

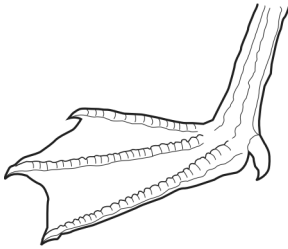
Predicting An Organism's Ability to Adapt

Name: _____

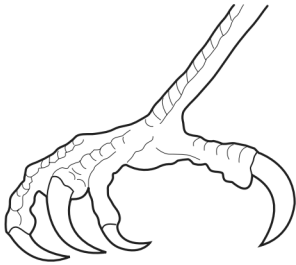
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1. Which bird foot is *best* for swimming?

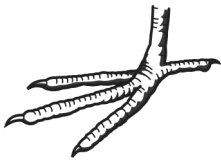
A.



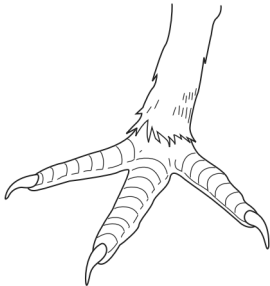
B.



C.



D.



2. Western coral snakes have a striped color pattern and are poisonous. Arizona mountain kingsnakes look like western coral snakes but are not poisonous.

The color pattern of the Arizona mountain kingsnake is an example of

- A. camouflage.
- B. mimicry.
- C. mutualism.
- D. parasitism.

3. Ducks live near ponds and lakes. The shape of a duck's foot helps it swim and walk on muddy ground. Which factor is *most* important in determining the shape of a baby duck's foot?

- A. the shape of the parent ducks' feet
- B. the temperature of the pond water
- C. the amount of mud in the bottom of the pond
- D. the amount of rain that fell before the duck was born

4. Which of the following is a source of genetic variation within a species?

- A. cloning
- B. mutation
- C. selective breeding
- D. natural selection

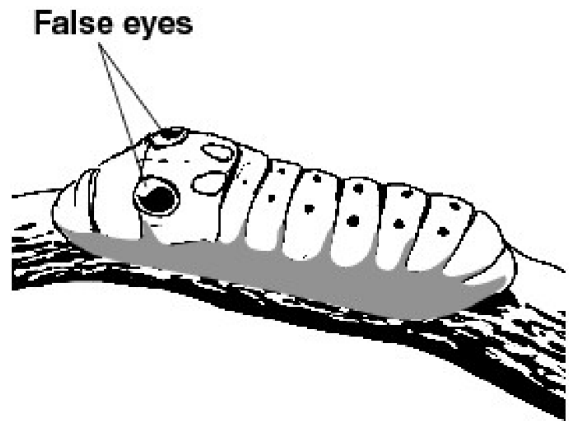
5. The diet of white-tailed deer consists primarily of shrubs. Sika are another species of deer that eat both grasses and shrubs. After an extended drought period, why might the sika population be favored over the white-tailed deer population?
- A. Sika require less food than do the white-tailed deer.
 - B. Sika require more water than do the white-tailed deer.
 - C. Sika have more food sources than do the white-tailed deer.
 - D. Sika have fewer food sources than do the white-tailed deer.

6. Water is necessary for life. During Connecticut winters, the ground freezes, making it difficult for trees to absorb water. How are Connecticut trees adapted to survive cold winters?
- A. They use sap as a water source.
 - B. They reverse the photosynthetic process.
 - C. They drop their leaves and become dormant
 - D. They use the water produced during cellular respiration.

7. The caterpillar has two large spots that look like large eyes as shown.

How do these large false eyes help the caterpillar survive?

Swallowtail Caterpillar



- A. They allow the caterpillar to see farther than other insects.
- B. They allow the caterpillar to scare away predators.
- C. They allow the caterpillar to move around at night.
- D. They allow the caterpillar to find more food.

8. The ptarmigan is a seed-eating Arctic bird that changes the color of its feathers with the change in seasons. In the summer it is a brownish color, and in the winter it is white.

Which of the following provides the *best* explanation for this change?

- A. The color change helps it find food more easily.
- B. The color change helps protect it from predators.
- C. The color change helps it regulate its body temperature better,
- D. Brown feathers are better than white ones for flying during mating season.

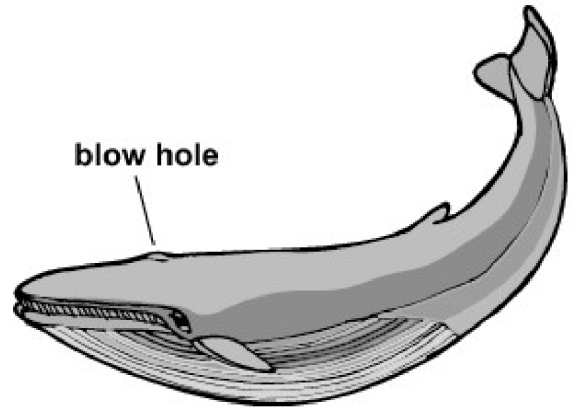
9. The Venus flytrap plant lives in soil with few nutrients. The plant absorbs nutrients by trapping insects inside its leaves.

The ability of the Venus flytrap to trap insects is an example of which of the following?

- A. Adaptation
- B. Parasitism
- C. Cooperation
- D. Competition

10. Whales are mammals that live in the ocean. They have nostrils, called blow holes, positioned at the top of their heads as shown. Fossil data indicate that whales evolved from a land mammal that had nostrils at the end of its snout. The fossils clearly show that over time, nostrils moved from the snout to the top of the head, as seen in modern whales.

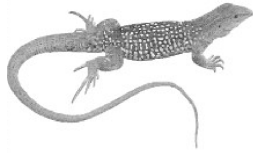
Which statement explains why blow holes *most likely* provide an advantage for modern whales?



Whale

- A. They allow them to take in air less often.
- B. They allow them to inhale larger volumes of air.
- C. They allow them to use less energy while breathing.
- D. They allow them to breathe oxygen dissolved in the water.

11. 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

12. *C. reinhardtii* is a species of unicellular green algae that primarily produce energy for growth through photosynthesis. However, when necessary, they can also produce energy from a carbon source, which allows them to grow in total darkness. A scientist grows a population of this algae in the dark and finds that after 600 generations, the algae population now grows better in the dark than in the light.

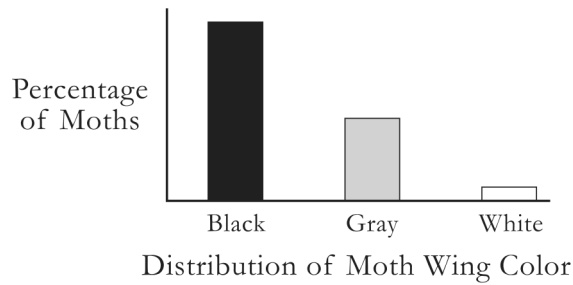
Which statement *best* explains what has happened to the cells in the algae population?

- A. The cells that were better adapted to growing in the dark reproduced more.
- B. The cells that were better adapted to growing in the light got smaller in size.
- C. They became contaminated with a species of algae that grow only in the dark.
- D. They evolved into a different species that can grow only in the dark.

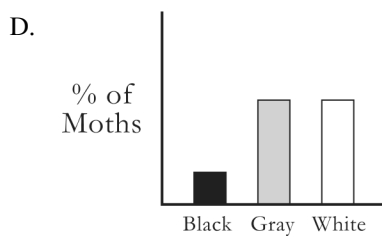
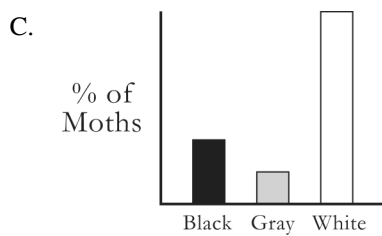
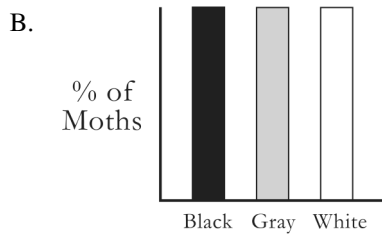
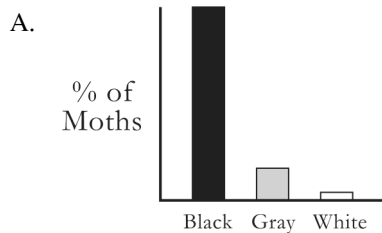
13. The coat of a horse in the summer is relatively smooth with short hairs. The coat of a horse in the winter is coarse with long hairs. What *most* likely causes this difference?

- A. seasonal changes in the horse's exercise
- B. adjustment to seasonal change
- C. seasonal changes in the horse's diet
- D. reduction in grooming due to winter weather

14. Students studying a moth population in the woods in Kentucky found the distribution of moth wing color shown in the graph below. The woods contained trees with bark that was mostly black.



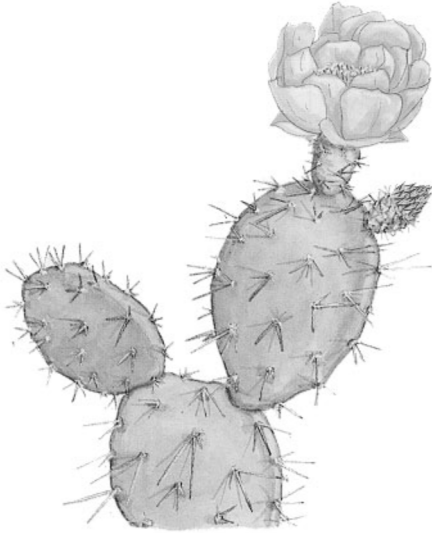
Two years later a fungus attacked nearly all of the trees in the woods and the tree bark changed from black to patches of gray and white. Which graph shows the probable distribution of moth wing color within the next few years?



15. Over a long period of time, some flowering plants have become dependent on honeybees to fertilize their seeds. In recent years, a form of mite has infected and killed the honeybees in many areas of the country. Since this has happened, the once bee-dependent plants with the best chance of surviving are those that

- grow taller so that the few remaining honeybees will find them.
- change their flowers so that wind will fertilize them.
- have always attracted many other insects as well as honeybees.
- have seeds that stay alive for a long time in the environment.

16. Use the picture below to answer the following question.



The cactus plant shown above lives in a desert environment.

Which characteristic of this plant could be found in many other desert plants?

- A. a deep root system for gathering water
- B. lush growth that serves to trap water if it rains
- C. broad leaves that protect the plants from the hot sun
- D. leaves and stems that are adapted to conserve water

17. Use the information below to answer the question that follows.

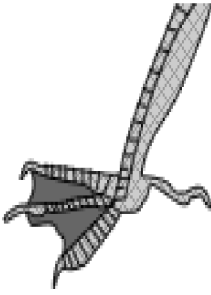
Planarian worms swim away from sources of light. One explanation for this behavior is that in the dark their planarian bodies are hidden from predators.

Which statement is another scientifically reasonable explanation for the evolution of this behavior?

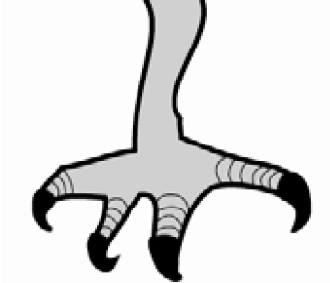
- A. Light causes planarians' body temperature to decrease.
- B. More carbon dioxide for the planarians is found in dark water.
- C. The planarians' food generally is found in dark regions.
- D. Light pushes on the planarians and turns them around.

18. Which foot would *most likely* help a bird live in water?

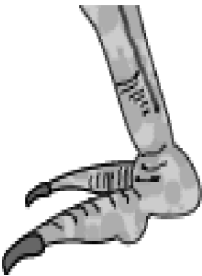
A.



B.



C.



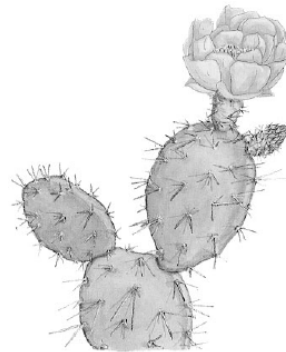
D.



19. Which example describes a behavioral adaptation?

- A. A bird builds its nest in the ash near a volcano.
- B. A whale has the ability to hold its breath for 20 minutes.
- C. A fox's hair is white in the winter and brown in the summer.
- D. A monkey has long arms that allow it to swing from one branch to another.

20. Use the picture below to answer the question.



The cactus plant shown above lives in a desert environment.

Which characteristic of this plant could be found in many other desert plants?

- A. a deep root system for gathering water
- B. lush growth that serves to trap water if it rains
- C. broad leaves that protect the plants from the hot sun
- D. leaves and stems that are adapted to conserve water

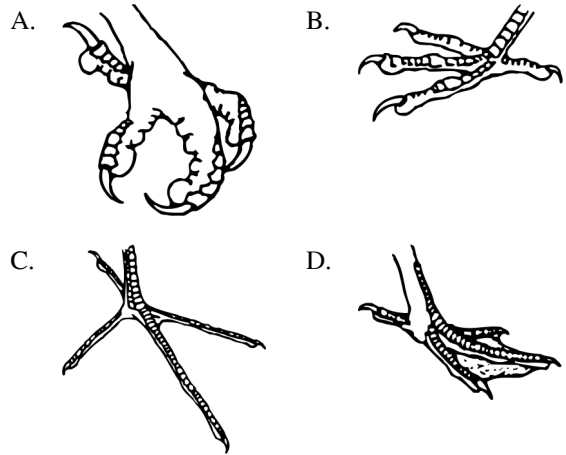
21. Over a long period, some flowering plants have become dependent on honeybees for pollination. In recent years, a form of mite has infected and killed the honeybees in many areas of the country. Since this has happened, the once bee-dependent plants with the best chance of surviving are those that

- A. grow taller so that the few remaining honeybees will find them.
- B. change their flowers so that wind will fertilize them.
- C. have always attracted many other insects as well as honeybees.
- D. have seeds that stay alive for a long time in the environment.

22. A lizard species mostly eats fruit from one particular type of tree. If a virus kills most of these trees, which individual lizards will *most likely* survive?

- A. lizards that can climb higher in the fruit trees
- B. lizards that have darker coloration
- C. lizards that can find other types of food
- D. lizards that produce more offspring

23. Which bird's foot below is best for grasping prey?



24. Few flowers are able to grow on the northern arctic tundra. Those that do grow there have very short stems. How is this an adaptation to help them survive in the arctic climate?

- A. It protects them from freezing.
- B. It prevents them from being eaten by consumers.
- C. It protects them from breaking in strong winds.
- D. It makes it very hard for them to be pulled from the ground.

25. Female seals usually return to the same beaches year after year to give birth. If they are repeatedly disturbed by humans at those beaches, how will the seals *most likely* respond?

- A. They will change color.
- B. They will give birth to more pups.
- C. They will hunt for food more often.
- D. They will give birth at different beaches.

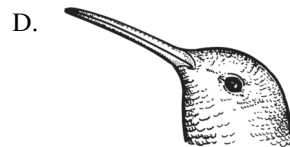
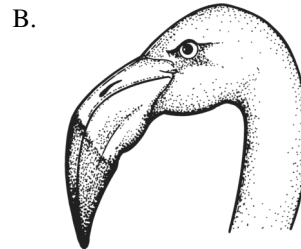
26. Tomato plants grow in warm weather. If the temperature drops below 32°F for two days in a row, what will *most likely* happen to the tomato plants?

- A. They will die.
- B. They will migrate.
- C. They will hibernate.
- D. They will grow faster.

27. The picture below shows a flower with a long slender bloom.



The size and shape of a bird's beak are related to the type of food that the bird eats. Which of the following beaks is suitable for drinking nectar located deep within flowers such as the one shown above?



28. The picture below shows a bird.



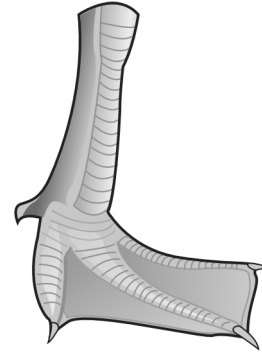
From the shape of its beak and the length of its legs, this bird is best adapted for feeding on which of the following?

- A. insects that feed on plants
- B. small fish in shallow water
- C. nuts from riverside trees and plants
- D. birds in ground nests

29. Some types of trees are able to survive the heat of a forest fire. Which of the following characteristics would *best* help a tree survive a fire?

- A. large leaves
- B. shallow roots
- C. thick bark
- D. thin trunks

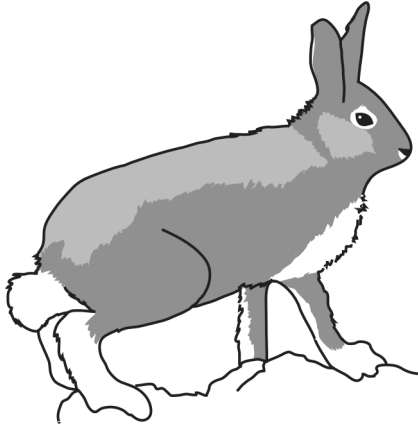
30. The picture below shows the foot of a certain species of bird.



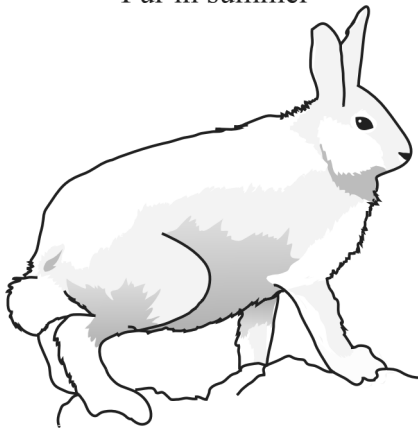
In which of the following environments is this species *best* adapted for survival?

- A. desert
- B. freshwater lake
- C. meadow
- D. tropical rain forest

31. The pictures below show the change in the fur of an arctic hare from summer to winter.



Fur in summer



Fur in winter

Which of the following statements *best* describes how this change helps arctic hares?

- A. It lowers their body temperature.
- B. It protects their eyes from sunlight.
- C. It helps them move on slippery ice.
- D. It makes them less visible to predators.

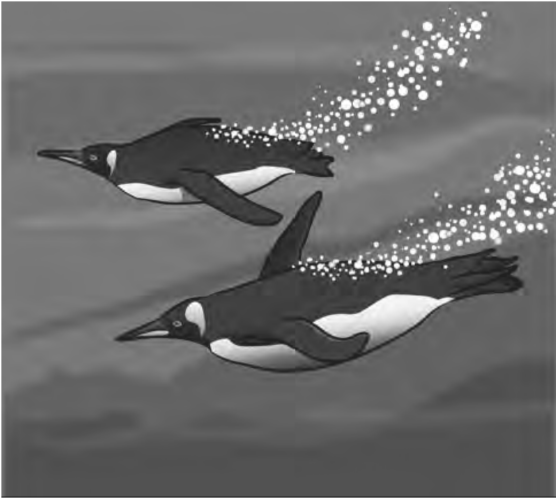
32. A tuna is an ocean fish that is well adapted to catching small, fast-moving prey. Which of the following adaptations *most* helps a tuna swim fast to catch its prey?

- A. large fins
- B. sharp teeth
- C. small gills
- D. tough scales

33. A morning glory is a type of flowering vine that climbs trees and fences. Which of the following behaviors *most* helps a morning glory plant climb a fence?

- A. stems curling in response to touch
- B. stems swelling in response to water
- C. flowers opening in response to light
- D. roots growing in response to gravity

34. Emperor penguins are specialized birds that eat fish. Emperor penguins have developed many special characteristics that help them survive in the ocean environment. The picture below shows two emperor penguins swimming in the ocean.



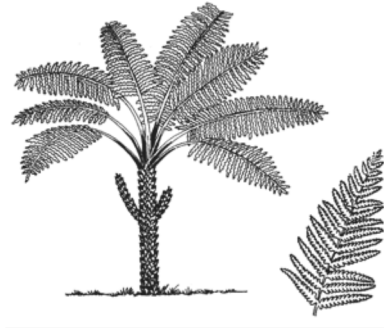
Which of the following characteristics *most* helps the emperor penguins survive in an ocean environment?

- A. having very little sense of smell
- B. having a very weak sense of taste
- C. having large feathers that absorb water
- D. having small wings that move like flippers

35. One of the most common types of adaptations in plants involves the shape and structure of each plant's leaves. The surface area of leaves is related to the amount of water a plant loses.

Based on this information, which of the following plants is probably *best* adapted for living in a hot, dry climate?

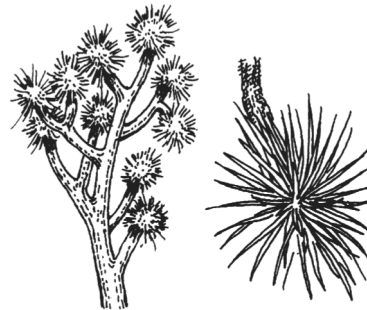
A.



B.



C.



D.



36. The illustration below shows several wild canine species that descended from a common canine ancestor.



African wild dog

Black-backed jackal



Bush dog

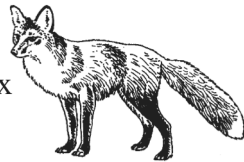
Coyote



Gray wolf



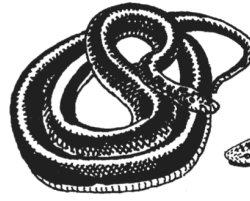
Red fox



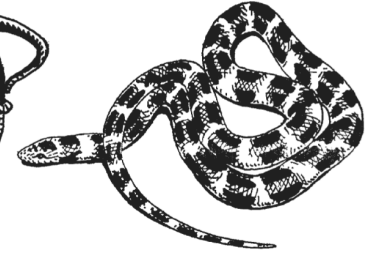
As a result of natural selection, canine biodiversity increased as all of these species developed from a common ancestor. Which of the following factors contributed *most* to the evolution of these diverse canine species?

- A. differences in environment
- B. selective breeding programs
- C. inheritance of learned behaviors
- D. interbreeding with unrelated species

37. The illustration below shows two snakes of the same species that have different striping.



Lengthwise
stripes



Crosswise
stripes

California king snakes may exhibit different patterns of stripes. According to evolution by natural selection, which of the following is the *most likely* result if a snake-eating predator can more easily detect the snakes with the crosswise stripes?

- A. The percentages of snakes born of each type will not change.
- B. Snakes with lengthwise stripes will become more common.
- C. Snakes with crosswise stripes will learn to move faster.
- D. A new type of king snake with no stripes will emerge.

38. *Odontomachus bauri* is a species of ant that has a trap jaw that shuts rapidly. This jaw system evolved from basic mouth parts that all ants have, but the jaw is longer, the joint is a different shape, and the muscles are larger.

Which of the following statements *best* explains why this trap-jaw trait evolved?

- A. The trap jaw increases the ants' body mass.
- B. The trap jaw allows the ants to eat only one kind of food.
- C. The trap jaw is the ants' only means of species recognition.
- D. The trap jaw increases the ants' chances of survival and reproduction.

The following section focuses on different lemur species of Madagascar.

Madagascar is an island located off the east coast of Africa, as shown on the map below.



Madagascar has a unique animal community. Lemurs are one of the animal groups that have diversified extensively on Madagascar. Lemurs are primates, which is an order of mammals that also includes monkeys and apes. Lemur species vary widely in habitat, diet, size, and color. Lemurs only live on the island of Madagascar. However, fossil evidence shows that lemur ancestors existed on Africa's mainland. Scientists hypothesize that lemur ancestors reached Madagascar by floating across the Mozambique Channel on matted clumps of vegetation.

Four different lemur species are shown in figures 1–4 below.

Figure 1. Mouse lemur

Length: 12.5 cm

Habitat: Rain forest and deciduous forest



Copyright © Konrad Wothe/Minden Pictures

Figure 2. Verreaux's sifaka

Length: 45 cm–55 cm

Habitat: Spiny deciduous forest and evergreen forest



Copyright © Frans Lanting/Minden Pictures

Figure 3. Ring-tailed lemur

Length: 38 cm–46 cm

Habitat: Deciduous forest and scrub forest



Copyright © Gerry Ellis/Minden Pictures

Figure 4. Red-bellied lemur

Length: 36 cm–54 cm

Habitat: Rain forest



Copyright © Frans Lanting/Minden Pictures

39. There are at least 88 species of lemurs in existence today. Which of the following conditions *most likely* existed and made it possible for Madagascar's original lemur ancestors to evolve into many species on the island?

- A. presence of a deadly virus that infected only lemurs
- B. complete isolation from other small mammal species
- C. new niches to adapt to in the absence of a large number of competitors
- D. climatic conditions that were very different from those on mainland Africa

40. Which of the following is a reason loggerhead turtles bury their eggs in holes that they dig on the beach?

- A. to keep the eggs covered with water
- B. to provide the eggs with nutrients
- C. to hide the eggs from predators
- D. to protect the eggs from sand

41. In some locations, squirrels sleep for long periods of time during the winter months. Which of the following *most likely* causes these squirrels to sleep for long periods of time?

- A. increase in humidity
- B. decrease in temperature
- C. clouds forming in the sky
- D. winds blowing in the night

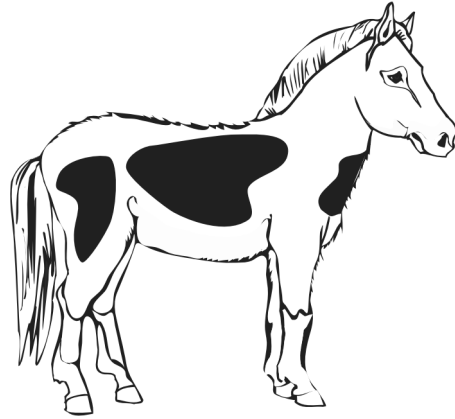
42. Some lizards have an adaptation that allows their tails to break off with minimal damage to bones, nerves, blood vessels, and muscles. This type of lizard can then regrow the missing portion of the tail.

Which of the following statements *best* explains why this adaptation is selected for in lizard populations?

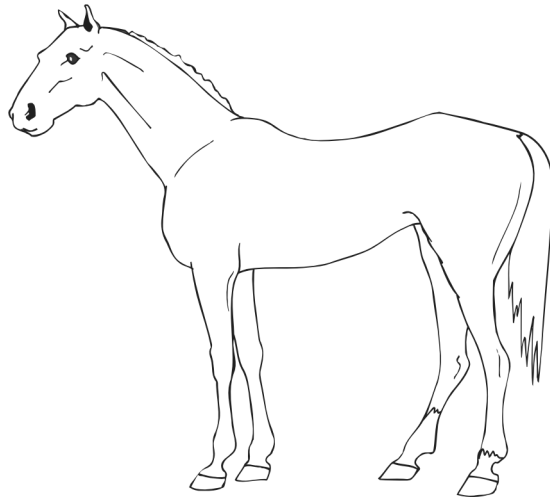
- A. Lizards with this adaptation are better at climbing trees.
- B. Lizards with this adaptation are more likely to escape from predators.
- C. Lizards with this adaptation can use their tails as lures to attract more food.
- D. Lizards with this adaptation can camouflage themselves more easily in vegetation.

43. Use the information and pictures below to answer the following question(s).

Wild ponies have lived on Assateague Island for about 300 years. The ponies have become well adapted to the harsh environment, including extreme temperatures in summer and winter. The ponies mainly eat salty marsh grasses and grow thick fur in winter. Domestic horses are larger than the ponies. An Assateague pony drinks twice as much fresh water as a domestic horse does. Other organisms on the island include rodents, birds, small foxes, marsh grasses, mussels, and deer.



Assateague Pony

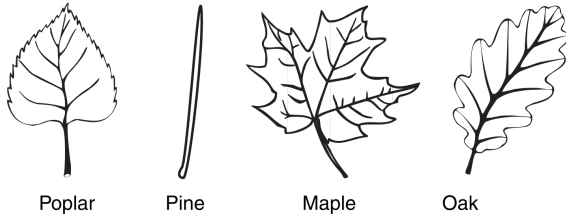


Domestic Horse

Why have the ponies developed a coat of thick fur?

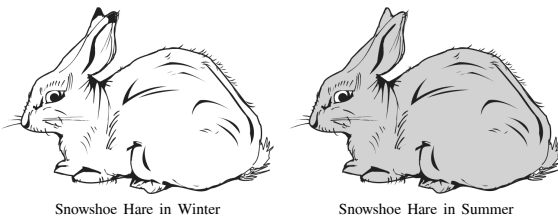
- A. to stay warm
- B. to help them swim
- C. to prepare them to find mates
- D. to protect them from predators

44. The picture below shows four leaves, each from a different tree.



Which leaf is *best* adapted to a dry environment?

- A. poplar B. pine C. maple D. oak
45. As shown in the drawing below, snowshoe hares have thick white fur in the winter and thin gray fur in the summer. Changing fur color with the season provides a certain advantage to these animals.



The advantage of changing fur color is that it

- A. helps hares to attract a mate
B. allows hares to build soft dens
C. helps hares to sneak up on prey
D. allows hares to blend with the environment

46. Mammals living in extremely cold climates typically have thick fur and a layer of fat to insulate them from the cold. Which of these terms *best* describes these characteristics?

- A. translations B. alterations
C. adaptations D. recombinations

47. Loggerhead turtles in the Atlantic Ocean return to lay their eggs on the same beaches where they hatched. Scientists have observed that the turtles have a “compass sense.” This sense allows them to use Earth’s magnetic field to find their way back to the beaches where they were hatched.

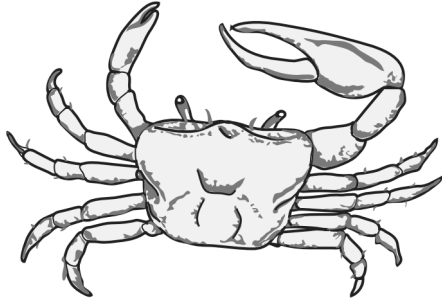
Which of these terms *best* describes the turtle’s ability to use Earth’s magnetic field?

- A. diversity B. habitat
C. succession D. adaptation

48. Use the information and the figure below to answer the following question(s).

Male fiddler crabs attract females by quickly waving their large front claw. If a claw is lost in a fight or accident, they quickly grow a hollow claw of equal length. Because the new claw is lighter, they can wave it faster. A male fiddler crab is shown below.

MALE FIDDLER CRAB



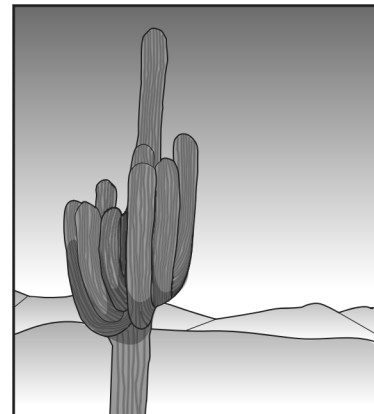
The male fiddler crab's new claw can be described as

- A. a clone B. a genotype
C. an adaptation D. a dominant trait

49. Use the information and the drawing below to answer the following question(s).

The desert climate is caused by geographic conditions such as location, high atmospheric pressure, and proximity of mountain ranges. Average desert rainfall amounts are usually less than 50 cm per year. Soil in deserts is coarse, sandy, and rocky. Desert plants and animals have specialized characteristics that help them survive in the harsh environment. An example is the Saguaro cactus. The Saguaro has a shallow root system with a main taproot and other roots that radiate out and collect surface water. The trunk of the Saguaro has the ability to expand while storing water. The sweet-nectar flowers of the Saguaro attract white-winged doves, bats, and other animals. These animals feed on the nectar. They are necessary for cross-pollination. Cross-pollination occurs when the pollen of a flower is carried to a flower on another plant. The illustration below shows the Saguaro cactus.

SAGUARO CACTUS



Which of these adaptations is *most* important for the Saguaro to survive long periods of drought?

- A. deep roots B. sweet nectar
C. large flowers D. expanding trunk

50. Use the information below to answer the following question(s).

Plants grow in various environments. Some plants, like mangroves, grow in salty wetlands. Mangroves have specialized structures that prevent salt from entering their cells. Other mangroves have specialized glands that can excrete excess salt.

Glands that excrete salt in the mangroves are examples of

- A. meiosis
- B. osmosis
- C. adaptations
- D. successions

51. In Maryland, most bears have thick, dark fur.

Which statement *best* explains how dark fur helps bears survive in the forests of Maryland?

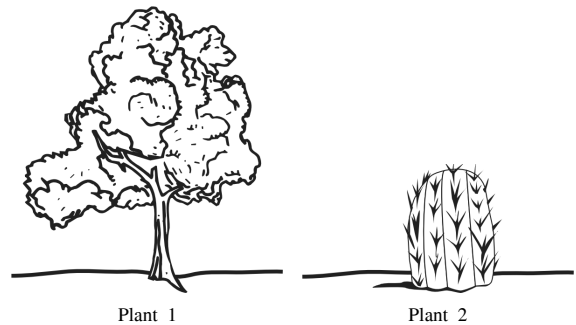
- A. Dark fur is lightweight.
- B. Dark fur scares enemies.
- C. Dark fur helps bears hide.
- D. Dark fur keeps bears cool.

52. The snowshoe hare sheds its fur twice a year. In the summer, the fur of the hare is brown. In the winter, the fur is white.

Which of these statements *best* explains the advantage of shedding fur?

- A. Shedding fur keeps the hare clean.
- B. Shedding fur helps the hare move quickly.
- C. Shedding fur keeps the hare's home warm.
- D. Shedding fur helps the hare blend into its habitat.

53. Some plants live in very dry conditions, such as a desert.



The plant *best* adapted to survive in a desert climate is

- A. Plant 2, because the spines attract insects
- B. Plant 1, because the leaves provide shade for the roots
- C. Plant 1, because the leaves are far away from the hot soil
- D. Plant 2, because the spines allow less water to evaporate

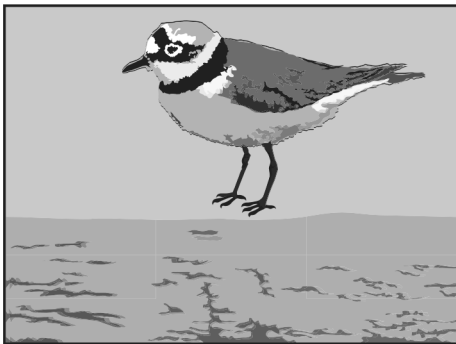
54. Which structure helps protect some plants from being eaten by animals?

- A. their large leaves
- B. their red flowers
- C. their sharp thorns
- D. their short stems

55. Deer eat plants. Some plants, however, have adaptations that keep the deer from eating them. Which adaptation is likely to keep deer from eating a particular plant?

- A. no flowers
- B. thorny branches
- C. large leaves
- D. short stems

56. Use the picture below to answer the following question(s).



Plover

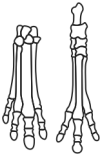
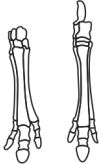
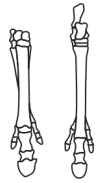
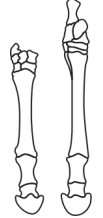
The plover finds its food at the *edge* of shallow water. Which adaptation would help this species find food in shallow water?

- A. shorter wings
- B. longer legs
- C. curved beak
- D. color change

57. A female bear has two male cubs. The first cub grows into a large and aggressive adult bear. The second cub grows to a smaller size and it is not as aggressive as its brother. What problem might the second cub have as an adult?

- A. It might not be able to swim.
- B. It might not be able to hear as well as the larger bear.
- C. It might spend more time with the mother bear.
- D. It might have a hard time protecting its territory.

58. Using the fossil foot bones of horses, scientists found that the feet of horses became longer and lost toes over a long period of time, as shown in the pictures below.

Foot Bones	When Horses Lived
	Oldest fossils (55-45 million years ago)
	(33-29 million years ago)
	(17-11 million years ago)
	Youngest fossils (5 million years ago)

Which conclusion *most likely* explains why the horses' feet changed?

- A. to allow horses to run faster than their predators
- B. to allow horses to swim faster than their ancestors
- C. to allow horses to eat more grass
- D. to allow horses to have more offspring

59. Which example shows a behavioral adaptation?

- A. a bear hibernating
- B. a turtle laying eggs
- C. a porcupine's quills
- D. a bird's hollow bones

60. How would looking like a poisonous dart frog help a non-poisonous frog survive?

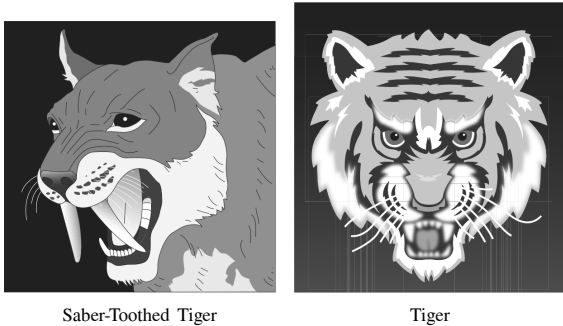
- A. It would help the frog find shelter.
- B. It would help the frog attract prey.
- C. It would help the frog frighten predators.
- D. It would help the frog blend with its environment.

61. Which characteristic would have the *greatest* effect on the ability of a species to survive an environmental change?

- A. Size
- B. Color
- C. Life span
- D. Reproduction

62. Bears are known to hibernate in the winter.
- Which statement predicts why hibernation is a useful adaptation for survival?
- A. Larger animals hunt bears in the winter.
 - B. Food becomes scarce during the winter.
 - C. Migration causes a struggle for available space.
 - D. Fewer leaves make it easier for prey to see the bears.

63. Scientists have found fossils of an animal known as the saber-toothed tiger. The organism is related to tigers we see today, but the fangs of the saber-toothed tiger are longer and bigger than those of today's tigers. The following pictures show examples of both organisms.



If saber-toothed tigers used their fangs for hunting, what evidence do the teeth of today's tigers suggest about a possible change in the environment?

- A. The tiger became a better hunter.
- B. The tiger became less interested in hunting.
- C. There is smaller prey in the tiger's environment.
- D. There are fewer animals in the tiger's environment.

64. The Bactrian camel has humps made of fat that it can use for energy when needed. The kangaroo rat does not drink water; it gets all it needs from food that it eats.

Which statement describes how these adaptations affect the Bactrian camel and the kangaroo rat?

- A. Allow them to survive a drought
- B. Increase their ability to catch prey
- C. Allow them to scare their predators
- D. Make them blend into the environment

65. The climate in a mountain environment has been changing over a long period of time. The climate is becoming warmer and the amount of rainfall is decreasing. The lower rainfall is also limiting the amount of plant life available as a food source. A species of goat that lives in this environment has had thinning hair over this period of time.

Which of these describes how thinning hair helps the species of goat survive?

- A. By stopping it from overheating
- B. By letting it survive on less food
- C. By reducing how much water it loses
- D. By allowing it to absorb more sunlight

66. Which adaptation helps the scarlet king snake survive in its environment?
- A. It reproduces between 4 and 20 eggs.
 - B. It usually grows to between 2 and 4 feet long.
 - C. It can live in deserts, wetlands, and grasslands.
 - D. It looks like the poisonous coral snake to confuse predators.

67. Some animals are capable of making noises that cannot be heard by humans. These noises can be used to communicate or to help an animal navigate. Which of the following organisms has a similar adaptation?

- A. Bats
- B. Birds
- C. Dogs
- D. Apes

68. Which table shows adaptations that allow organisms to survive in a marshy wetland environment?

A.

Organism	Adaptation to Environment
Mammal	Broad tail Thick, waterproof coat
Plant	Broad leaves that float Roots that reduce salt absorption

B.

Organism	Adaptation to Environment
Mammal	Broad, flat teeth Front paws structured for digging into ground
Plant	Tall, narrow leaves Fibrous roots that grow in clumps

C.

Organism	Adaptation to Environment
Mammal	Long ears to release heat from body Dig burrows into ground for shelter
Plant	Thick stems that store water Narrow leaves and needles

D.

Organism	Adaptation to Environment
Mammal	White fur that provides camouflage and reduces amount of heat released back into air Insulated layer of fat
Plant	Furry, waxlike leaves Dead leaves that stay attached to provide insulation

69. Dunia and Shane are studying the cold, snowy taiga biome for a science assignment. They learn that many of the trees in the taiga forests have long, thin needles that remain on the trees all year long. The following table shows Shane's beliefs about why needles allow trees to survive in the taiga.

Why Needles Allow Trees to Survive Taiga Biome

1	Needles grow faster than leaves, allowing the plant to increase its level of photosynthesis and crowd out other plants.
2	Needles have a smaller surface area than leaves, decreasing the loss of water during the winter when the ground is frozen.
3	The shape of needles allows snow to fall from them easily, minimizing the buildup of a large mass of snow that would break branches.
4	Needles do not have to be replaced every spring, increasing the amount of energy that can be used for growth and reproduction during short growing seasons.

Which explanations should Dunia include in their final paper?

- A. 1 and 2 B. 1, 3, and 4
C. 2, 3, and 4 D. 3 and 4

70. Crassulacean acid metabolism (CAM) is a type of photosynthesis. A plant using CAM takes in carbon dioxide (CO₂) at nighttime, when it is cooler. The plant changes the CO₂ into an acid. During the daytime, the plant changes the acid into carbohydrates, without losing water to the warm air.

In which environment are such plants best adapted for survival?

- A. Low-altitude, because the air pressure is greater closer to sea level
B. Desert, because plants living in the desert have little water available
C. High-altitude, because the night air is cooler in alpine zones of mountains
D. Aquatic, because plants living in water need more carbohydrates to avoid drowning

71. Ospreys are a type of bird that nests near a body of water. These birds have adapted to hunt the fish living in the water of the environment.

Which adaptations have allowed ospreys to survive in their environment?

- A.
 - Short wings for gliding over water
 - Long legs for reaching into the water
 - Hollow, lightweight bones that allow for flying
- B.
 - Large eyes that provide keen vision
 - Webbed feet for quick movement in water
 - Pivotal head that allows for quick view in all directions
- C.
 - Thick, oily feathers for water resistance
 - Strong feet and sharp claws for grasping fish
 - Strong, muscular legs for carrying the fish back to land
- D.
 - Straight, sharply pointed beak for grasping prey
 - Large ears for hearing movements of fish in water
 - Long, sleek feathers that allow for diving into water

72. Greg is studying a grassland system. His data show that the area experiences a short drought every year. During this drought, the amount of vegetation is reduced, and little water is available.

Which adaptations provide an organism with the greatest chance for surviving the drought?

- A.
 - Long tongue for catching insects
 - Able to camouflage to avoid predators
- B.
 - Thick, white fur that reflects heat from the sun
 - Able to hibernate for long period of time
- C.
 - Long neck to reach vegetation in tall trees
 - Able to survive long periods without water
- D.
 - Horns for defense when competing for vegetation
 - Able to run away from predators quickly

73. Jesse is studying the red mangrove trees in a coastline environment. The following illustration shows the structure of a red mangrove.



Jesse's data indicate that the salt content in the water on this coastline is increasing. Which of the following adaptations allows the red mangrove to survive in this coastline environment?

- A. Flowers that attract insects for pollination, causing genetic variation in offspring
- B. Large leaves that allow for oxygen and gas exchange from the air instead of the sand
- C. Roots with a filtration system that allows water to enter but keeps out the larger salt molecules
- D. Roots that prop the tree above the sand, giving it support so it can withstand the force of ocean tides

74. Which table describes adaptations that allow organisms to survive in a desert environment?

A.

Organism	Adaptation to Environment
Plant	Sharp needles for protection
	Thick stems that store water
Animal	Hump of fatty tissue that cools animal
	Nostrils that close, trapping exhaled water vapor

B.

Organism	Adaptation to Environment
Plant	Broad, flat leaves that capture sunlight
	Deep roots that anchor plant during windstorms
Animal	Dark-colored fur that absorbs heat
	Sharp claws for digging in soil

C.

Organism	Adaptation to Environment
Plant	Leaves drop off trees to avoid fungal infections
	Produces cones that protect seeds
Animal	White-colored fur to blend in with environment
	Active at night and sleep during day

D.

Organism	Adaptation to Environment
Plant	Produces colorful flowers to attract pollinators
	Grows long vines to climb toward sunlight
Animal	Oily fur for water resistance
	Webbed feet for swimming in water

75. A light-colored insect lives on trees in a forest. The bark of the trees appeared white because of light-colored lichen that also lived on the tree. Disease destroyed the lichen. The tree bark is now dark-colored.

How will this environmental change affect the number of light-colored insects?

- A. The number of insects will decrease because, with the lichen gone, the insects will have no other source of food.
- B. The number of insects will decrease because predators will see the light-colored insects on the dark bark more easily.
- C. The number of insects will increase because, with the lichen gone, the insects will no longer have to compete with the lichen for space.
- D. The number of insects will increase because the insect predators that also eat the diseased lichen will become ill and decrease in number.

76. The spotted cuscus lives in Australia's tropical rainforest region. This mammal is primarily active at night and feeds on fruit and leaves. Which of the following traits would be found in the spotted cuscus?

- A. Short tail
- B. Broad feet
- C. Large eyes
- D. Sharp teeth

77. Animals like the kangaroo rat have the ability to obtain water through metabolism of food. This adaptation helps the kangaroo rat survive in which biome?

- A. Desert
- B. Grassland
- C. Deciduous forest
- D. Tropical rainforest

78. The following shows a species of Hawaiian honeycreeper and the flowers on which it feeds.



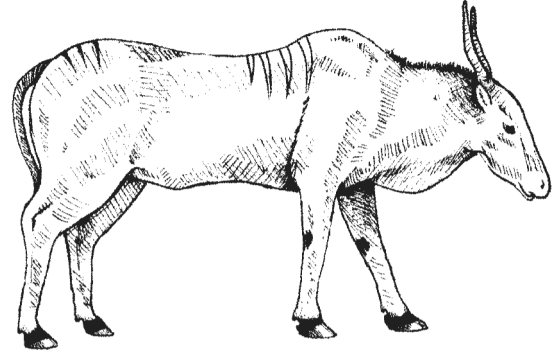
The flower shape allows the bird to aid which process required for plant survival?

- A. Mitosis
- B. Photosynthesis
- C. Pollination
- D. Transpiration

79. Which of the following terms describes traits or characteristics that promote an organism's survival in a given environment?

- A. Population variability
- B. Allele frequency
- C. Generation gaps
- D. Behavioral adaptations

80. Eland are large herbivores with loose skin under the throat and neck. This patch of loose skin aids in lowering the body temperature when temperatures are high. Eland are able to run at speeds over 40 miles per hour. They run long distances in their open environment. Eland live in large herds.

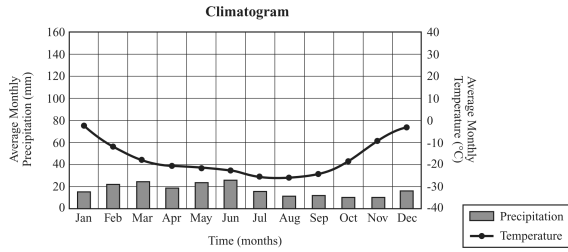


Eland

In which of the following biomes would the adaptations of the eland have the *greatest* survival benefit?

- A. The taiga, due to its plentiful vegetation for herbivores
- B. The grassland, because of its warm open fields for grazing
- C. The desert, due to its high temperatures and empty plains for running fast
- D. The tundra, because of the treeless open spaces for ease in running long distances

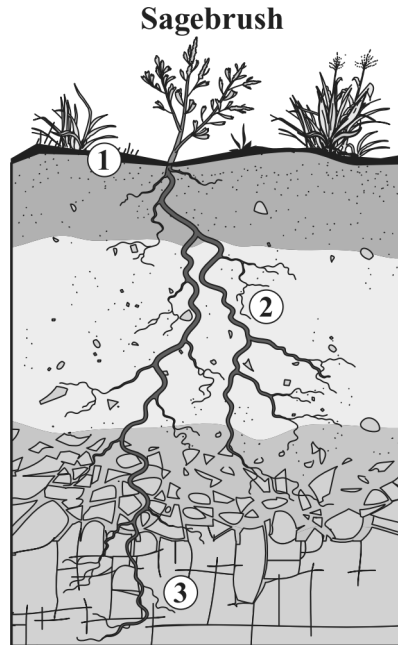
81. The graph below is a climatogram of a particular biome.



Which adaptation would be seen in animals in this biome?

- A. Long thin bodies
- B. Strong thick hooves
- C. Thick body fat layers
- D. Dark colored feathers

82. The diagram shows the three levels of sagebrush plant roots.

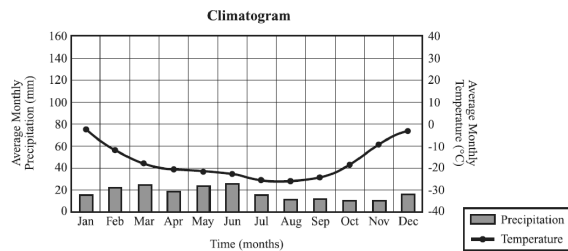


Which statement describes the root adaptation of the sagebrush plant in its biome?

- A. The roots help stabilize the plant in the taiga.
- B. The roots access frozen, nutrient-rich soil in the tundra.
- C. The roots access underground water sources in the desert.
- D. The roots help the plant compete for water sources in the tropical rainforest.

83. How do small, narrow leaves help plants survive in hot, dry environments?
- The leaves reduce water loss of the plants.
 - The leaves protect the plants from consumers.
 - The leaves absorb more sunlight for the plants.
 - The leaves increase the reproduction rate of the plants.

84. The graph below is a climatogram of a particular biome.



Which adaptation would be seen in animals in this biome?

- Long thin bodies
- Strong thick hooves
- Thick body fat layers
- Dark colored feathers

85. What function is served by plant adaptations such as stinging hairs, thorns, and briars?
- reproduction
 - photosynthesis
 - protection
 - disease prevention

86. How have desert plants adapted to their environment?

- by limiting the use of sunlight
- by storing water
- by distributing certain nutrients
- by releasing water

87. Variety within a species is *most likely* to result from which situation?

- severe weather conditions that might occur, such as hurricanes or blizzards
- adaptation to local environmental characteristics by isolated populations of the species
- the extinction of competing species over a broad range of habitats
- sex-specific coloring differences

88. Which statement *best* describes most of the species that have lived on Earth?

- A. Their habitats were located in the desert.
- B. They still exist on Earth in their original forms.
- C. They are no longer living on Earth.

89. During winter, chipmunks sleep for long periods of time, so they do not need a constant supply of food. Which *best* describes this adaptation?

- A. structural
- B. behavioral
- C. reproductive

90. A population of organisms has adapted so that the organisms are better able to survive in their environment. What will *most likely* happen to the population of organisms?

- A. It will increase.
- B. It will decrease.
- C. It will stay the same.

91. Scientists think that the first forms of life on Earth were anaerobic. Which *most* supports this theory?

- A. The ozone layer of early Earth was very thin.
- B. The temperatures of early Earth were warmer than they are today.
- C. The atmosphere of early Earth contained very little oxygen.

92. Which statement *best* describes natural selection?

- A. Living organisms develop from other living things.
- B. Acquired characteristics are inherited from parent to offspring.
- C. Organisms adapted to their environment can survive and pass traits to offspring.

93. How does a reptile know when to stop lying in the sun?

- A. It senses that its body is cold.
- B. It senses that its body is hot.
- C. It sees the bright sun in the sky.
- D. It sees the sun covered by clouds.

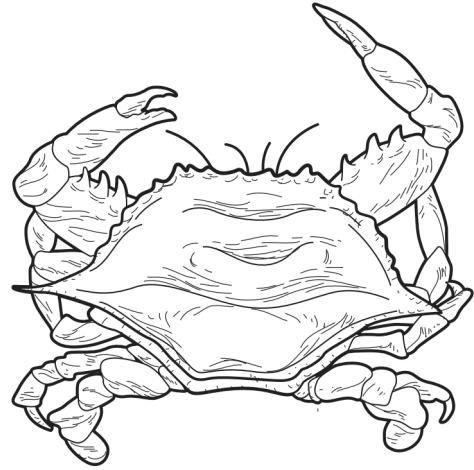
94. Two rabbits live in the same forest. One rabbit has a thin fur coat in the summer and grows a thicker fur coat during the winter. The other rabbit has a thin fur coat year-round. Which *best* describes what could happen during a cold winter?

- A. Both rabbits could grow thin fur coats to survive the cold weather.
- B. Both rabbits could shed their fur coats to survive the cold weather.
- C. The rabbit with the thick fur coat could have a better chance of surviving the cold weather.
- D. The rabbit with the thin fur coat could have a better chance of surviving the cold weather.

95. A plant is placed on a windowsill facing the sun. After a week, the plant is rotated away from the sun. How will the plant *most likely* respond?

- A. The plant will bend toward the window, because the sun is a positive stimulus.
- B. The plant will bend away from the window, because the sun is a positive stimulus.
- C. The plant will bend toward the window, because the sun is a negative stimulus.
- D. The plant will bend away from the window, because the sun is a negative stimulus.

96.



Blue crabs can be found in the coastal waters of New Jersey. Which of these explains why the crab's outer shell helps it survive in its habitat?

- A. The shell keeps the crab warm.
- B. The shell helps the crab catch food.
- C. The shell protects the crab from predators.
- D. The shell allows the crab to get oxygen.

97. The environment of a particular species of rabbit is becoming colder over time. Rabbits with which of the following traits will best be able to survive and reproduce?

- A. shorter legs
- B. thicker fur
- C. longer ears
- D. longer whiskers

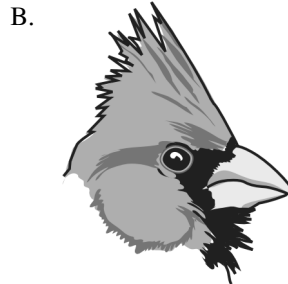
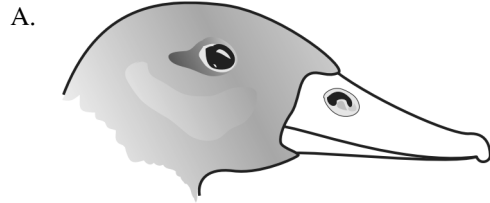
98. A forest of trees with white bark is home to a species of gray moth and to birds which prey on them. Pollution made the bark of the trees go black. Several years later most of the moths found had wings that were

- A. shorter.
- B. longer.
- C. lighter.
- D. darker.

99. Why do the faster-running deer tend to be found more frequently in a deer population?

- A. Slow-running deer reproduce more slowly.
- B. Slow-running deer are unable to compete for food.
- C. Fast-running deer have more fawns per doe.
- D. Fast-running deer are able to escape predators.

100. Which bird's bill is *best* for collecting nectar from plants?



101. Which difference would *most* likely give certain individuals in a population an advantage to survive and reproduce over other individuals in the environment where they live?

- A. Certain jackrabbits that move slower than most other jackrabbits would be chased less by predators.
- B. Certain mountain lions with greater speed than most other mountain lions would have an easier time catching prey.
- C. Certain bighorn sheep that are smaller than most other bighorn sheep would be more difficult for predators to see.
- D. Certain desert tortoises with front claws that are more webbed than most other desert tortoises' claws would be able to swim better in lakes.

102. Killer whales inhabit all the oceans in the world. Which adaptation *most* directly helps killer whales maintain their body temperatures in arctic marine environments?

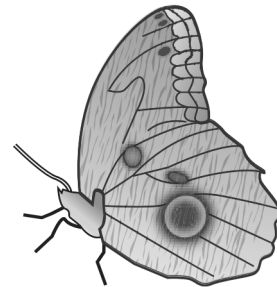
- A. light and dark skin coloration
- B. ability to swim at fast speeds
- C. keen eyesight for hunting prey
- D. thick layer of fat beneath the skin

103. If a species of insect lacks the variations needed to adapt to a changing environment, it will most likely

- A. acquire them through evolution.
- B. evolve into a lower form.
- C. become extinct.
- D. evolve into a higher form.

104.

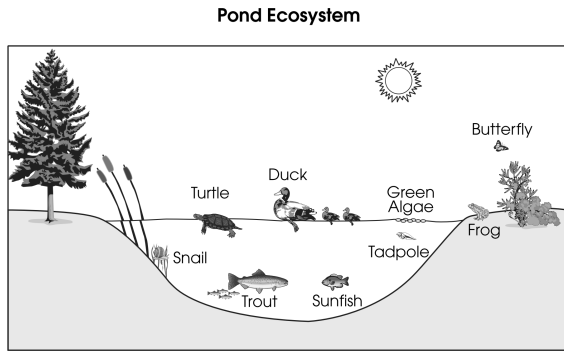
Owl Butterfly



The owl butterfly has patterns on its wings that look like large eyes. How does this help the butterfly survive?

- A. It helps the butterfly fly faster.
- B. It helps the butterfly see better.
- C. It helps the butterfly scare enemies.
- D. It helps the butterfly absorb sunlight.

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



The picture shows a pond ecosystem. Many plants and animals live in and around the pond.

In the winter, the pond starts to freeze. The ducks leave the pond. They migrate to warmer climates.

Which statement explains one reason why ducks migrate?

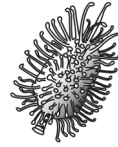
- A. The ducks have too many enemies.
- B. The ducks have difficulty finding food.
- C. The ducks have to lay eggs near water.
- D. The ducks have too few places to hibernate.

106. Which seed has structures that allow animals to transport the seed on their fur?

A. Corn Seed



B. Cocklebur



C. Maple Seed



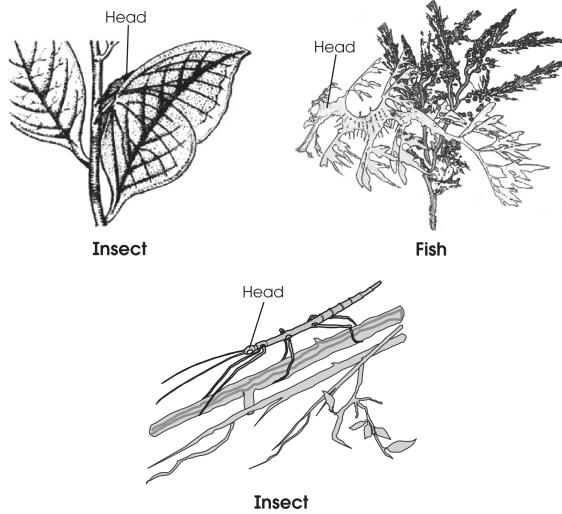
D. Acorn



107. In which environment is white fur color an advantage for survival?

- A. desert
- B. grassland
- C. arctic tundra
- D. temperate forest

108. Use the following pictures to answer the question.



The reproductive success of an organism depends in part on the ability of the organism to survive.

How does the physical appearance of these organisms help them survive?

- A. Their physical appearance helps them find a habitat.
- B. Their physical appearance helps them resist parasites.
- C. Their physical appearance helps them avoid predators.
- D. Their physical appearance helps them defend a territory.

A group of students is working on a project to identify and classify different types of animals. Each student examined the characteristics of a single type of animal. The students then compiled a table of some traits that could be useful for classification of the animals (see the table below).

	Skeleton type	Adult appendages	Temperature regulation	Adult respiration	Fertilization
Bony Fish	bone	unpaired dorsal fins, paired ventral fins	cold-blooded	gills	external
Amphibians	bone	most adults—2 pairs of legs	cold-blooded	usually lungs	usually external
Reptiles	bone	2 pairs of legs (except snakes)	cold-blooded	lungs	internal
Birds	bone	1 pair of wings, 1 pair of legs	warm-blooded	lungs	internal
Mammals	bone	2 pairs of legs or 1 pair of legs and 1 pair of arms	warm-blooded	lungs	internal

The students must now develop flowchart classification schemes to make it easier to classify animals. Use the information in the table to answer the following questions.

109. Which of the following characteristics of amphibians represents an adaptation to a land environment?

- A. external fertilization
- B. cold-blooded
- C. bony skeleton
- D. lungs of adult forms

110. Animals have adaptations that help them in survival. One example of this is the giraffe's long neck. What primary purpose does this adaptation serve?

- A. Protection from heat
- B. Gathering of food
- C. Protection from predators
- D. Increased speed

111. Use the pictures below to answer the following question.



hover fly



honey bee

A hover fly looks like a honey bee. Which statement *best* explains how this adaptation helps the hover fly survive?

- A. Looking like a honey bee keeps other animals away from the hover fly's food.
- B. Looking like a honey bee allows the hover fly to collect more pollen.
- C. Looking like a honey bee allows the hover fly to blend with its environment.
- D. Looking like a honey bee keeps some predators from trying to eat the hover fly.

112. Which adaptation of the American bullfrog helps it hide in grass?

- A. long and sticky tongue
- B. over 6 inches in size
- C. brown and green color
- D. large eyes on top of head

113. A scientist observed two populations of birds of the same species. One population lives in a warm climate, and the other population lives in a cold climate. The birds in the two populations look very different. The birds in the cold climate are larger than the birds in the warm climate and have smaller wingspans. Which statement explains why these two populations have different adaptations?

- A. Birds in warm climates fly more often than birds in cold climates.
- B. Birds in warm climates eat more food than birds in cold climates.
- C. Birds in cold climates need to grow more slowly than birds in warm climates.
- D. Birds in cold climates need to conserve more body heat than birds in warm climates.

114. Use the picture below to answer the question.



How is this fish adapted for weedy areas in freshwater lakes?

- A. The upper fin of the fish looks like waves of water.
- B. The lower fins of the fish look like the legs of a turtle.
- C. The stripes of the fish look like plants in the water.
- D. The front of the fish looks like the surface of a rock.

115. Use the table below to answer the following question.

Shell Color in Theoretical Insect Population

Year	Amount of Population with Specific Shell Color (%)	
	Yellow	Brown
1	75	25
2	50	50
3	25	75
4	100	0

This table shows changes in the occurrence of different shell colors in a theoretical population of insects over a four-year period. How could differential reproduction explain the changes in the insects' shell color over the four-year period?

- A. Changing circumstances made brown-shelled insects more attractive to potential mates.
- B. Chemical changes in the insects' shells made brown-shelled insects reproduce more rapidly.
- C. Chemical changes in the insects' DNA made brown-shelled insects reproduce at a higher rate.
- D. Changing circumstances made brown-shelled insects less likely to survive to reproductive age.

116. A scientist discovers several varieties of crickets living in different habitats on an island. The crickets were similar except for their colors. On the north side, most of the crickets were green. On the east side, most of the crickets were black. On the south side, most of the crickets were light brown.

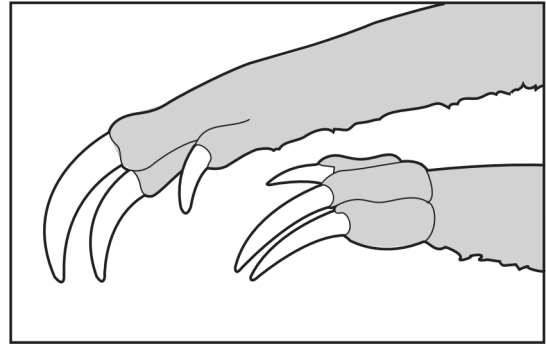
Which statement best explains why the crickets varied in color?

- A. Crickets moved to different habitats on the island according to their color.
- B. Crickets intentionally changed their colors to blend in with their habitat.
- C. Crickets select mates of different colors in order to have different-colored offspring.
- D. Crickets of certain colors were more likely to survive and reproduce in different habitats.

117. Which physical characteristic do some organisms have that helps them survive in the Arctic?

- A. growing tall to hide in trees
- B. changing fur color to hide from predators
- C. developing large paws to protect themselves from the wind
- D. producing shallow root systems to protect themselves from the cold air

118. The drawing shows the front feet of an animal.



Which activity does this animal *most likely* do very well?

- A. flying
- B. digging
- C. jumping
- D. swimming

119. A research scientist repeatedly observes a bird avoiding a specific butterfly species even though it eats other types of butterflies. Which statement *most likely* explains the behavior of the bird?

- A. The behavior is a random act.
- B. The behavior is the result of a genetic mutation.
- C. The behavior is inherited from the bird's parents.
- D. The behavior is learned over the lifetime of the bird.

120. Which action is *most likely* a learned behavior?

- A. A bird builds a nest.
- B. A spider spins a web.
- C. A lion cub practices its hunting skills.
- D. An earthworm moves away from bright light.

121. Which of these is an example of an animal's instinctive behavior?

- A. a goose flying south in the fall
- B. a dog sitting up to beg for food
- C. a seal balancing a ball on its nose
- D. a parrot repeating the words it hears

122. Killer whales inhabit all the oceans in the world. Which adaptation *most* directly helps killer whales maintain their body temperatures in arctic marine environments?

- A. light and dark skin coloration
- B. ability to swim at fast speeds
- C. keen eyesight for hunting prey
- D. thick layer of fat beneath the skin

Predicting An Organism's Ability to Adapt 5/2/2019

- | | |
|-----------------------|-----------------------|
| 1.
Answer: A | 21.
Answer: C |
| 2.
Answer: B | 22.
Answer: C |
| 3.
Answer: A | 23.
Answer: A |
| 4.
Answer: B | 24.
Answer: C |
| 5.
Answer: C | 25.
Answer: D |
| 6.
Answer: | 26.
Answer: A |
| 7.
Answer: B | 27.
Answer: D |
| 8.
Answer: B | 28.
Answer: B |
| 9.
Answer: A | 29.
Answer: C |
| 10.
Answer: C | 30.
Answer: B |
| 11.
Answer: C | 31.
Answer: D |
| 12.
Answer: A | 32.
Answer: A |
| 13.
Answer: B | 33.
Answer: A |
| 14.
Answer: D | 34.
Answer: D |
| 15.
Answer: C | 35.
Answer: C |
| 16.
Answer: D | 36.
Answer: A |
| 17.
Answer: C | 37.
Answer: B |
| 18.
Answer: A | 38.
Answer: D |
| 19.
Answer: A | 39.
Answer: C |
| 20.
Answer: D | 40.
Answer: C |

41.
Answer: B

42.
Answer: B

43.
Answer: A

44.
Answer: B

45.
Answer: D

46.
Answer: C

47.
Answer: D

48.
Answer: C

49.
Answer: D

50.
Answer: C

51.
Answer: C

52.
Answer: D

53.
Answer: D

54.
Answer: C

55.
Answer: B

56.
Answer: B

57.
Answer: D

58.
Answer: A

59.
Answer: A

60.
Answer:

61.
Answer: D

62.
Answer: B

63.
Answer: C

64.
Answer: A

65.
Answer: A

66.
Answer: D

67.
Answer: A

68.
Answer: A

69.
Answer: C

70.
Answer: B

71.
Answer: C

72.
Answer: C

73.
Answer: C

74.
Answer: A

75.
Answer: B

76.
Answer: C

77.
Answer: A

78.
Answer: C

79.
Answer: D

80.
Answer: B

81.
Answer: C

82.
Answer: C

83.
Answer: A

84.
Answer:

85.
Answer: C

86.
Answer: B

87.
Answer: B

88.
Answer: C

89.
Answer: B

90.
Answer: A

91.
Answer: C

92.
Answer: C

93.
Answer: B

94.
Answer: C

95.
Answer: A

96.
Answer: C

97.
Answer: B

98.
Answer: D

99.
Answer: D

100.
Answer: C

101.
Answer: B

102.
Answer: D

103.
Answer:

104.
Answer: C

105.
Answer: B

106.
Answer: B

107.
Answer: C

108.
Answer: C

109.
Answer: D

110.
Answer: B

111.
Answer: D

112.
Answer: C

113.
Answer: D

114.
Answer: C

115.
Answer: D

116.
Answer: D

117.
Answer: B

118.
Answer: B

119.
Answer: D

120.
Answer: C

121.
Answer: A

122.
Answer: D