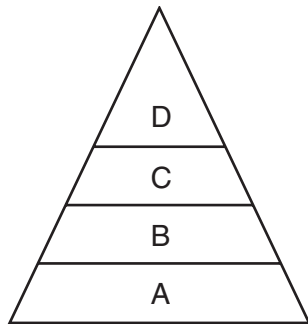


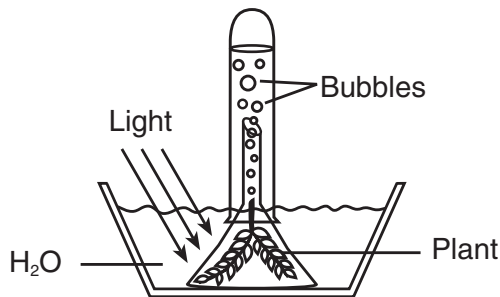
“Most of the important things in the world have been accomplished by people who have kept on trying when there seemed no hope at all.” - Dale Carnegie

Which process provides the initial energy to support all the levels in the energy pyramid shown below?



- (1) circulation
- (2) photosynthesis
- (3) active transport
- (4) digestion

The green aquatic plant represented in the diagram below was exposed to light for several hours.

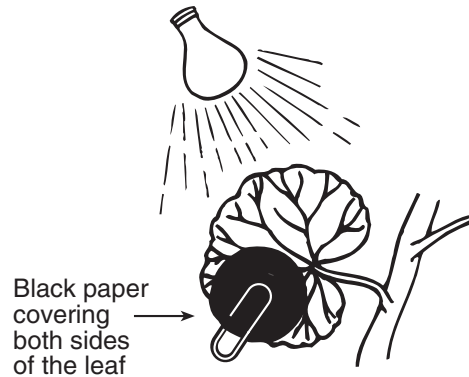


Which gas would most likely be found in the greatest amount in the bubbles?

- (1) oxygen
- (2) nitrogen
- (3) ozone
- (4) carbon dioxide

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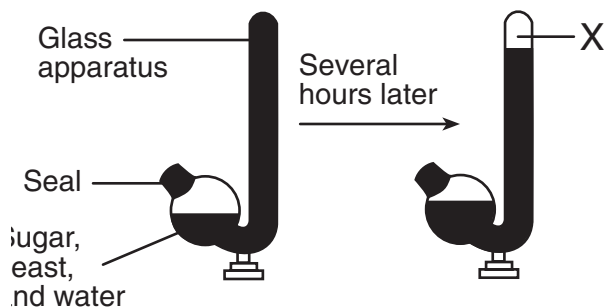
An experimental setup is shown below.



Which hypothesis would most likely be tested using this setup?

- (1) Light is needed for the process of reproduction.
- (2) Glucose is not synthesized by plants in the dark.
- (3) Protein synthesis takes place in leaves.
- (4) Plants need fertilizers for proper growth.

An investigation was carried out and the results are shown below. Substance X resulted from a metabolic process that produces ATP in yeast (a single-celled fungus).

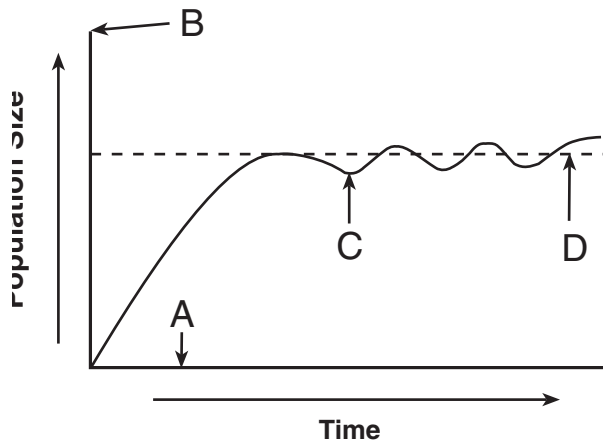


Which statement best describes substance X?

- (1) It is oxygen released by protein synthesis.
- (2) It is glucose that was produced in photosynthesis.
- (3) It is starch that was produced during digestion.
- (4) It is carbon dioxide released by respiration.

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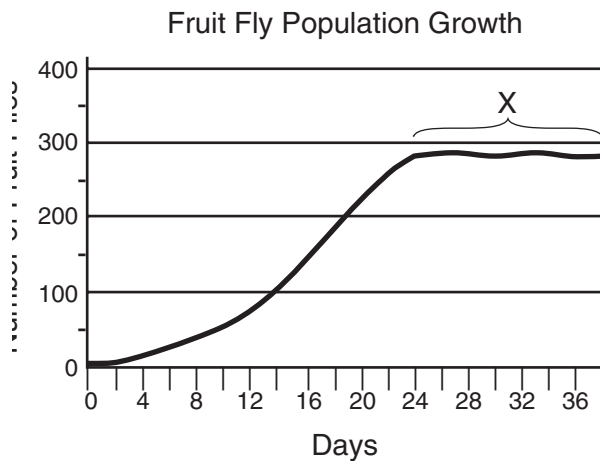
The growth of a population is shown in the graph below.



Which letter indicates the carrying capacity of the environment for this population?

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

Which statement best describes the fruit fly population in the part of the curve labeled X in the graph shown below?



- (1) The fruit fly population has reached the number of organisms the habitat can support.
- (2) The fruit fly population can no longer mate and produce fertile offspring.
- (3) The fruit fly population has an average life span of 36 days.
- (4) The fruit fly population is no longer able to adapt to the changing environmental conditions.

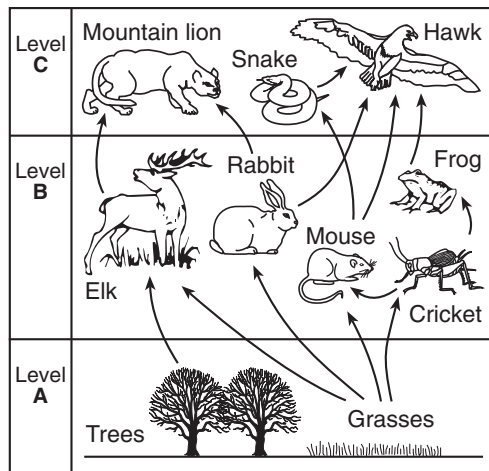
“Most of the important things in the world have been accomplished by people who have kept on trying when there seemed no hope at all.” - Dale Carnegie

Lichens and mosses are the first organisms to grow in an area. Over time, grasses and shrubs will grow where these organisms have been. The grasses and shrubs are able to grow in the area because the lichens and mosses

- (1) synthesize food needed by producers in the area
- (2) are at the beginning of every food chain in a community
- (3) make the environment suitable for complex plants
- (4) provide the enzymes needed for plant growth

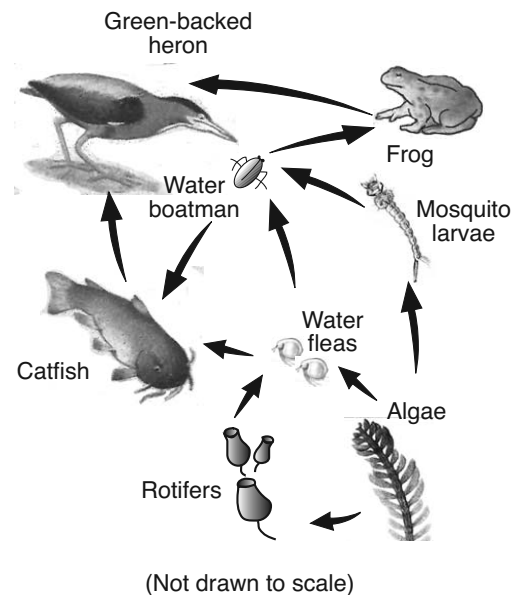
4 A pond ecosystem is shown in the diagram below.

A food web is represented below.



Which statement best describes energy in this food web?

- (1) The energy content of level B depends on the energy content of level C.
- (2) The energy content of level A depends on energy provided from an abiotic source.
- (3) The energy content of level C is greater than the energy content of level A.
- (4) The energy content of level B is transferred to level A.

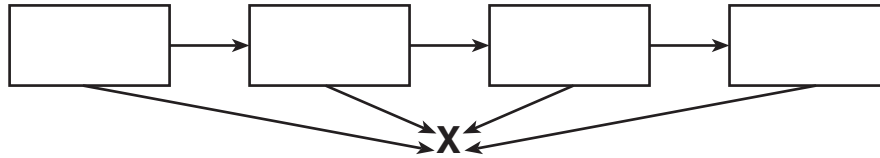


Which statement describes an interaction that helps maintain the dynamic equilibrium of this ecosystem?

- (1) The frogs make energy available to this ecosystem through the process of photosynthesis.
- (2) The algae directly provide food for both the rotifers and the catfish.
- (3) The green-backed heron provides energy for the mosquito larvae.
- (4) The catfish population helps control the populations of water boatman and water fleas.

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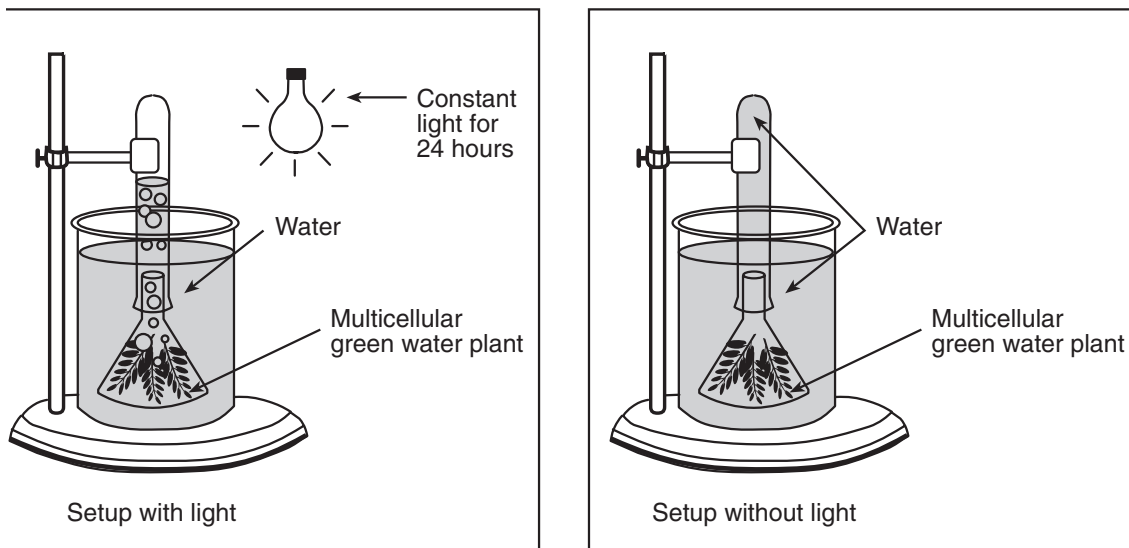
The diagram below represents some energy transfers in an ecosystem.



Which type of organism is most likely represented by letter X?

- (1) decomposer
- (2) autotroph
- (3) producer
- (4) herbivore

An experimental setup is shown in the diagram below.



Which hypothesis would most likely be tested using this setup?

- (1) Green water plants release a gas in the presence of light.
- (2) Roots of water plants absorb minerals in the absence of light.
- (3) Green plants need light for cell division.
- (4) Plants grow best in the absence of light.

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The Pine Bush ecosystem near Albany, New York, is one of the last known habitats of the nearly extinct Karner Blue butterfly. The butterfly's larvae feed on the wild green plant, lupine. The larvae are in turn consumed by predatory wasps. The four groups below represent other organisms living in this ecosystem.

Group A	Group B	Group C	Group D
algae mosses ferns pine trees oak trees	rabbits tent caterpillars moths	hawks moles hognosed snakes toads	soil bacteria molds mushrooms

40 The Karner Blue larvae belong in which group?

- (1) A
- (2) ~~B~~
- (3) C
- (4) D

41 Which food chain best represents information in the passage?

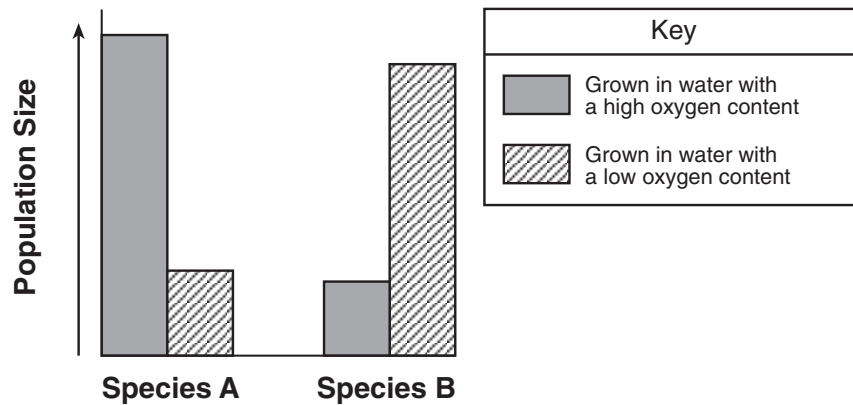
- (1) lupine → Karner Blue larvae → wasps
- (2) wasps → Karner Blue larvae → lupine
- (3) Karner Blue larvae → lupine → wasps
- (4) lupine → wasps → Karner Blue larvae

42 Which group contains decomposers?

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

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A graph of the population growth of two different species is shown below.

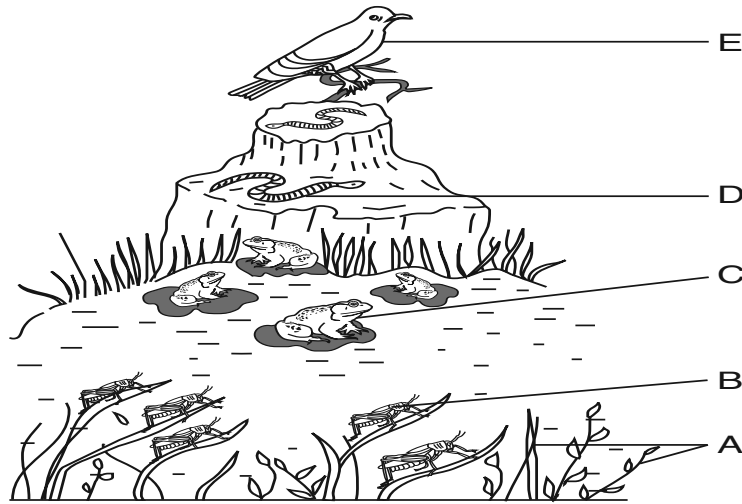


Which conclusion can be drawn from information in the graph?

- (1) Oxygen concentration affects population sizes of different species in the same manner.
 - (2) Species A requires a high oxygen concentration for maximum population growth.
 - (3) Species B requires a high oxygen concentration to stimulate population growth.
 - (4) Low oxygen concentration does not limit the population size of either species observed.
-

"Most of the important things in the world have been accomplished by people who have kept on trying when there seemed no hope at all." - Dale Carnegie

Base your answers to questions 38 and 39 on the diagram below that represents an energy pyramid in a meadow ecosystem and on your knowledge of biology.



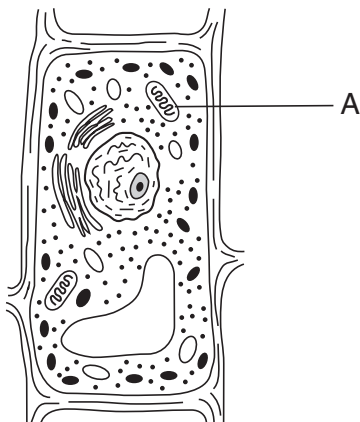
38 Which species would have the largest amount of available energy in this ecosystem?

- (1) A
- (2) B
- (3) C
- (4) E

39 Which two organisms are carnivores?

- (1) A and B
- (2) A and E
- (3) B and D
- (4) C and E

The diagram below represents a plant cell.



Which process takes place in structure A?

- (1) cellular respiration
- (2) heterotrophic nutrition
- (3) digestion of fats
- (4) protein synthesis