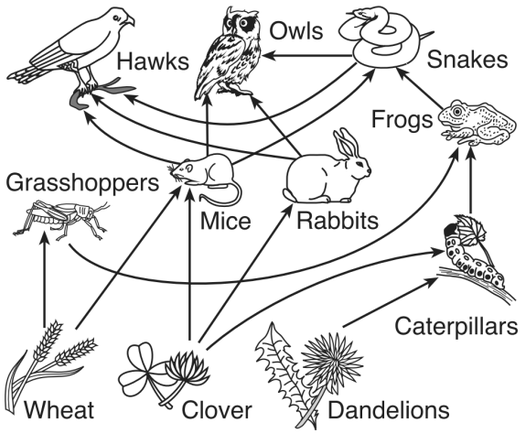
Ecology 2 Star

Name: _____ **Date:** _____

1. Missing from the diagram of this ecosystem are the



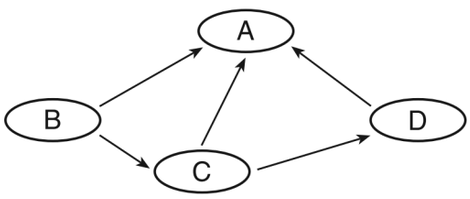
A. biotic factors and decomposers

B. abiotic factors and decomposers

C. autotrophs, only

D. heterotrophs, only

2. The diagram below represents a food web composed of producers, consumers, and decomposers.



Which group would represent the decomposer organisms?

A. A B. B C. C D. D

3. A relationship between a consumer and producer is best illustrated by a

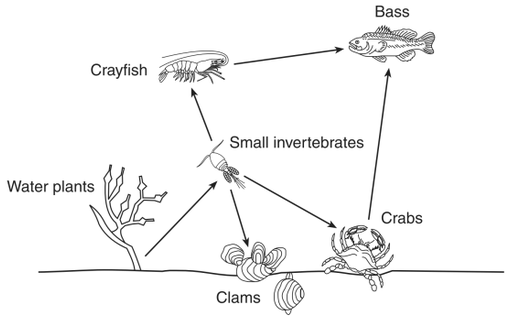
A. snake eating a bird

B. tree absorbing minerals

C. fungus breaking down wastes

D. deer eating grass

4. A food web is represented below.



When water used to cool machinery is returned to a river, it raises the river water temperature. This causes a sharp decline in small invertebrate populations. Based on the food web, a likely consequence of this change would be

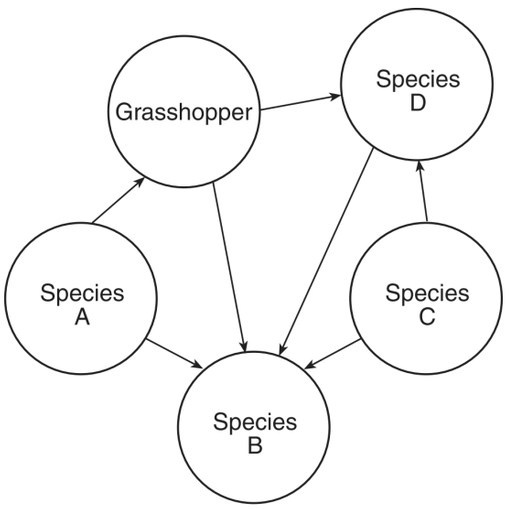
A. an increase in the number of clams

B. a decrease in the number of water plants

C. an increase in the number of crabs

D. a decrease in the number of crayfish

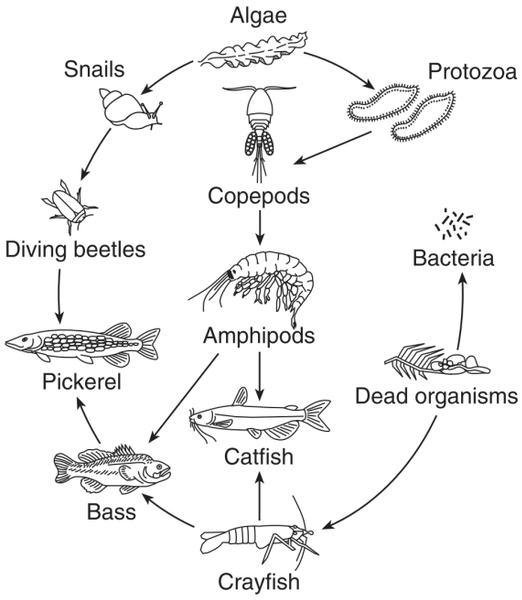
5. The diagram below represents a food web.



Which species would most likely be a decomposer?

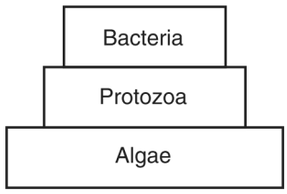
A. A B. B C. C D. D

6. Base your answer(s) to following question(s) on the diagram below, which represents a pond food web, and on your knowledge of biology.

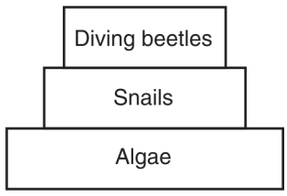


Which energy pyramid most accurately shows the energy relationships between three organisms in this food web?

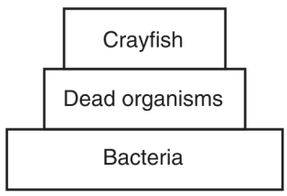
A.



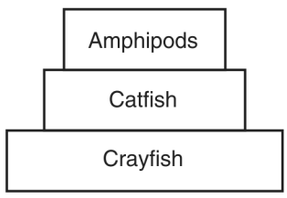
B.



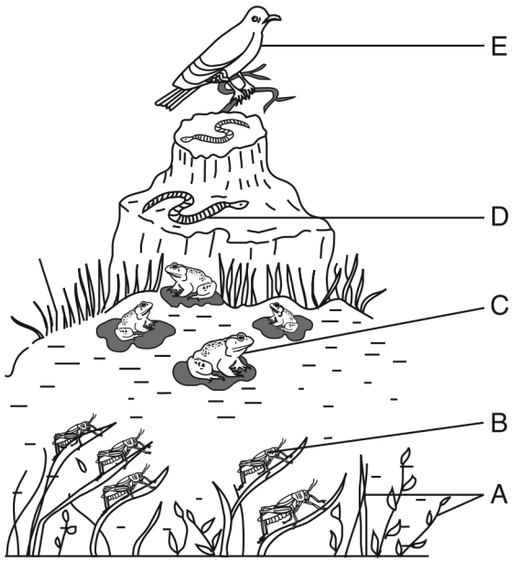
C.



D.



7. Base your answer(s) to the following question(s) on the diagram below that represents an energy pyramid in a meadow ecosystem and on your knowledge of biology.



Which two organisms are carnivores?

A. *A* and *B*
B. *A* and *E*
C. *B* and *D*
D. *C* and *E*

8. A food chain is represented below.

Grass → Cricket → Frog → Owl

This food chain contains

A. 4 consumers and no producers
B. 1 predator, 1 parasite, and 2 producers
C. 2 carnivores and 2 herbivores
D. 2 predators, 1 herbivore, and 1 producer

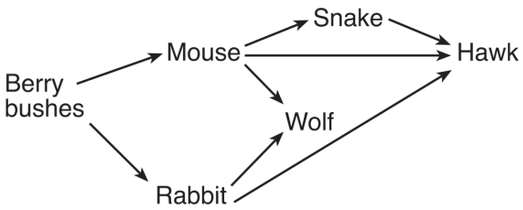
9. The chart below contains both autotrophic and heterotrophic organisms.

A	owl	cat	shark
B	mouse	corn	dog
C	squirrel	bluebird	alga

Organisms that carry out only heterotrophic nutrition are found in

A. row *A*, only
B. row *B*, only
C. rows *A* and *B*
D. rows *A* and *C*

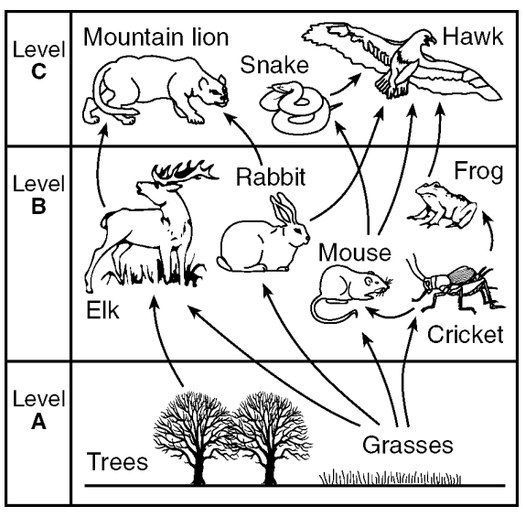
10. A food web is represented in the diagram below.



Which population in this food web would most likely be *negatively* affected by an increase in the mouse population?

A. snake B. rabbit C. wolf D. hawk

11. A food web is represented below.



Which statement best describes energy in this food web?

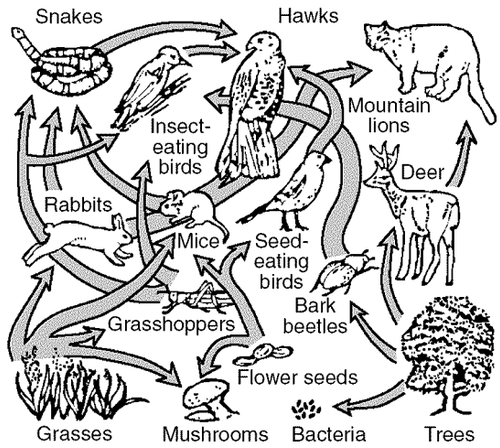
A. The energy content of level *B* depends on the energy content of level *C*.

B. The energy content of level *A* depends on energy provided from an abiotic source.

C. The energy content of level *C* is greater than the energy content of level *A*.

D. The energy content of level *B* is transferred to level *A*.

12. A food web is represented in the diagram below.



Which organisms are correctly paired with their roles in this food web?

A. mountain lions, bark beetles—producers hawks, mice—heterotrophs

B. snakes, grasshoppers—consumers mushrooms, rabbits—autotrophs

C. all birds, deer—consumers grasses, trees—producers

D. seeds, bacteria—decomposers mice, grasses—heterotrophs

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

Research has shown that plants might chemically change their environment. The roots of certain plants release many chemicals. Some chemicals made by plants can kill nearby plants or discourage herbivores from eating them. Other plant chemicals kill plant pathogens such as bacteria and fungi.

Predict *one* way the carnivores in the area could be affected by the production of protective chemicals by plants. Support your answer.

14. Due to overfishing, the number of fish in the ocean could drastically decrease. This will cause

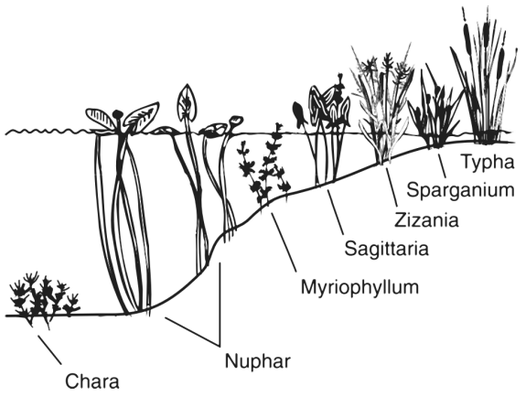
A. an increase in the stability of the oceans

B. an increase in the salt content of the oceans

C. a decrease in the stability of the oceans

D. a decrease in the oxygen available in the oceans

15. Which statement best explains why different plant species are found at different water depths as represented in the diagram below?



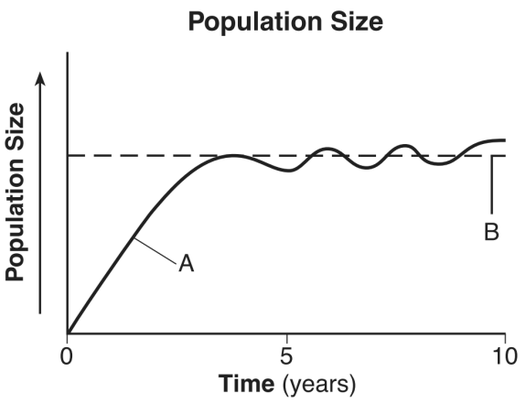
A. Energy flows through ecosystems in one direction, typically beginning with photosynthetic organisms.

B. In any particular environment, the growth and survival of organisms is affected by physical conditions.

C. Plants on land are higher up the food chain than plants under water.

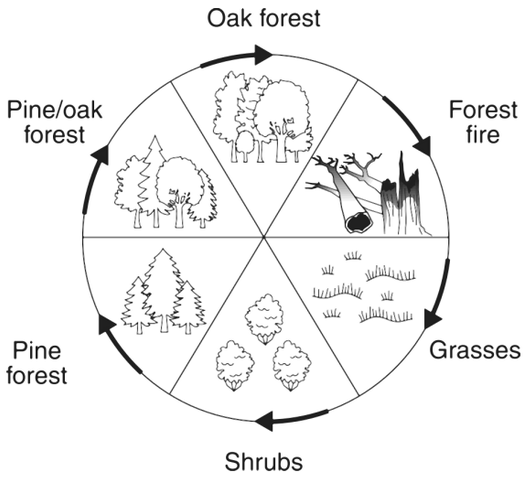
D. Plant cells and some one-celled organisms contain chloroplasts.

16. Base your answer(s) to the following question(s) on the graph below on your knowledge of biology. The graph shows the size of a population over time.



State *one* reason for the changes in population size represented by line A between years 5 and 10.

17. Which process is represented in the diagram below?



A. energy flow

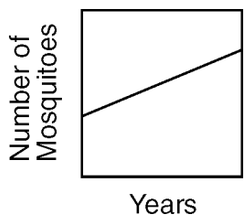
B. biological evolution

C. cellular communication

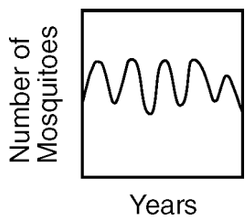
D. ecological succession

18. Which graph illustrates changes that indicate a state of dynamic equilibrium in a mosquito population?

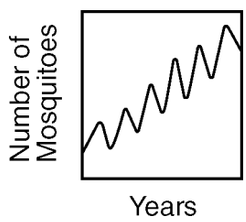
A.



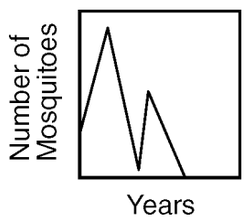
B.



C.



D.



19. The accompanying diagram shows a food chain.

Grasses → Rabbits → Bobcats

If the population of bobcats decreases, what will most likely be the long-term effect on the rabbit population?

A. It will increase, only.

B. It will decrease, only.

C. It will increase and then decrease.

D. It will decrease and then increase.

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

Invasion of the Giant Rodents

Large, 20-pound rodents [nutria] that were originally from South America are spreading northward from the southern United States.

The nutria were brought in and raised in the southern United States for their fur. Nutria escaped and started a wild population.

They have since moved up the east coast, damaging plant life in Delaware and Maryland. Currently, they have reached New Jersey. These rodents are damaging New Jersey's marshland ecosystems.

A nutria can eat up to 5 pounds of marshland plants a day. This loss of plant life is harming the marshland ecosystems.

State *one* reason why the removal of plant life by the nutria can harm marshland ecosystems.

21. A wildlife manager in New Jersey wants to use poisons to destroy the nutria. State *one* problem that might result from this action.

22. When habitats are destroyed, there are usually fewer niches for animals and plants. This action would most likely *not* lead to a change in the amount of

A. biodiversity

B. competition

C. interaction between species

D. solar radiation reaching the area

23. Decomposers are necessary in an ecosystem because they

A. produce food for plants by the process of photosynthesis

B. provide energy for plants by the process of decay

C. can rapidly reproduce and evolve

D. make inorganic materials available to plants

24. An ecosystem that has almost the same number and type of organisms for many years is exhibiting

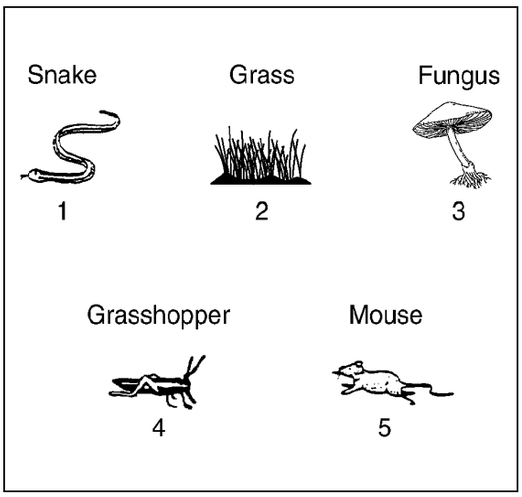
A. feedback

B. global instability

C. environmental change

D. equilibrium

25. Organisms from a particular ecosystem are shown below.



Which statement concerning an organism in this ecosystem is correct?

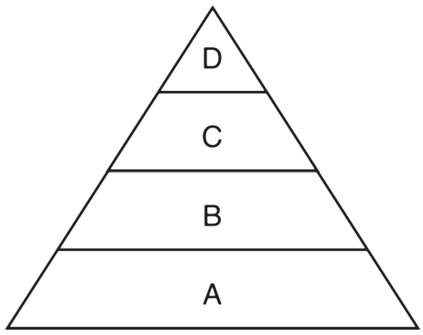
A. Organism 2 is heterotrophic.

B. Organism 3 helps recycle materials.

C. Organism 4 obtains all of its nutrients from an abiotic source.

D. Organism 5 must obtain its energy from organism 1.

26. The diagram below represents interactions between organisms in a stable ecosystem.



Which statement correctly describes organisms in this ecosystem?

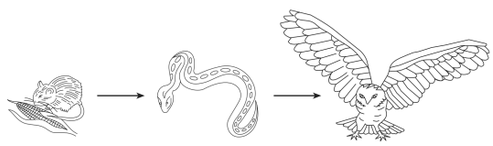
A. Organisms in level B obtain their energy directly from the Sun.

B. Organisms in level C obtain their nutrients directly from organisms in level D.

C. Organisms in level A are herbivores.

D. Organisms in level D are heterotrophic.

27. The diagram below represents a food chain made up of organisms found in a field.

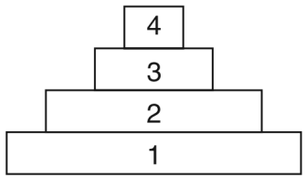


Which row in the chart correctly identifies characteristics that can be associated with the members of this food chain?

Row	Producer	Consumer	Autotroph	Heterotroph
(1)	corn	snake	mouse	owl
(2)	mouse	owl	snake	mouse
(3)	corn	owl	corn	snake
(4)	owl	corn	snake	corn

A. (1) B. (2) C. (3) D. (4)

28. Four levels of an energy pyramid are represented below.



Which statement about this energy pyramid is correct?

A. Organisms in level 4 receive their energy directly from the Sun.

B. Organisms in level 2 are carnivores.

C. Organisms in level 2 receive their energy from level 3.

D. Organisms in level 1 are autotrophic.

29. Certain organisms are able to store energy from the Sun in energy-rich compounds. Which event best illustrates this activity?

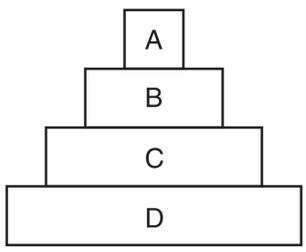
A. A fox captures and eats a young rabbit.

B. A caterpillar is eaten by a blackbird.

C. Lettuce produces organic substances.

D. Bacteria change organic material into simple nutrients.

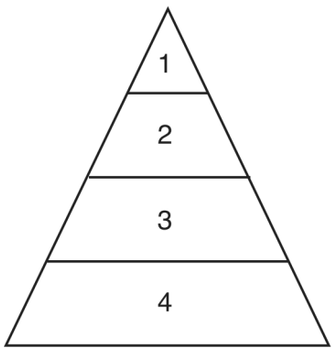
30. The diagram below represents a typical energy pyramid.



Which level in the pyramid includes autotrophs?

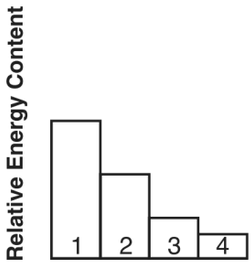
A. A B. B C. C D. D

31. An energy pyramid is shown below.

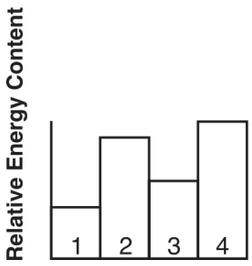


Which graph best represents the relative energy content of the levels of this pyramid?

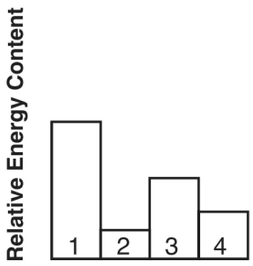
A.



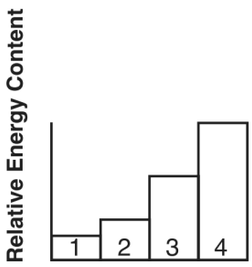
B.



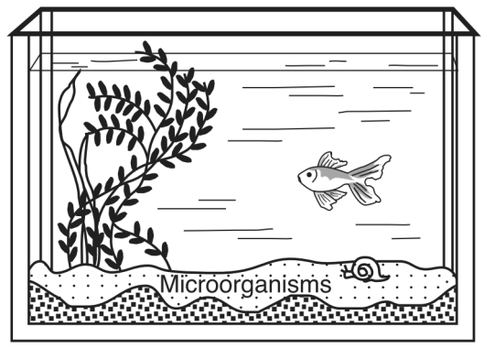
C.



D.



32. Which statement most accurately predicts what would happen in the aquarium shown below if it were tightly covered and maintained in natural light for one month?



A. The water temperature would rapidly decrease.

B. The process of respiration in the snail would decrease.

C. The rate of reproduction of the fish would be affected.

D. The organisms would probably survive because materials would cycle.

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

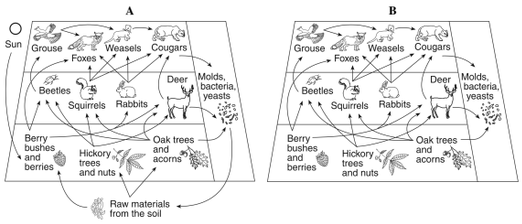
Decline of the Salmon Population

Salmon are fish that hatch in a river and swim to the ocean where their body mass increases. When mature, they return to the river where they were hatched and swim up stream to reproduce and die. When there are large populations of salmon, the return of nutrients to the river ecosystem can be huge. It is estimated that during salmon runs in the Pacific Northwest in the 1800s, 500 million pounds of salmon returned to reproduce and die each year. Research estimates that in the Columbia River alone, salmon contributed hundreds of thousands of pounds of nitrogen and phosphorus compounds to the local ecosystem each year. Over the past 100 years, commercial ocean fishing has removed up to two-thirds of the salmon before they reach the river each year.

Identify *two* nutrients that are returned to the ecosystem when the salmon die.

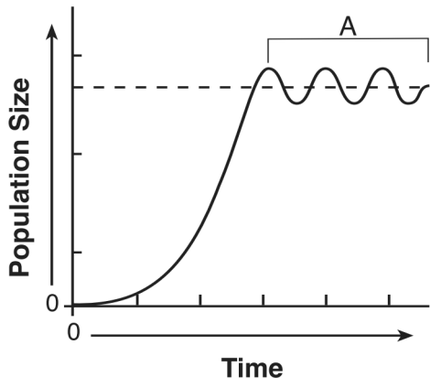
34. Identify the process that releases the nutrients from the bodies of the dead salmon, making the nutrients available for other organisms in the ecosystem.

35. Base your answer(s) to the following question(s) on the diagrams below and on your knowledge of biology. The diagrams represent how various populations interact in a forest environment.



State *one* possible reason why the deer population could remain relatively constant, even though the number of berry bushes and berries varies from year to year.

36. The graph below indicates the size of a fish population over a period of time.



The section of the graph labeled *A* represents

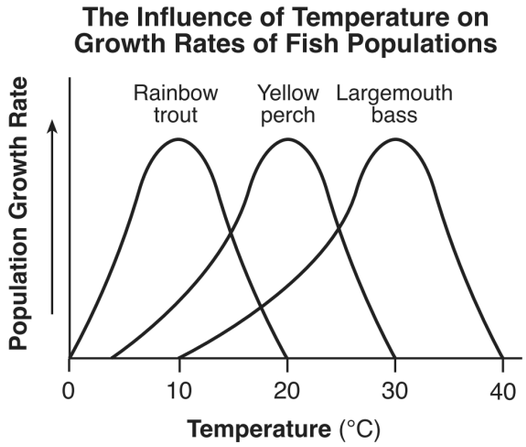
A. biodiversity within the species

B. nutritional relationships of the species

C. a population becoming extinct

D. a population at equilibrium

37. A study was done on three different fish species living in a pond in New York State. The influence of temperature on the growth rates of the fish populations is shown in the graph below.



In this pond where these fish live, temperature is a

A. limiting factor

B. hereditary factor

C. source of ATP

D. source of solar energy

38. Which consequence could most likely be associated with a decrease in biodiversity in an area?

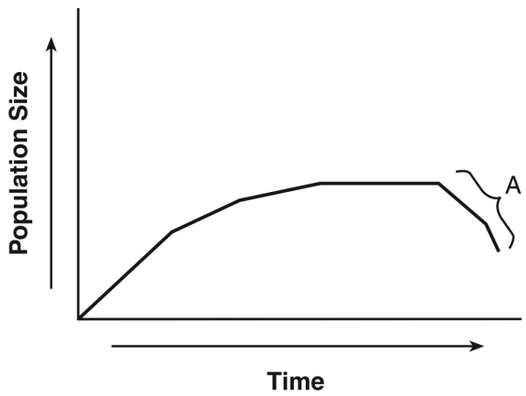
A. More species would be better able to survive a major environmental change.

B. The ecosystems in the area would become more stable.

C. The amount of genetic information in the species of the area would increase.

D. Some sources of future foods or medications would be lost.

39. The graph below shows the changes in the size of a population over a period of time.



Which environmental condition could have caused the change in the population size at A?

A. an increase in competition

B. a constant availability of shelter

C. a decrease in the size of its predators

D. an unlimited supply of its food

40. Competition for biotic resources can be illustrated by organisms fighting for a limited amount of

A. air to breathe B. water to drink

C. mates for breeding D. space for nesting

41. Which pair of organisms would most likely compete for the same ecological niche?

A. bacteria and fungi B. deer and wolf

C. tree and fungi D. deer and bacteria

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

> . . . Corals come in about 1,500 known species—from soft swaying fans to stony varieties with hard skeletons that form reef bases. They are made up of polyps, tiny animals that live in colonies and feed at night on microscopic plants and creatures. The coral's surface is the living part, with color infused by single-celled algae called zooxanthellae that live in polyp tissue. The algae act like solar panels, passing energy to the coral as they photosynthesize while feeding on the coral's waste.
>
> Extremely sensitive, corals survive in a narrow range of temperature, sunlight and salinity. An uncommonly severe El Niño in 1998 raised ocean temperatures and changed currents, causing bleaching that devastated reefs worldwide. Scientists say parts of the Indian Ocean lost up to 90 percent of corals. The bleaching struck reefs around the Persian Gulf, East Africa, Southeast Asia and the Caribbean. Some recovered. Many died. . . .
>
> Source: Associated Press, December 2001

The passage contains information concerning

A. limiting factors

B. reproductive methods

C. bacteria

D. competition

43. The relationship between the polyps and the zooxanthellae can best be described as

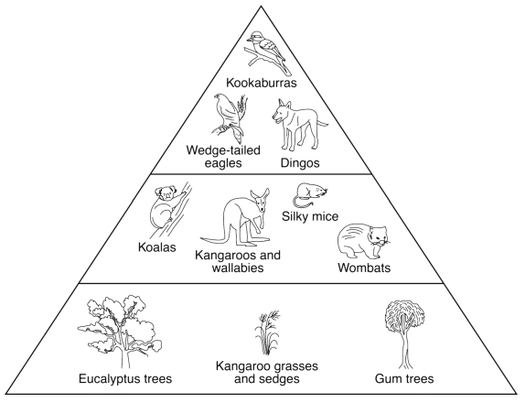
A. negative for both

B. neutral for both

C. positive for both

D. negative for one and positive for the other

44. Base your answer(s) to the following question(s) on the diagram below and on your knowledge of biology. The diagram represents an energy pyramid for an ecosystem in the Australian outback.



Wombats are classified as herbivores because they can

A. get energy from the Sun

B. provide energy for the kookaburras

C. get nutrition from the grasses and sedges

D. provide nutrition for the kangaroos

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

Mayflies

Mayflies belong to a group of insects known as Ephemeroptera, which means "shortlived wings." They have been given this name because the adult, the only stage that has wings, lives for only a few days.

The aquatic juvenile form of most mayfly species lives for several years under rocks in streams that have high levels of dissolved oxygen. The juveniles feed on microscopic photosynthetic organisms. Juveniles supply food for trout and other stream fish.

Millions of adult mayflies emerge from stream water in early summer. The adults have wings for flight, but lack functional mouth parts. Their energy supply comes from food stored in their bodies. Birds and bats eat adult mayflies. Adult mayflies mate, lay eggs, and die within a few days.

A student was asked to construct a food chain based on the information given in the passage. The student's answer is shown below.

microscopic plants → mayfly eggs ← bats

State *one* of the errors the student made when constructing this food chain.

46. Identify the nutritional role of the juveniles in a stream food chain.

47. Adult mayflies are unable to

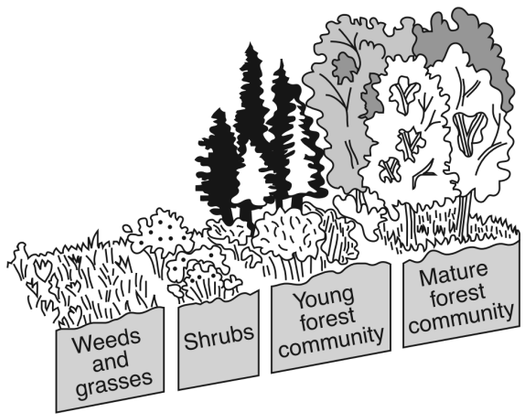
A. take in food

B. move from place to place

C. form ATP

D. form gametes

48. Which statement best describes one of the stages represented in the diagram below?



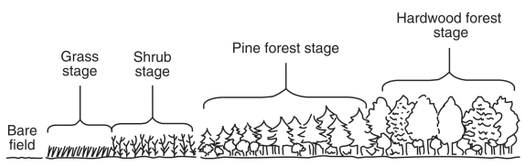
A. The mature forest will most likely be stable over a long period of time.

B. If all the weeds and grasses are destroyed, the number of carnivores will increase.

C. As the population of the shrubs increases, it will be held in check by the mature forest community.

D. The young forest community will invade and take over the mature forest community.

49. The diagram below represents a biological process taking place in an area of New York State unaffected by natural disasters.



Which statement correctly describes a stage in this process?

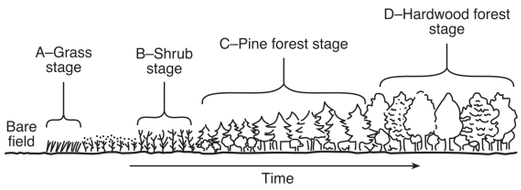
A. The grass stage is the most stable stage and exists for thousands of years.

B. The shrub stage modifies the ecosystem, making it more suitable for the pine forest.

C. The pine forest stage has no biodiversity and the least competition.

D. The hardwood forest stage will be replaced by a pine forest.

50. The diagram below represents different stages of an ecosystem over a period of time.



Which stage of the ecosystem has the greatest long-term stability?

A. A B. B C. C D. D

51. Which type of organism helps to reduce atmospheric carbon dioxide?

A. carnivores B. producers

C. decomposers D. herbivores

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1.
Answer: B

2.
Answer: A

3.
Answer: D

4.
Answer: D

5.
Answer: B

6.
Answer: B

7.
Answer: D

8.
Answer: D

9.
Answer: A

10.
Answer: B

11.
Answer: B

12.
Answer: C

13.
Answer:
– The carnivores will increase if there are more herbivores.
– The carnivore population would probably decline because their food source would probably decline.
– The carnivores might migrate to a different area where more food is available.

14.
Answer: C

15.
Answer: B

16.
Answer:
– Populations grow until they exceed the limits of the environment,and then they die off until they fall below environmentallimits.
– Changes in available food cause changes in population size.
– Parasites/disease/starvation causes population sizes to vary.
– Variations in predator populations will cause changes in preypopulations.

17.
Answer: D

18.
Answer: B

19.
Answer: C

20.
Answer:
– Plants provide food for native consumers.
– Fish hide among plants to avoid predators.
– The marshland food web might be altered.
– Decreased biodiversity.

21.
Answer:
– Other animals might be poisoned.
– Beneficial organisms might be destroyed.
– The poisons might be harmful to people.

22.
Answer: D

23.
Answer: D

24.
Answer: D

25.
Answer: B

26.
Answer: D

27.
Answer: C

28.
Answer: D

29.
Answer: C

30.
Answer: D

31.
Answer: D

32.
Answer: D

33.
Answer: nitrogen compounds, phosphorus compounds, or carbon compounds

34.
Answer: decomposition, decay, or recycling

35.
Answer:
– If there are not enough berries, then the deer population can eat more acorns and Hickory nuts.
– The deer have other food sources.

36.
Answer: D

37.
Answer: A

38.
Answer: D

39.
Answer: A

40.
Answer: C

41.
Answer: A

42.
Answer: A

43.
Answer: C

44.
Answer: C

45.
Answer: – Both arrows don't go in the same direction. – Mayfly eggs do not eat bats. – Mayfly eggs do not feed on microscopic plants. – According to the passage, mayfly eggs and bats are not in the same food chain.

46.
Answer: They eat microscopic autotrophs. prey for fish consumer food for trout herbivores

47.
Answer: A

48.
Answer: A

49.
Answer: B

50.
Answer: D

51.
Answer: B