has been banned in most areas because of its negative impact on the biosphere?
- A. reforestation and covercropping
  - B. use of DDT to control insects
  - C. biological control of pests
  - D. management of wildlife
65. Some negative effects of human activities of the environment can be counteracted by increasing the
- A. growth of the human population
  - B. use of pesticides
  - C. enforcement of pollution control laws
  - D. use of nonbiodegradable materials
66. Japanese beetles and gypsy moths were accidentally introduced into North America. The most probable reasons these insects have become serious pests in North America is that they
- A. were bred by research scientists and are resistant to all pesticides
  - B. are protected by environmental laws and feed on other insects species
  - C. have few natural enemies and reproduce successfully
  - D. are affected by biological controls and feed on plants
67. The peregrine falcon has been bred in captivity and then released into areas where there is an ample food supply. This procedure best illustrates
- A. species preservation
  - B. biological control
  - C. biocide use
  - D. species exploitation
68. Which activity has had the most negative effect on the environment?
- A. recycling of aluminum cans
  - B. biological control of insect pests
  - C. importation of the gypsy moth
  - D. control of air pollution

69. Which activities most directly control erosion?
- A. use of reforestation and covercropping
  - B. establishment of game laws and fisheries
  - C. use of phosphates and hydrocarbons
  - D. establishment of wildlife refuges and national parks

70. Some animal and plant species are in danger of becoming extinct because of
- A. an increase in human population controls
  - B. the exploitation of these species for their products
  - C. the rapid reproduction of these species
  - D. an increase in available food supplies

71. The chart shown illustrates some methods of pest control. Pests can be repelled or attracted with sex hormones. Pests can be controlled by introducing their natural enemies. New plant varieties can be bred and propagated that are resistant to pests. One likely effect of using these methods of pest control will be to



- A. prevent the extinction of endangered species
- B. increase water pollution
- C. reduce pesticide contamination of the environment
- D. harm the atmosphere

72. Which statement is a valid reference that can be made from the cartoon shown?



Suddenly, Fish and Wildlife agents burst in on Mark Trail's poaching operation.

- A. Wildlife agents regulate reproduction rates of animal species in wildlife refuges.
- B. Wildlife agents prevent the importation of organisms to areas where they have no natural enemies.
- C. Some human activities have led to the endangerment of numerous animal species.
- D. Biological control of pest species is prevented by laws.

73. The wrasse, a small marine fish, periodically cleans harmful parasites from the mouth and body of the moray eel. The moray, in turn, protects the wrasse from larger predators and provides it with a constant supply of food. This is an example of the type of relationship known as

- A. mutualism
- B. parasitism
- C. commensalism
- D. saprophytism

74. In New York State, bluebirds and sparrows inhabit nearly the same ecological niche. In many areas, bluebirds are being replaced by the sparrows as a result of

- A. symbiosis
- B. competition
- C. mutualism
- D. equilibrium

75. Cattails in freshwater swamps in New York State are being replaced by purple loosestrife plants. The two species have very similar environmental requirements. This observation best illustrates

- A. variation within a species
- B. competition between species
- C. isolation of species populations
- D. random recombination

76. The relationship between athlete's foot fungus and humans is known as

- A. synthesis
- B. mutualism
- C. parasitism
- D. commensalism

77. Some hydras have green algae living symbiotically inside their bodies. The algae produce food for the hydra and receive carbon dioxide and shelter from the animal. What type of relationship exists between the two organisms?

- A. parasitism
- B. commensalism
- C. mutualism
- D. saprophytism

78. An organism that obtains its food at the expense of another living organism is known as a

- A. host
- B. saprophyte
- C. parasite
- D. scavenger

79. Which term includes the other three?

- A. symbiosis
- B. mutualism
- C. parasitism
- D. commensalism

80. Both species of organisms in a lichen benefit from a symbiotic association called

- A. commensalism
- B. mutualism
- C. saprophytism
- D. parasitism

81. The members of two similar species occupy similar niches. As a result, which is most likely to occur between the two species?

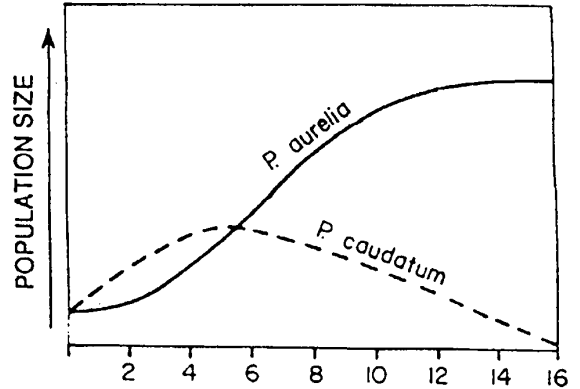
- A. symbiosis
- B. mutualisms
- C. parasitism
- D. competition



82. Increasing populations of gypsy moths have caused the defoliation of many forested areas in New York State. This illustrates the kind of environmental disruption which may result from

- A. human population-control measures
- B. efforts to sustain endangered species
- C. increased urbanization and concentration of food crops
- D. introduction of organisms into areas where they have no natural enemies

83. The graph here shows the population growth curves of *Paramecium aurelia* and *Paramecium caudatum* cultures after they were mixed together. One influence that could correctly be drawn from the graph is that *Paramecium aurelia* and *Paramecium caudatum* cannot successfully



- A. utilize oxygen for anaerobic respiration
- B. utilize the same wavelengths of light
- C. live in marine environments
- D. occupy the same niche

84. The gypsy moth, *Porthetria dispar*, is a defoliator (an agent that removes leaves) of both deciduous trees and conifers in New York State. The gypsy moth undergoes a complete metamorphosis from egg to larva to pupa to adult moth. The gypsy moth larvae (caterpillars) cause the greatest amount of damage to trees. The heaviest defoliations occur in oak forests because these trees are highly favored as food plants by all larval stages. The adult moths do not feed; their only function is to reproduce.

The male moth is a fairly strong daytime flier and tends to fly upwind in a zigzag pattern. The female is so heavily laden with eggs that she is unable to fly. Egg laying occurs soon after the moths mate, usually within a day or so after the female reaches the adult stage. Moths die soon after egg laying is completed.

The best means of controlling the gypsy moth in the forests of New York State is through the development and use of biological methods of pest control. The most important of these includes the use of *Ooencyrtus kuwanae*, a tiny wasp that parasitizes the upper layers of eggs in a cluster and is normally effective on about three-fourths of the eggs; *Sturmia scutellata*, a fly known as the pupal parasite; and *Calosoma sycophanta*, a ground beetle that preys on both gypsy moth larvae and pupae.

An important natural agent that causes gypsy moth populations to collapse is a viral disease of the larvae. Affected caterpillars are seen hanging from trees. The virus is always present in gypsy moth colonies in a dormant form and becomes activated when outside stress is applied. The viral disease, starvation, stress-induced diseases, and parasitism may cause a population to collapse after a forest has undergone 2 or 3 years of defoliation.

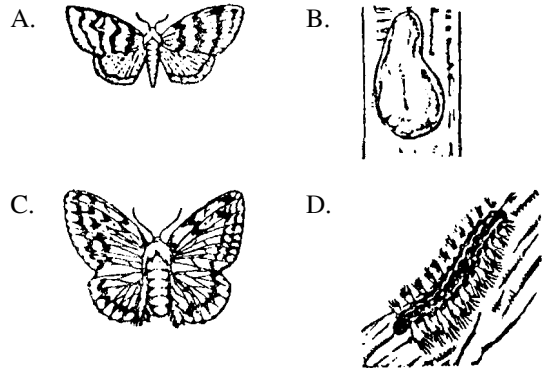
Which is the best method to use in eliminating gypsy moth populations from the Adirondack and Catskill Mountains of New York State?

- A. Spray the oak, beech, and maple trees with an insecticide.
- B. Apply DDT residues to the trunk of spruce, fir, and pine trees.
- C. Introduce a species of ground beetle that preys upon gypsy moth larvae.
- D. Apply a phosphate fertilizer to the soil to prevent larval attack against conifer and deciduous root systems.

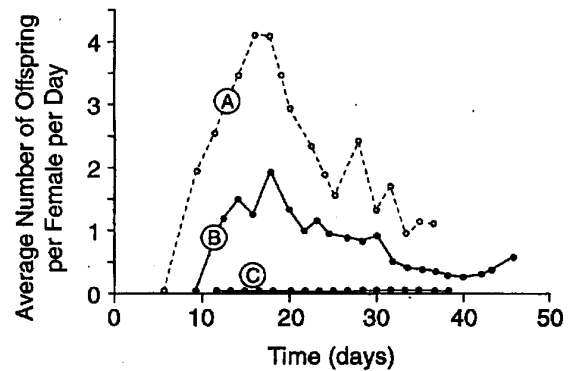
85. Which statement concerning the gypsy moth is true?

- A. Adult gypsy moths die shortly after egg laying is completed.
- B. Adult female moths heavily defoliate oak forests in New York State.
- C. Gypsy moth larvae can survive the cold winters in New York State.
- D. The male gypsy moth is not a very good daytime flier.

86. Which diagram represents the stage of development of the gypsy moth in which it is most destructive as a defoliator of both deciduous trees and conifers in New York State?

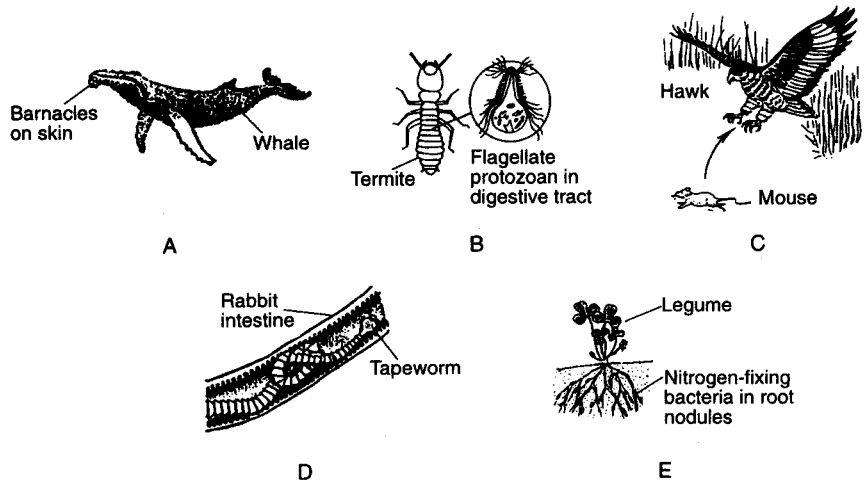


87. A group of 100 female water fleas was placed in each of three culture jars of different sizes. The graph shows the average number of offspring produced per female each day in each jar. The information in the graph suggests that



- A. water fleas produce more offspring when they are crowded together
- B. the ability of a water flea to produce offspring is affected by population density
- C. water fleas have fewer offspring when they are thinly populated
- D. the reproduction rate of water fleas increases steadily after 20 days

88. Which diagram shows the relationship that is most similar to that between humans and an athlete's foot fungus?

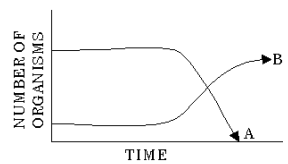


- A. E                      B. B                      C. C                      D. D

89. The relationship between fleas and a dog is most similar to the relationship between

- A. honeybees and a flower
- B. orchids and a tree
- C. nitrogen-fixing bacteria and a legume
- D. athlete's-foot fungus and a human

90. The graph shows the changes in two populations of herbivores in a grassy field. A possible reason for these changes is that



- A. all of the plant populations in this habitat decreased
- B. population B competed more successfully for food than population A did
- C. population A produced more offspring than population B did
- D. population A consumed the members of population B

91. Which organism would most likely have a predator-prey relationship?
- A. tapeworm and dog    B. barnacle and whale  
C. hawk and mouse    D. rabbit and grass

92. Which factor promotes competition between organisms in an ecosystem?
- A. cycling of minerals  
B. decomposition of organic matter  
C. limited resources  
D. presence of saprophytes

93. Base your answer(s) to the following question(s) on the paragraph and on your knowledge of biology.

Leeches often attach to the tongue of a crocodile and consume the crocodile's blood as food. The Egyptian plover is a bird that flies into the mouth of the crocodile and eats the leeches. The crocodiles do not harm the plovers.

For *each* relationship identified in the following questions, select the ecological term, *chosen from the list below*, that identifies that relationship.

*Ecological Terms*

- (1) Commensalism  
(2) Mutualism  
(3) Parasitism  
(4) Saprophytism  
(5) Prey-predator

The relationship between the crocodile and the leech

- A. (1)    B. (3)    C. (4)    D. (5)

94. Base your answer(s) to the following question(s) on the key below and on your knowledge of biology.

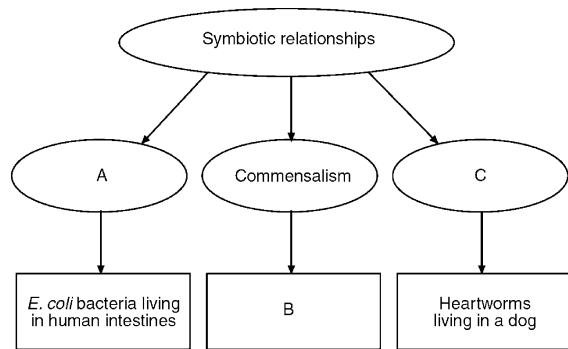
**Key**

0 = organism is not affected + = organism is benefited - = organism is adversely affected
---

Which set of symbols indicates a relationship that is *least* likely to exist in nature?

- A. +, 0    B. -, -    C. +, +    D. +, -

95. Base your answer(s) to the following question(s) on the diagram below and on your knowledge of biology.



Which term belongs in area *A* ?

- A. mutualism                      B. prey  
C. saprophytism                  D. host

96. Organisms that are always part of the relationship indicated by letter *C* may be classified as

- A. bryophytes                      B. parasites  
C. scavengers                      D. carnivores

97. Which phrase belongs in area *B*?

- A. protozoa within termites  
B. athlete's foot fungus on humans  
C. nitrogen-fixing bacteria within legume nodules  
D. orchids on tropical trees

98. Base your answer(s) to the following question(s) on the key below and on your knowledge of biology.

**Key**

<p>0 = organism is not affected + = organism is benefited - = organism is adversely affected</p>
--

A small shrimp feeds on parasites on the skin of a marine fish. Which set of symbols represents the relationship between the fish and the other two organisms?

- A. + with shrimp; - with parasite  
B. - with shrimp; 0 with parasite  
C. 0 with shrimp; - with parasite  
D. + with shrimp; 0 with parasite

99. Which statement best illustrates the concept of the interrelationship of living things with the physical environment, as found in the definition of ecology?

- A. Hawks and eagles often compete with each other.  
B. White-tailed deer shed their antlers.  
C. Algae release oxygen and absorb carbon dioxide from pond water.  
D. Frogs produce many eggs in a single reproductive cycle.

Ecology Practice Test (27%)      5/6/2019

1.		15.	
Answer:	D	Answer:	D
Points:	1	Points:	1
2.		16.	
Answer:	A	Answer:	B
Points:	1	Points:	1
3.		17.	
Answer:	B	Answer:	C
Points:	1	Points:	1
4.		18.	
Answer:	A	Answer:	
Points:	1	Points:	1
5.		19.	
Answer:	D	Answer:	A
Points:	1	Points:	1
6.		20.	
Answer:	D	Answer:	B
Points:	1	Points:	1
7.		21.	
Answer:	C	Answer:	C
Points:	1	Points:	1
8.		22.	
Answer:	D	Answer:	C
Points:	1	Points:	1
9.		23.	
Answer:	C	Answer:	D
Points:	1	Points:	1
10.		24.	
Answer:	D	Answer:	A
Points:	1	Points:	1
11.		25.	
Answer:	C	Answer:	B
Points:	1	Points:	1
12.		26.	
Answer:	D	Answer:	C
Points:	1	Points:	1
13.		27.	
Answer:	A	Answer:	D
Points:	1	Points:	1
14.		28.	
Answer:	C	Answer:	B
Points:	1	Points:	1
		29.	
		Answer:	C
		Points:	1

30.  
Answer: C  
Points: 1

31.  
Answer: A  
Points: 1

32.  
Answer: A  
Points: 1

33.  
Answer:  
Points: 1

34.  
Answer: C  
Points: 1

35.  
Answer: C  
Points: 1

36.  
Answer: A  
Points: 1

37.  
Answer: B  
Points: 1

38.  
Answer: C  
Points: 1

39.  
Answer: B  
Points: 1

40.  
Answer: A  
Points: 1

41.  
Answer: A  
Points: 1

42.  
Answer: C  
Points: 1

43.  
Answer: B  
Points: 1

44.  
Answer: D  
Points: 1

45.  
Answer: B  
Points: 1

46.  
Answer: C  
Points: 1

47.  
Answer: D  
Points: 1

48.  
Answer: D  
Points: 1

49.  
Answer: C  
Points: 1

50.  
Answer: C  
Points: 1

51.  
Answer: B  
Points: 1

52.  
Answer: D  
Points: 1

53.  
Answer: D  
Points: 1

54.  
Answer: A  
Points: 1

55.  
Answer: C  
Points: 1

56.  
Answer: B  
Points: 1

57.  
Answer: D  
Points: 1

58.  
Answer: A  
Points: 1

59.  
Answer: C  
Points: 1

60.  
Answer: B  
Points: 1

61.  
Answer: D  
Points: 1



62.  
Answer: C  
Points: 1

63.  
Answer: C  
Points: 1

64.  
Answer: B  
Points: 1

65.  
Answer: C  
Points: 1

66.  
Answer: C  
Points: 1

67.  
Answer: A  
Points: 1

68.  
Answer: C  
Points: 1

69.  
Answer: A  
Points: 1

70.  
Answer: B  
Points: 1

71.  
Answer: C  
Points: 1

72.  
Answer: C  
Points: 1

73.  
Answer: A  
Points: 1

74.  
Answer: B  
Points: 1

75.  
Answer: B  
Points: 1

76.  
Answer: C  
Points: 1

77.  
Answer: C  
Points: 1

78.  
Answer: C  
Points: 1

79.  
Answer: A  
Points: 1

80.  
Answer: B  
Points: 1

81.  
Answer: D  
Points: 1

82.  
Answer: D  
Points: 1

83.  
Answer: D  
Points: 1

84.  
Answer: C  
Points: 1

85.  
Answer: A  
Points: 1

86.  
Answer: D  
Points: 1

87.  
Answer: B  
Points: 1

88.  
Answer: D  
Points: 1

89.  
Answer: D  
Points: 1

90.  
Answer: B  
Points: 1

91.  
Answer: C  
Points: 1

92.  
Answer: C  
Points: 1

93.  
Answer: B  
Points: 1

94.  
Answer: B  
Points: 1

95.  
Answer: A  
Points: 1

96.  
Answer: B  
Points: 1

97.  
Answer: D  
Points: 1

98.  
Answer: A  
Points: 1

99.  
Answer: C  
Points: 1