

1 The diagram shows a food chain.



If the carnivores in trophic level 3 suddenly die out as a result of disease, in which trophic levels will the number of organisms be likely to **decrease**?

- A** 1 and 2 **B** 1 and 4 **C** 2 and 4 **D** 4 only

2 The surface waters of the ocean contain a population of microscopic plants.

Which factor would result in **fewer** of these plants?

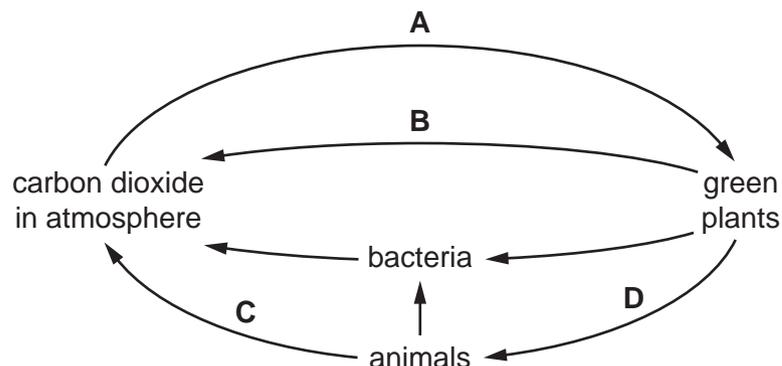
- A** an increase in the population of microscopic animals
B greater concentration of mineral nutrients
C higher temperature
D more light

3 By which process does water enter the atmosphere?

- A** condensation
B photosynthesis
C precipitation
D transpiration

4 The diagram shows part of the carbon cycle.

Which labelled arrow represents photosynthesis?



5 What are products of respiration in green plants?

- A glucose and carbon dioxide
- B glucose and oxygen
- C water and carbon dioxide
- D water and oxygen

6 In 2005, fifteen mice were set free on an island where mice had never lived before. The table shows how their population changed over the next three years.

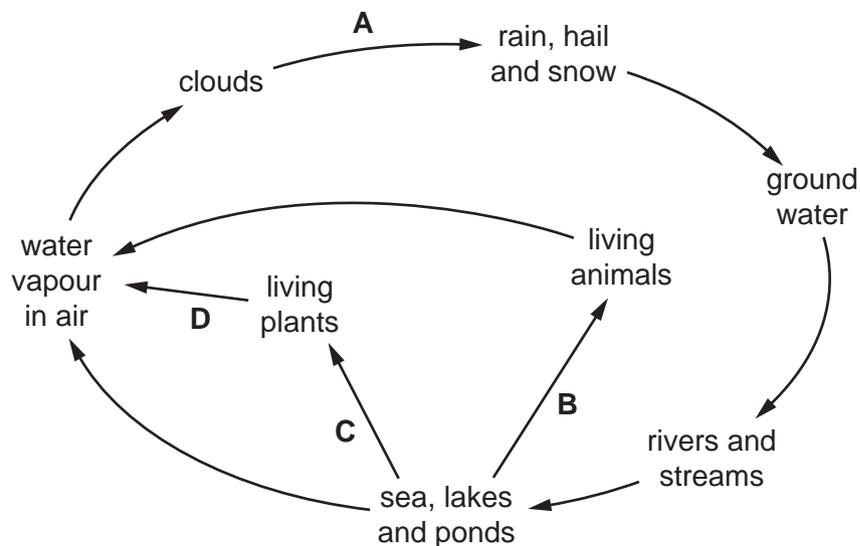
year	mouse population
2005	15
2006	62
2007	237
2008	965

What caused the population change shown in the table?

- A lack of food
- B lack of predators
- C lack of space
- D lack of water

7 The diagram shows the water cycle.

Which letter represents transpiration?

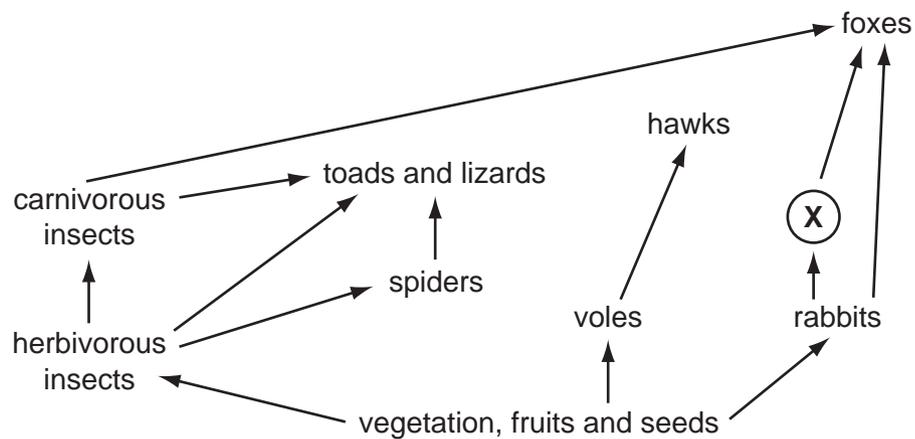


8 A food chain shows how organisms depend on each other for their sources of energy, but all energy comes ultimately from one source.

What is this energy source?

- A leaves of plants
- B meat
- C sunlight
- D water

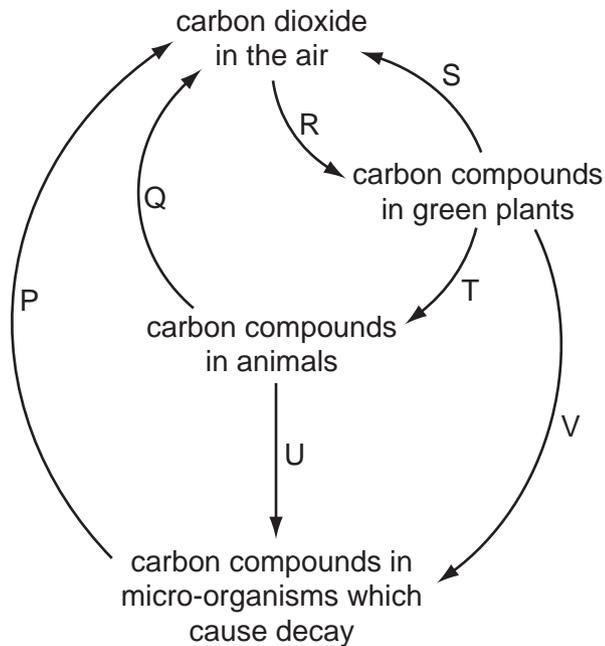
9 The diagram shows a food web.



What type of organism is X?

- A a carnivore
- B a decomposer
- C a herbivore
- D a producer

10 The diagram shows the carbon cycle.



Which three letters represent respiration?

- A** P, Q and R **B** P, Q and S **C** T, S and V **D** T, U and V

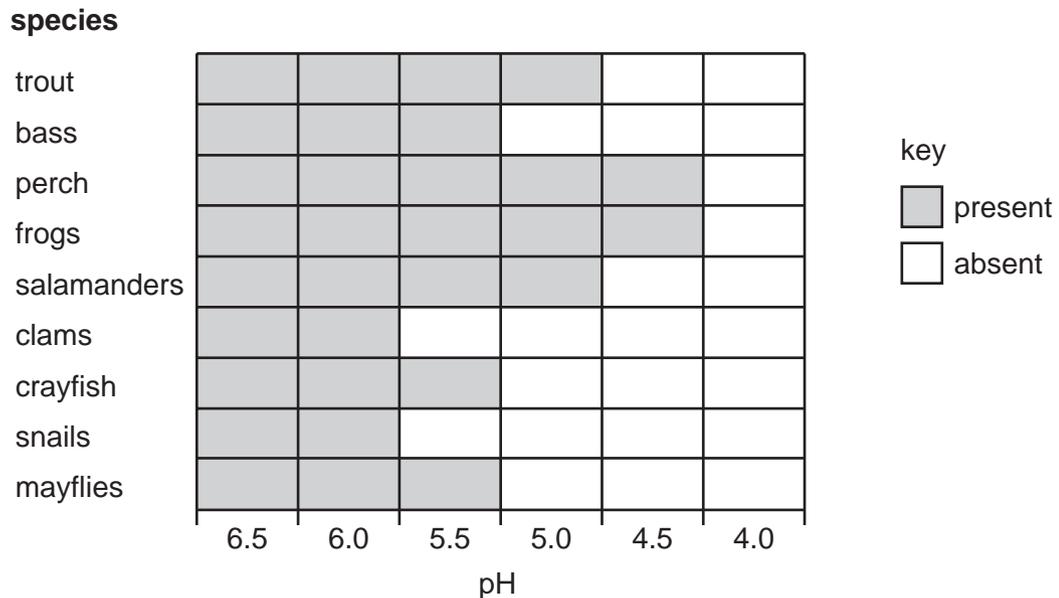
11 In which natural cycles do photosynthesis and respiration **both** play a part?

	carbon cycle	water cycle
A	✓	✓
B	✓	x
C	x	✓
D	x	x

12 What is the correct sequence for the stages in a sigmoid population growth curve?

- A** lag → log → stationary
B log → lag → stationary
C stationary → lag → log
D stationary → log → lag

13 The chart shows which species of different animals are present in rivers of different pH.



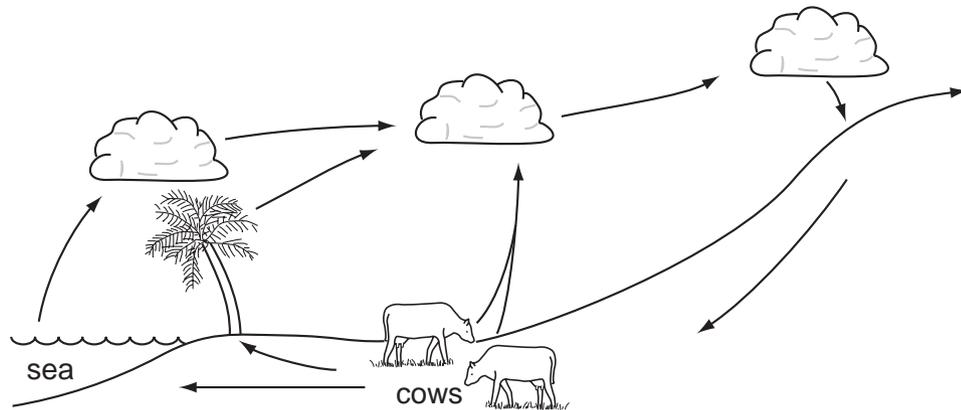
Which conclusion can be drawn from this information?

- A Both frogs and mayflies can live in more acidic river water than trout.
 - B Clams and snails are most affected by acidic river water.
 - C Most species can live in river water below pH 5.5.
 - D Not all species are affected by acidic river water.
- 14 In an ecosystem, what happens to most of the chemical energy in the decomposers?
- A It becomes heat.
 - B It is transferred back to the producers.
 - C It is transferred back to both producers and consumers.
 - D It is destroyed.
- 15 The three-toed sloth is a mammal that lives in the forests of Central America. Sloths are eaten by wild cats such as jaguars and also by snakes. The sloths mainly eat leaves.

What is the original source of the energy supplied to the jaguars?

- A leaves
- B sloths
- C snakes
- D Sun

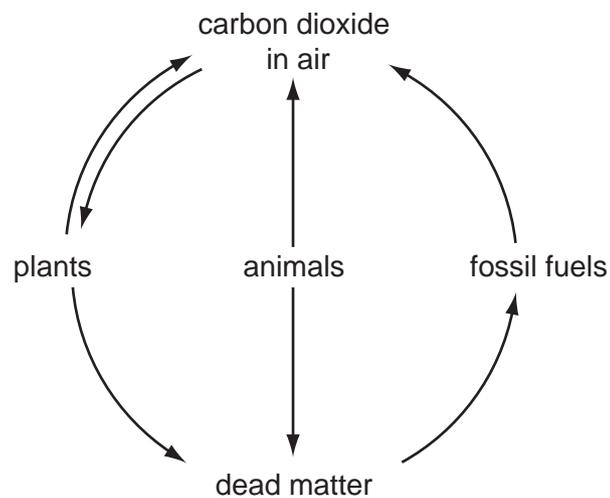
16 The diagram shows part of the water cycle.



What must occur for water in the sea to reach the cows?

- A condensation only
- B condensation, then evaporation
- C evaporation, then condensation
- D evaporation only

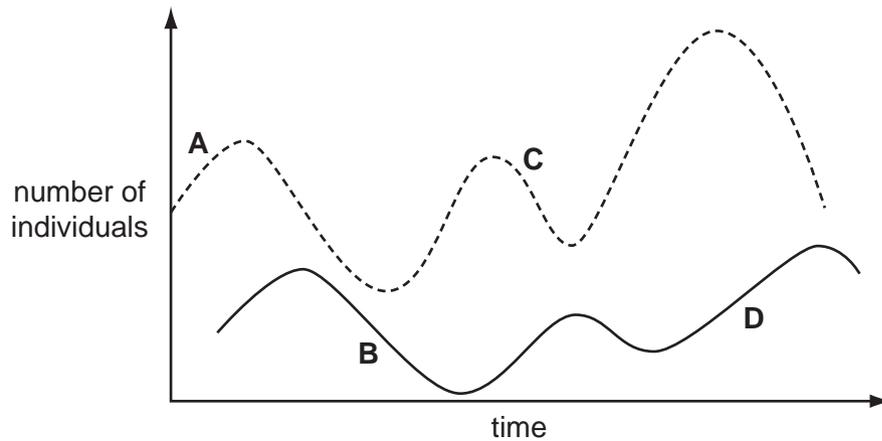
17 The diagram represents part of the carbon cycle.



What is missing from this diagram?

- A an arrow from animals to plants
- B an arrow from carbon dioxide in the air to animals
- C an arrow from carbon dioxide in the air to fossil fuels
- D an arrow from plants to animals

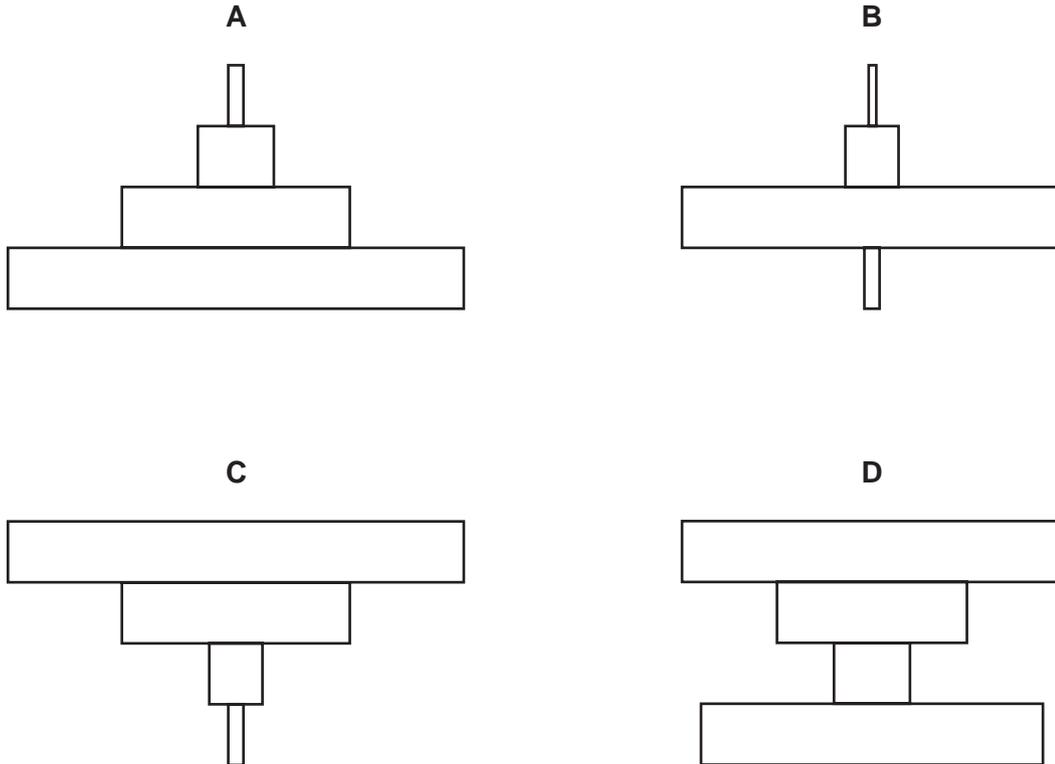
- 18 The graphs show the changes in the populations of predator and prey over a period of time.
Which point on the graph shows a decrease in predator population?



- 19 In a pyramid of numbers, what does the top of the pyramid represent?
- A carnivores
 - B decomposers
 - C herbivores
 - D Sun
- 20 Which statement explains why the energy flow in a food chain is in one direction?
- A Decomposers recycle nutrients for plants.
 - B Energy is not recycled.
 - C Plants convert light energy to chemical energy.
 - D The number of organisms decreases at each level in the food chain.
- 21 Which organisms do **not** get their energy by eating other organisms?
- A consumer
 - B decomposer
 - C herbivore
 - D producer

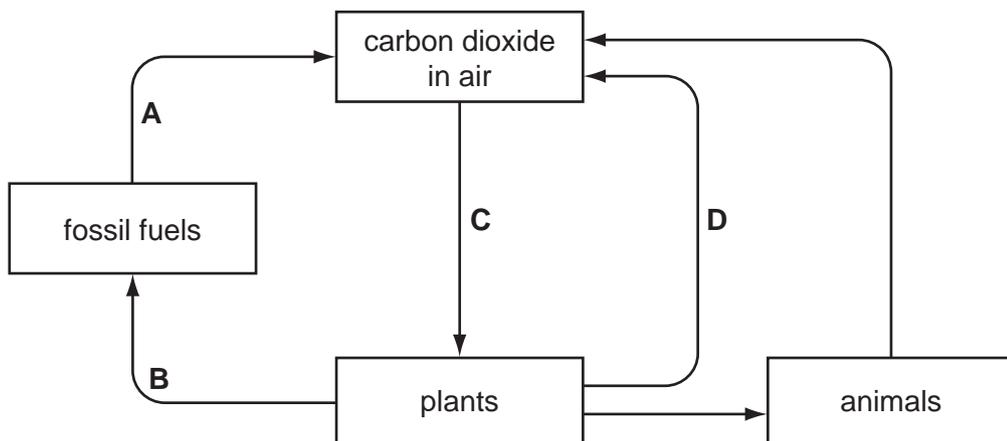
22 A single tree is food for a large population of caterpillars. Several small birds eat the caterpillars. The small birds are eaten by a bird of prey.

Which is the pyramid of biomass?

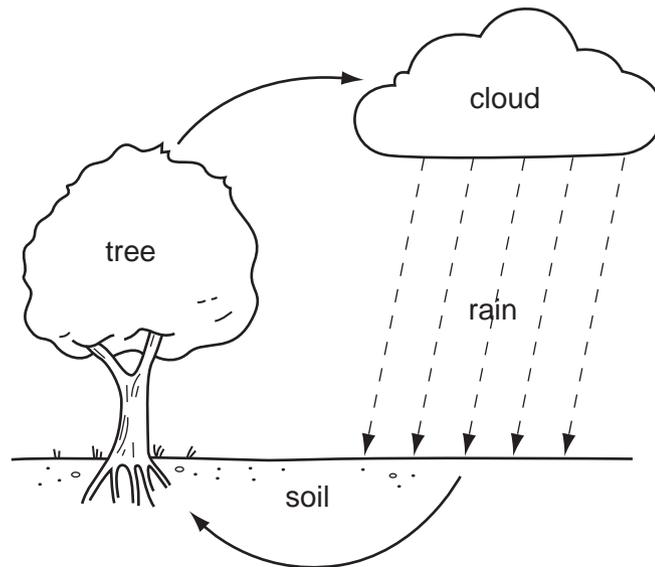


23 The diagram shows part of the carbon cycle.

Which letter represents photosynthesis?



24 The diagram shows part of the water cycle.



How is water lost from the tree?

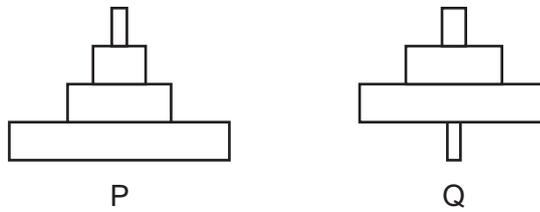
- A condensation
- B respiration
- C translocation
- D transpiration

25 Rabbits eat grass and foxes eat rabbits.

What would cause the highest increase in the number of rabbits?

- A less grass and fewer foxes
- B less grass and more foxes
- C more grass and fewer foxes
- D more grass and more foxes

26 The diagram shows two pyramids based on food chains in which the producer is a large tree.



What do the two pyramids represent?

	P	Q
A	biomass	
B	biomass	
C	numbers	
D	numbers	

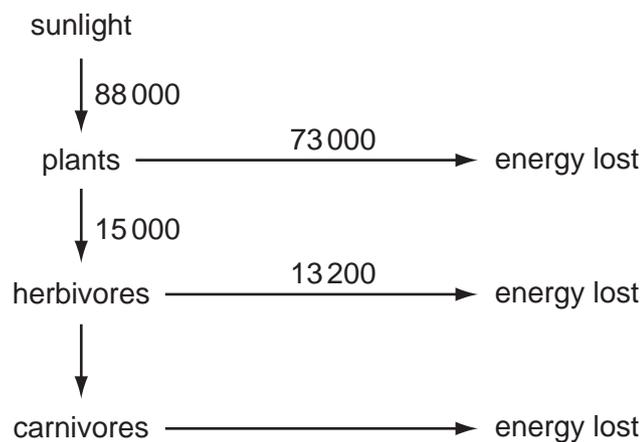
27 The diagram shows a food chain.

rice plant → caterpillar → song bird → hawk

How many decomposers are shown in this food chain?

- A** 0 **B** 1 **C** 3 **D** 4

28 The numbers in the diagram below show the amount of energy, in kJ, transferred through a part of an ecosystem.

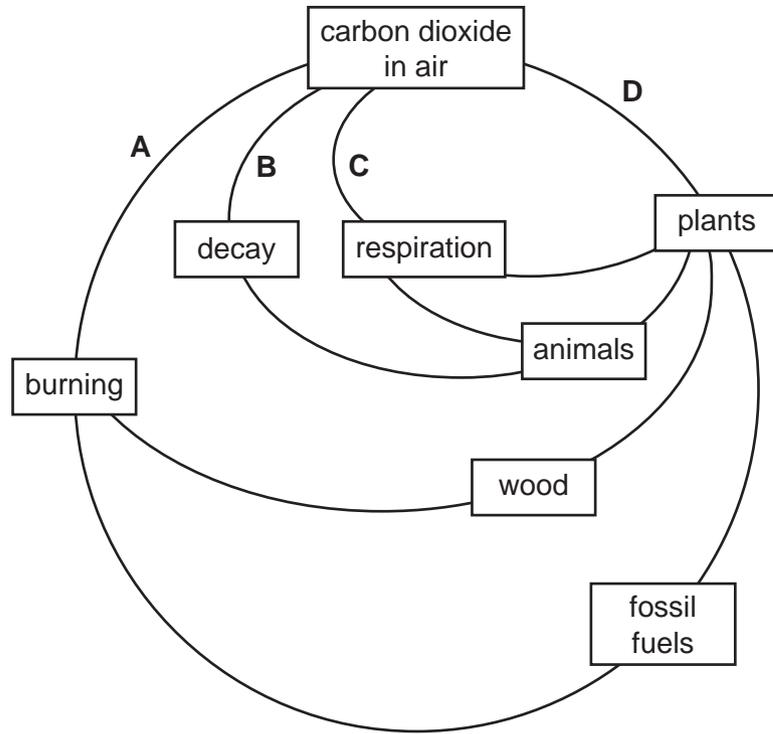


How much energy, in kJ, is transferred from herbivores to carnivores?

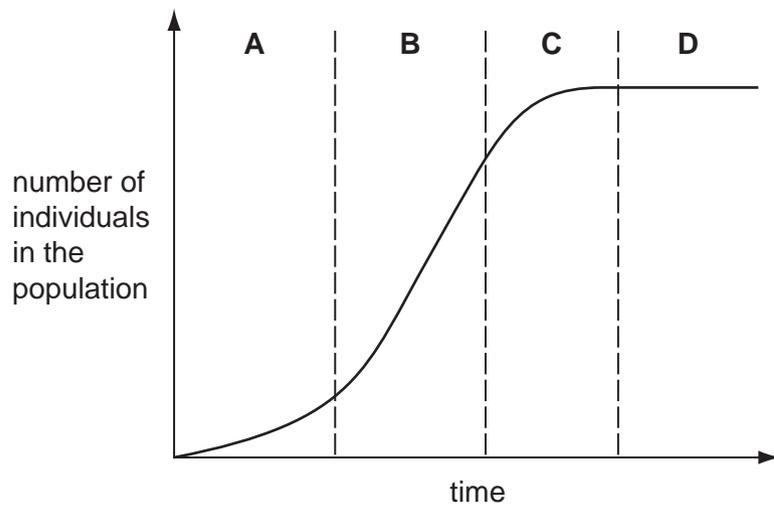
- A** 15000 + 13200
B 15000 – 13200
C 88000 + 15000
D 88000 – 15000

29 The diagram shows part of the carbon cycle without the arrows.

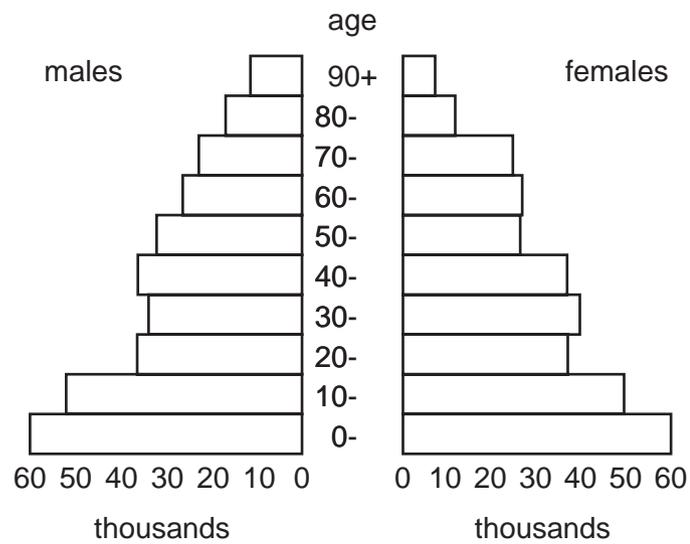
Which labelled line should have an arrow head on its lower end?



30 Which letter represents the lag phase in the population graph shown?



31 The diagram shows a population pyramid for a city.



What feature of the population is shown in the diagram?

- A** A quarter of the population is aged above 70.
- B** The greater proportion of the population is aged below 40.
- C** There are more females over 80 than males over 80.
- D** There is a low birth rate.

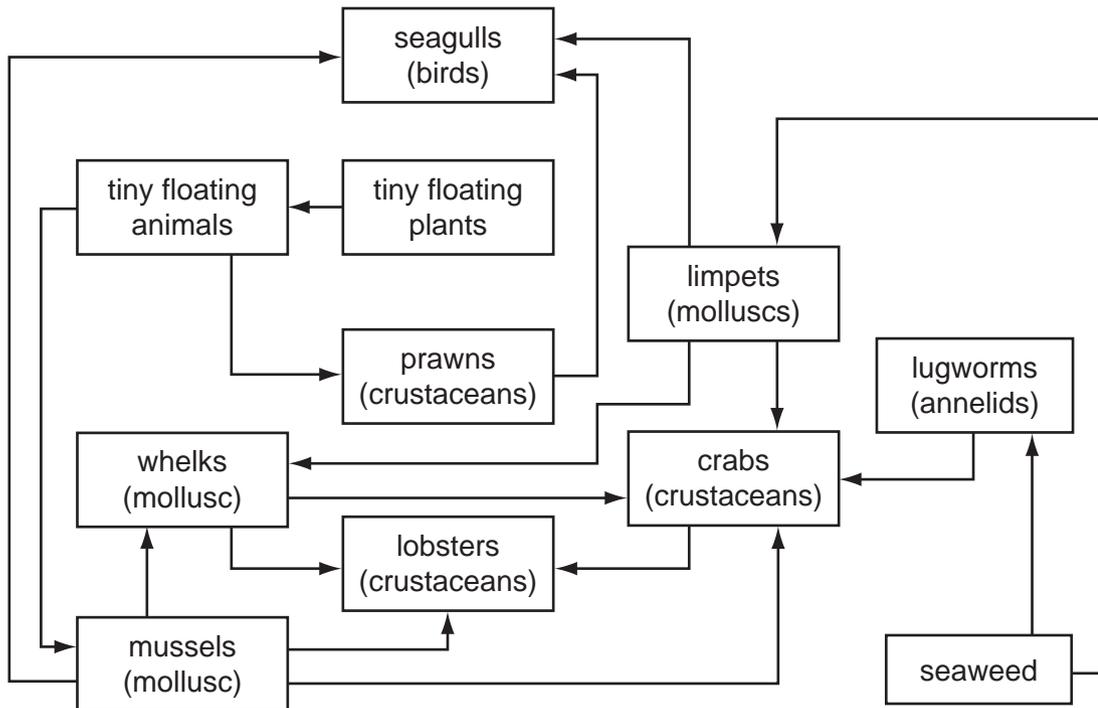
32 The diagram shows a food chain.

mahogany tree → caterpillar → small bird → owl

In this food chain, which population has the largest biomass and which has the largest population size?

	largest biomass	largest population size
A	owl	mahogany tree
B	owl	small bird
C	mahogany tree	caterpillar
D	mahogany tree	owl

33 The diagram shows a food web near a sea shore.



Which animals have the most varied food, as shown in **this** food web?

- A** crabs
- B** limpets
- C** lobsters
- D** seagulls

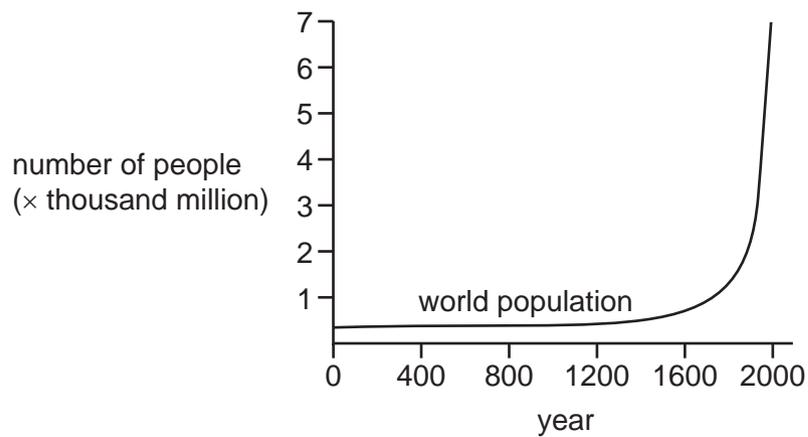
34 In the carbon cycle, what is the simple substance absorbed by producers?

- A carbohydrate
- B carbon dioxide
- C nitrate
- D protein

35 Which process forms part of both the carbon and water cycles?

- A condensation
- B fossilisation
- C photosynthesis
- D transpiration

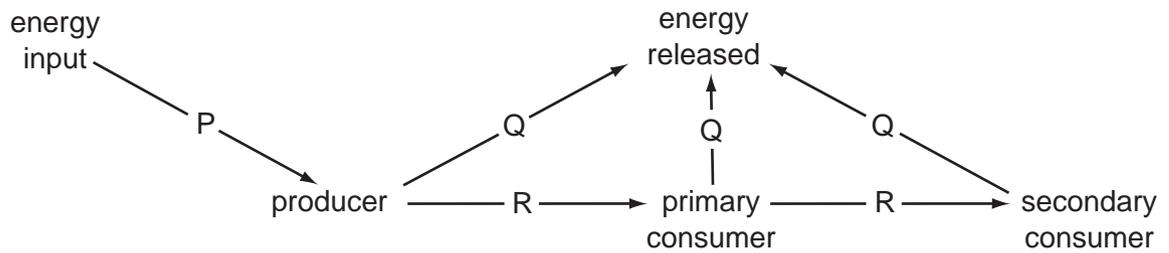
36 The graph shows the growth of the human population of the world.



Between which years did the population grow fastest?

- A 0 – 800
- B 800 – 1200
- C 1200 – 1800
- D 1800 – 2000

37 The diagram shows the flow of energy in a food chain.



What are the forms of energy P, Q and R?

	P	Q	R
A	chemical	light	heat
B	heat	chemical	light
C	light	heat	chemical
D	light	chemical	heat

38 In a pond, the biomass at each trophic level is measured. The results are shown in the table.

Which trophic level contains herbivores?

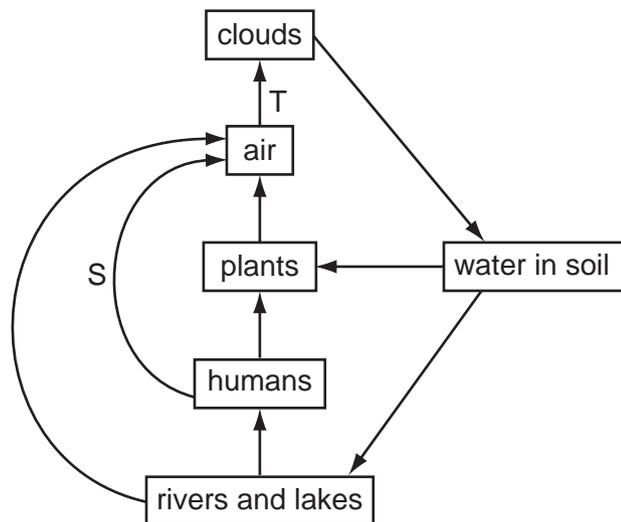
trophic level	mass/g m ³
A	0.1
B	0.6
C	1.2
D	17.9

39 Carbon is essential to life.

Which process provides a carbon-containing compound for all life forms?

- A eating
- B gaseous exchange
- C photosynthesis
- D respiration

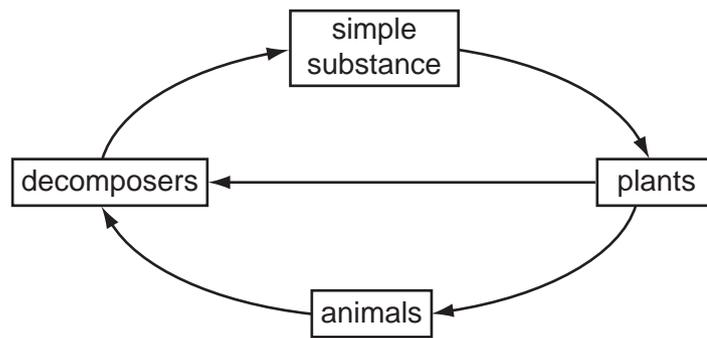
40 The diagram shows part of the water cycle.



What are processes S and T?

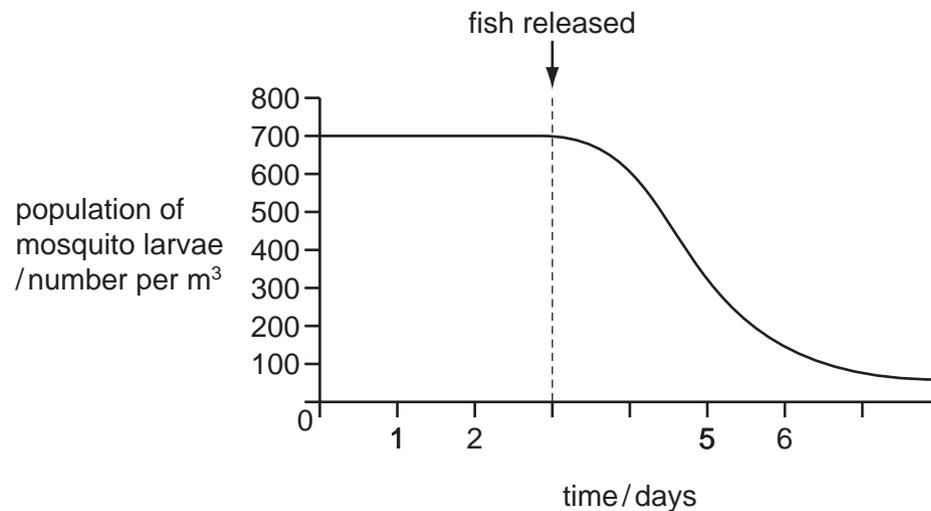
	S	T
A	evaporation	precipitation
B	condensation	drainage
C	evaporation	condensation
D	condensation	evaporation

41 The diagram shows part of the carbon cycle.



What is the simple substance?

- A carbohydrate
 - B carbon dioxide
 - C chlorophyll
 - D light
- 42 The graph shows the population of mosquito larvae in a pond. On day 3, mosquito fish, which eat mosquito larvae, are released into the pond.



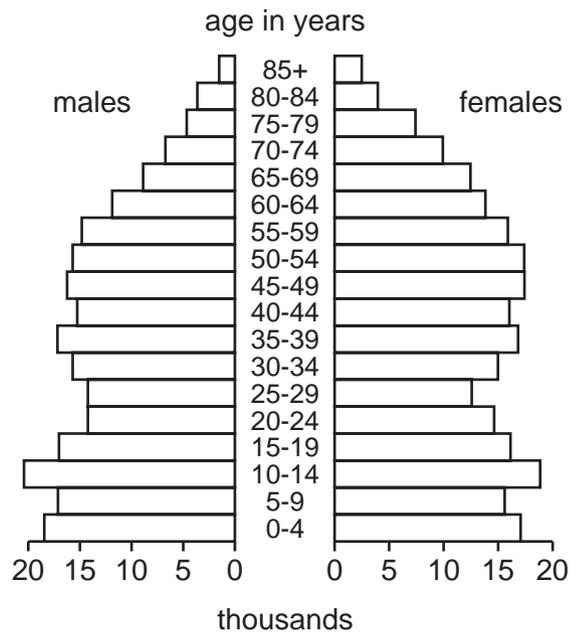
What is the most likely reason for the decline in the population of larvae after day 3?

- A disease
- B lack of food
- C old age
- D predation

47 In an ecosystem, which are the only organisms to remove carbon dioxide from the atmosphere?

- A carnivores
- B decomposers
- C herbivores
- D producers

48 What name is given to the diagram below?



- A a food web pyramid
- B a population pyramid
- C a pyramid of biomass
- D a pyramid of energy

49 The diagram shows a food chain.

grass → wildebeest → lion

What is the original source of energy used in this food chain?

- A grass
- B lion
- C sunlight
- D wildebeest

50 What may happen to the Sun's energy that reaches the Earth?

- A converted to chemical energy by animals
- B recycled by bacteria
- C stored in fossil fuels
- D used by plants for absorbing water