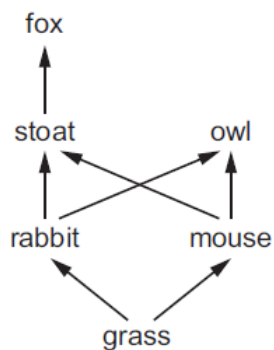


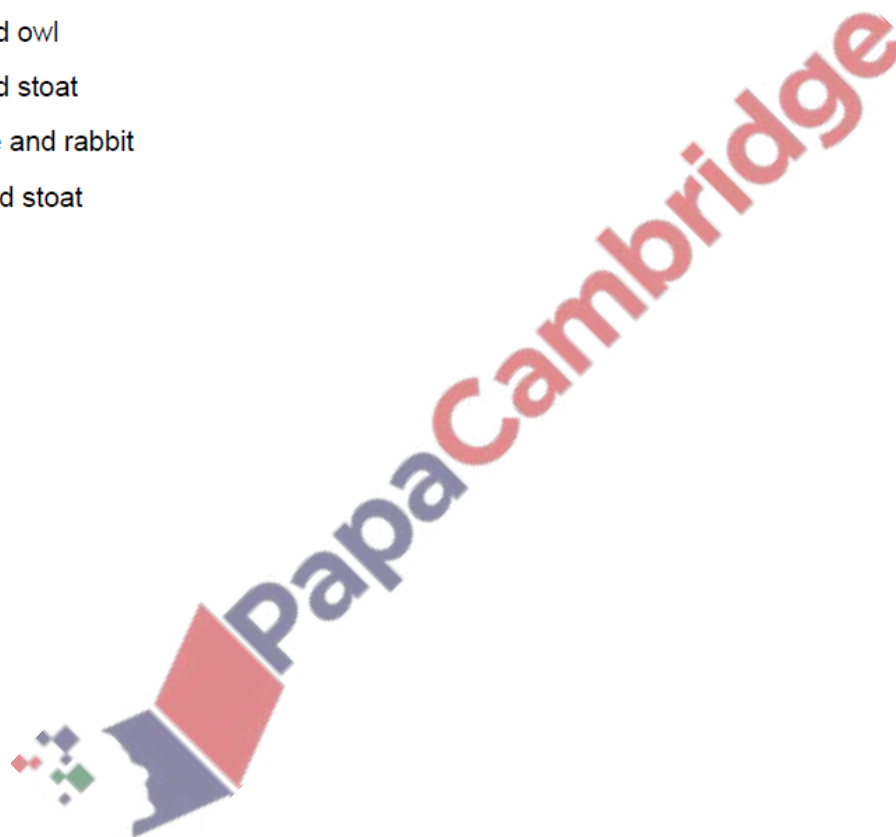
**1. Nov/2022/Paper\_11/No.37**

The diagram shows a woodland food web.



Which organisms are secondary consumers?

- A fox and owl
- B fox and stoat
- C mouse and rabbit
- D owl and stoat



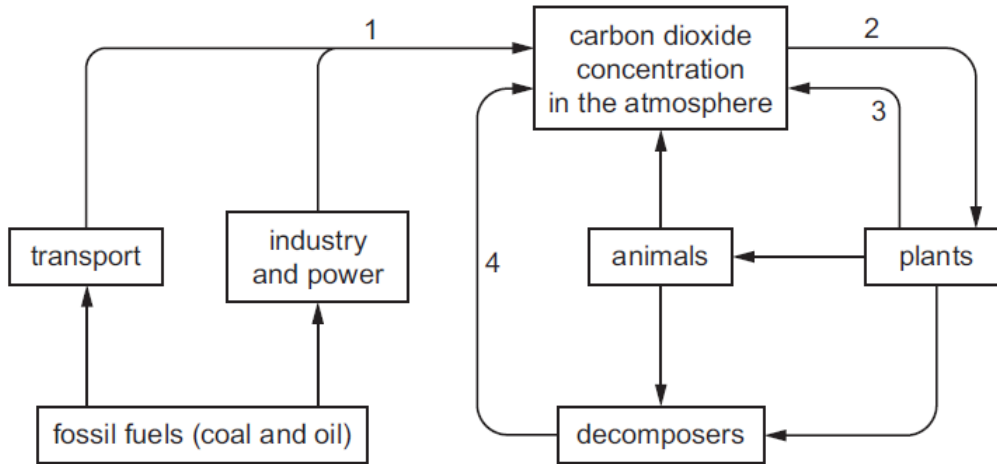
**2. Nov/2022/Paper\_11/No.38**

Which statement describes a population?

- A all the three-spined stickleback fish living in a lake
- B all the organisms living in a lake
- C all the fish living in a lake
- D all the three-spined stickleback fish that have ever lived in a lake

3. Nov/2022/Paper\_12/No.36

The diagram shows part of the carbon cycle.



Which processes reduce or increase carbon dioxide concentration in the atmosphere?

	reduces	increases
<b>A</b>	1	4
<b>B</b>	2	3
<b>C</b>	3	2
<b>D</b>	4	1

4. Nov/2022/Paper\_12/No.37

The diagram shows a food chain.

rose bush → aphids → ladybirds → spiders

A disease reduced the number of ladybirds.

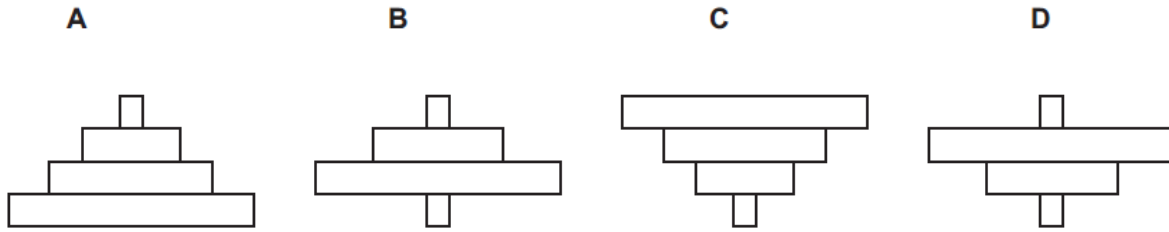
What would be the likely effect of this on the numbers of aphids and spiders?

	aphids	spiders
<b>A</b>	decrease	decrease
<b>B</b>	decrease	increase
<b>C</b>	increase	decrease
<b>D</b>	increase	increase

5. Nov/2022/Paper\_12/No.38

The block at the base of each pyramid represents the number of producers.

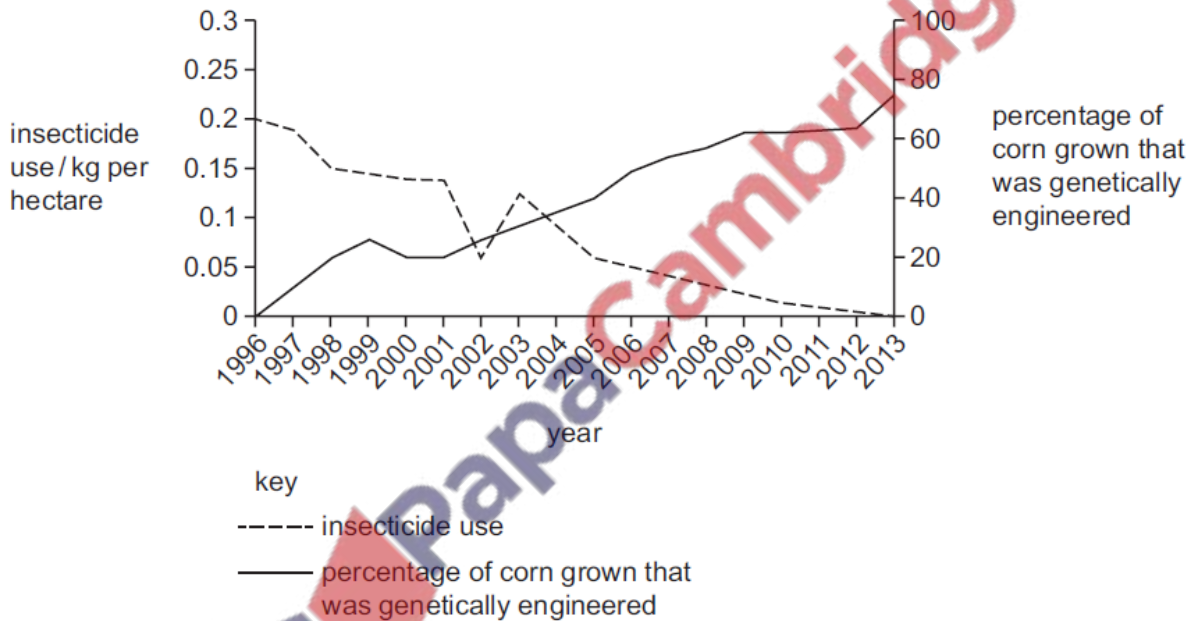
Which pyramid of numbers has more tertiary consumers than secondary consumers?



6. Nov/2022/Paper\_12/No.39

Corn that has been genetically engineered to be resistant to pests was developed in the 1990s.

The graph shows the change in the percentage of corn grown that was genetically engineered and the change in the mass of chemical insecticides used.

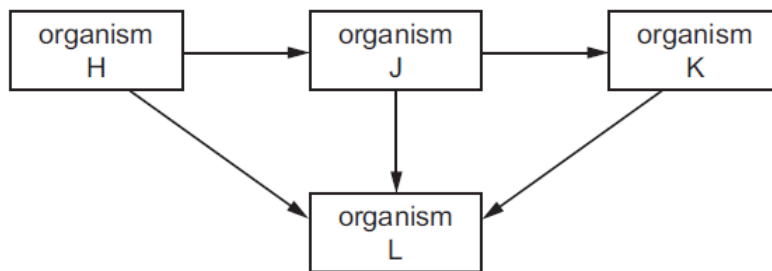


Which statement describes the data shown in the graph between 1996 and 2013?

- A The percentage of corn grown that was genetically engineered increased and the use of insecticides decreased.
- B The percentage of corn grown that was genetically engineered increased and the use of insecticides increased.
- C The percentage of corn grown that was genetically engineered decreased and the use of insecticides decreased.
- D The percentage of corn grown that was genetically engineered decreased and the use of insecticides increased.

7. Nov/2022/Paper\_13/No.36

Letters H, J, K and L show the organisms that make up a simple food web.

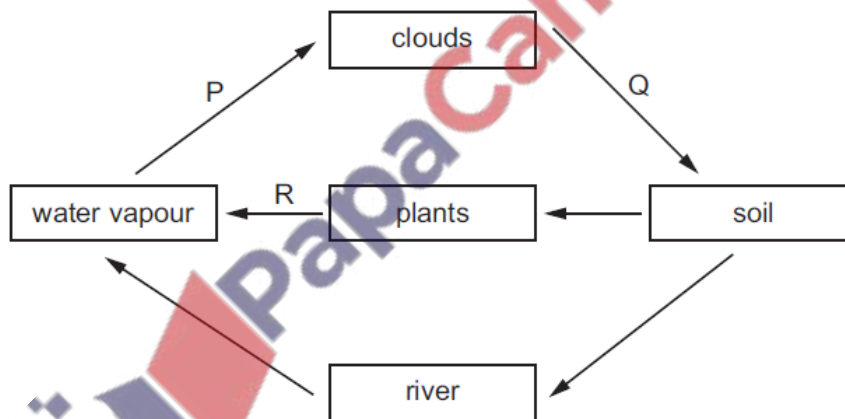


Which row identifies the types of organism shown in the food web?

	carnivore	decomposer	producer
<b>A</b>	H	L	K
<b>B</b>	J	K	H
<b>C</b>	K	L	H
<b>D</b>	L	J	K

8. Nov/2022/Paper\_13/No.37

The diagram shows part of the water cycle.

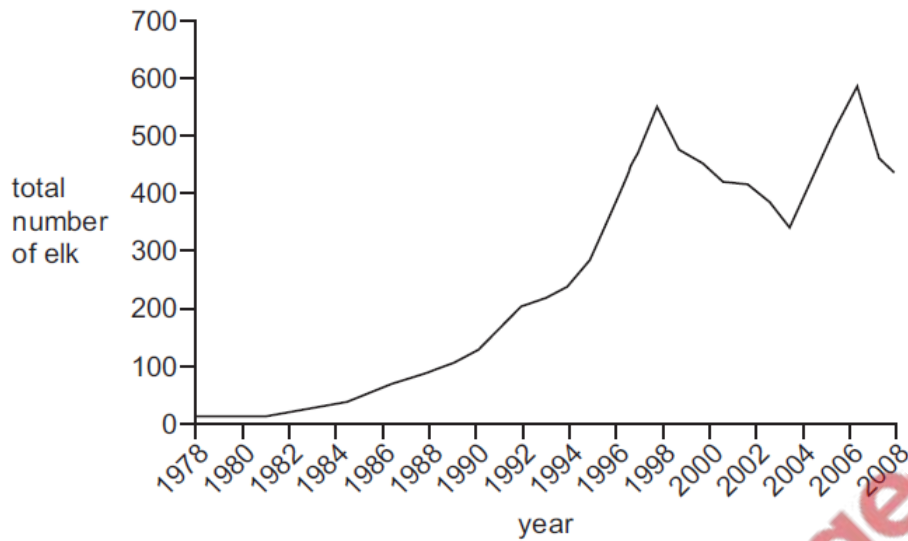


Which row identifies the different parts of the water cycle?

	P	Q	R
<b>A</b>	condensation	transpiration	precipitation
<b>B</b>	condensation	precipitation	transpiration
<b>C</b>	evaporation	transpiration	precipitation
<b>D</b>	evaporation	precipitation	transpiration

9. Nov/2022/Paper\_13/No.38

Elk are mammals and they are herbivores. The graph shows the total number of elk in a national park between 1978 and 2008.

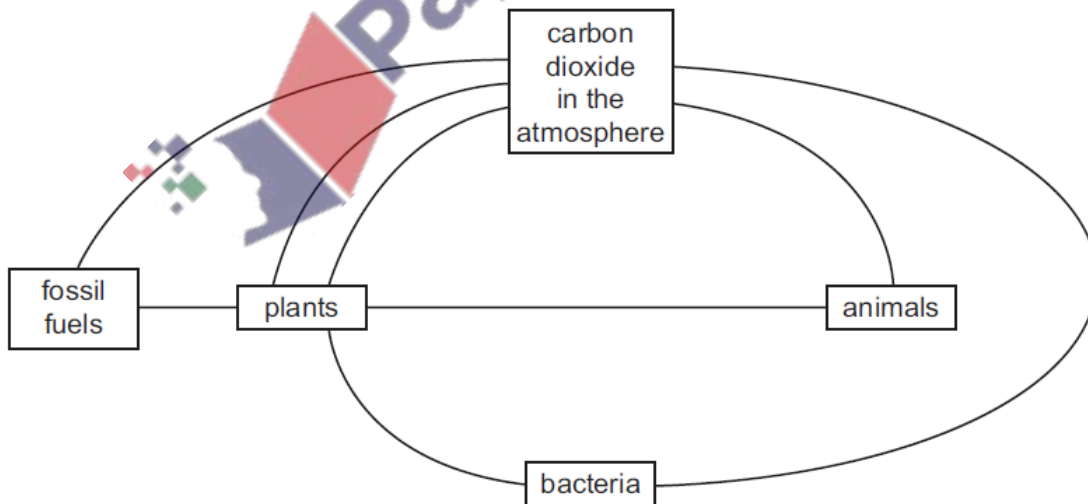


What is a possible explanation for the change in the elk population between 1978 and 1992?

- A decrease in disease
- B decrease in food source
- C increase in hunting
- D increase in predation

10. Nov/2022/Paper\_13/No.39

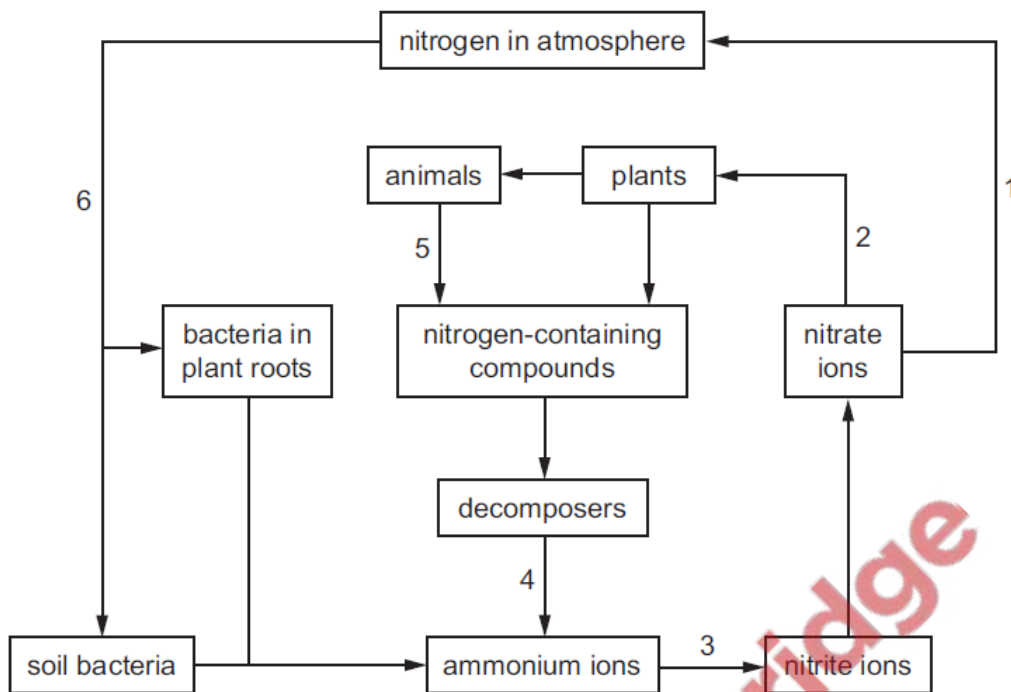
The diagram shows part of the carbon cycle. The arrowheads are missing from the diagram so the direction of movement of carbon is not shown.



How many arrows should point **towards** the box labelled carbon dioxide in the atmosphere?

- A 1
- B 2
- C 4
- D 5

The diagram shows part of the nitrogen cycle.

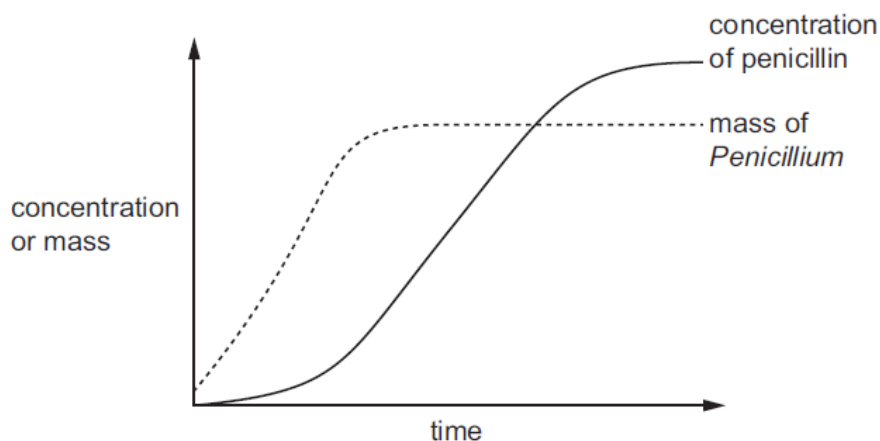


Which row shows the correct labels?

	denitrification	absorption	nitrification	nitrogen fixation
<b>A</b>	3	2	4	6
<b>B</b>	3	5	4	1
<b>C</b>	1	2	3	6
<b>D</b>	1	5	3	4

12. Nov/2022/Paper\_21/No.38

The graph shows the growth of the fungus *Penicillium* and its production of the antibiotic penicillin in a fermenter.

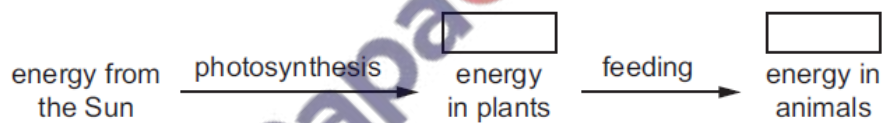


Which stage of the *Penicillium* growth curve produces the highest concentration of penicillin?

- A lag phase
- B exponential phase
- C stationary phase
- D death phase

13. Nov/2022/Paper\_22/No.35

The diagram shows the flow of energy through living organisms.



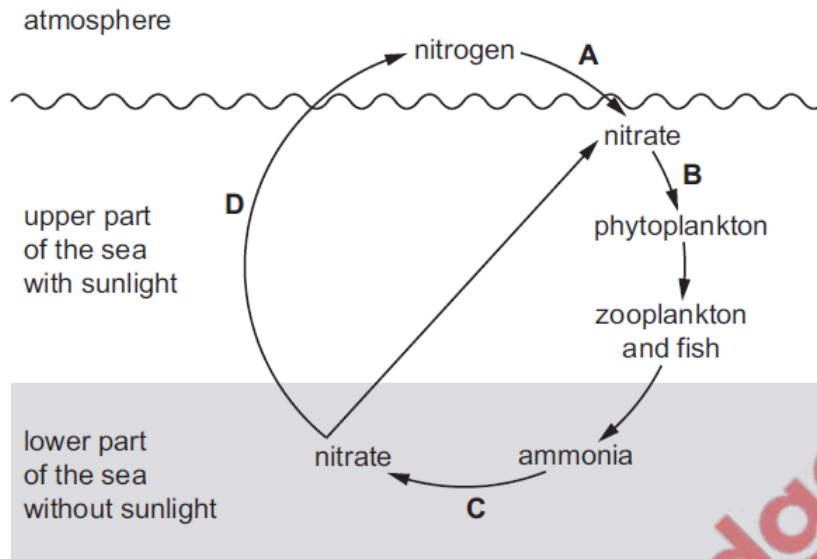
Which term should be placed in both boxes to complete the diagram?

- A chemical
- B heat
- C kinetic
- D light

14. Nov/2022/Paper\_22/No.36

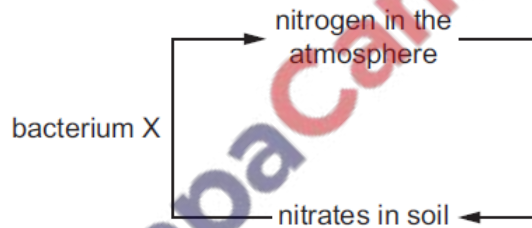
The diagram shows the nitrogen cycle in the ocean.

Which stage represents nitrification?



15. Nov/2022/Paper\_23/No.35

The diagram shows part of the nitrogen cycle.



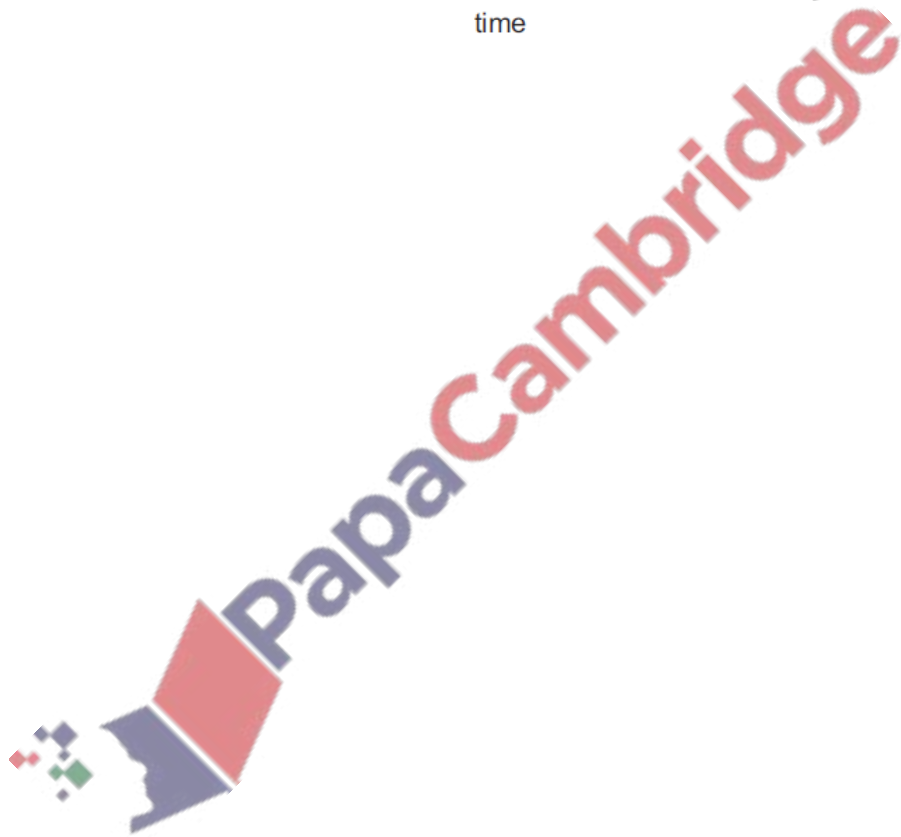
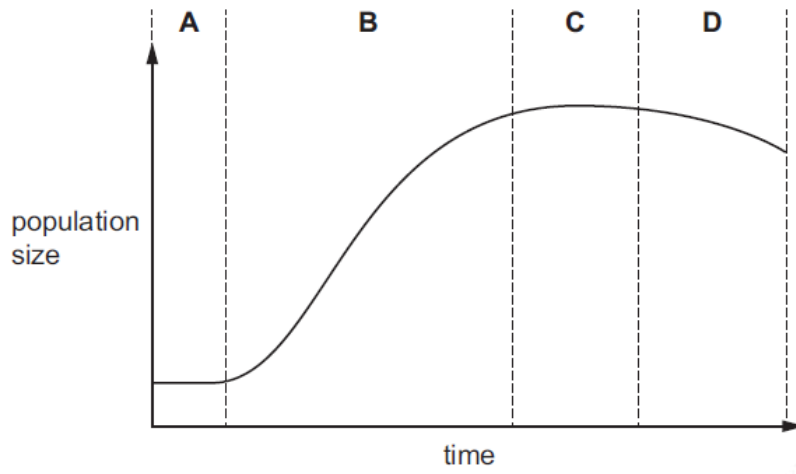
Which process in the cycle is performed by bacterium X?

- A decomposition
- B nitrification
- C nitrogen fixation
- D denitrification



The graph shows changes in the population size of a microorganism growing in a fermenter.

What is the exponential phase?



- (a) The population of leatherback turtles in one part of the Pacific Ocean was monitored over several years.

The population numbers were estimated and the results are shown in Fig. 3.1.

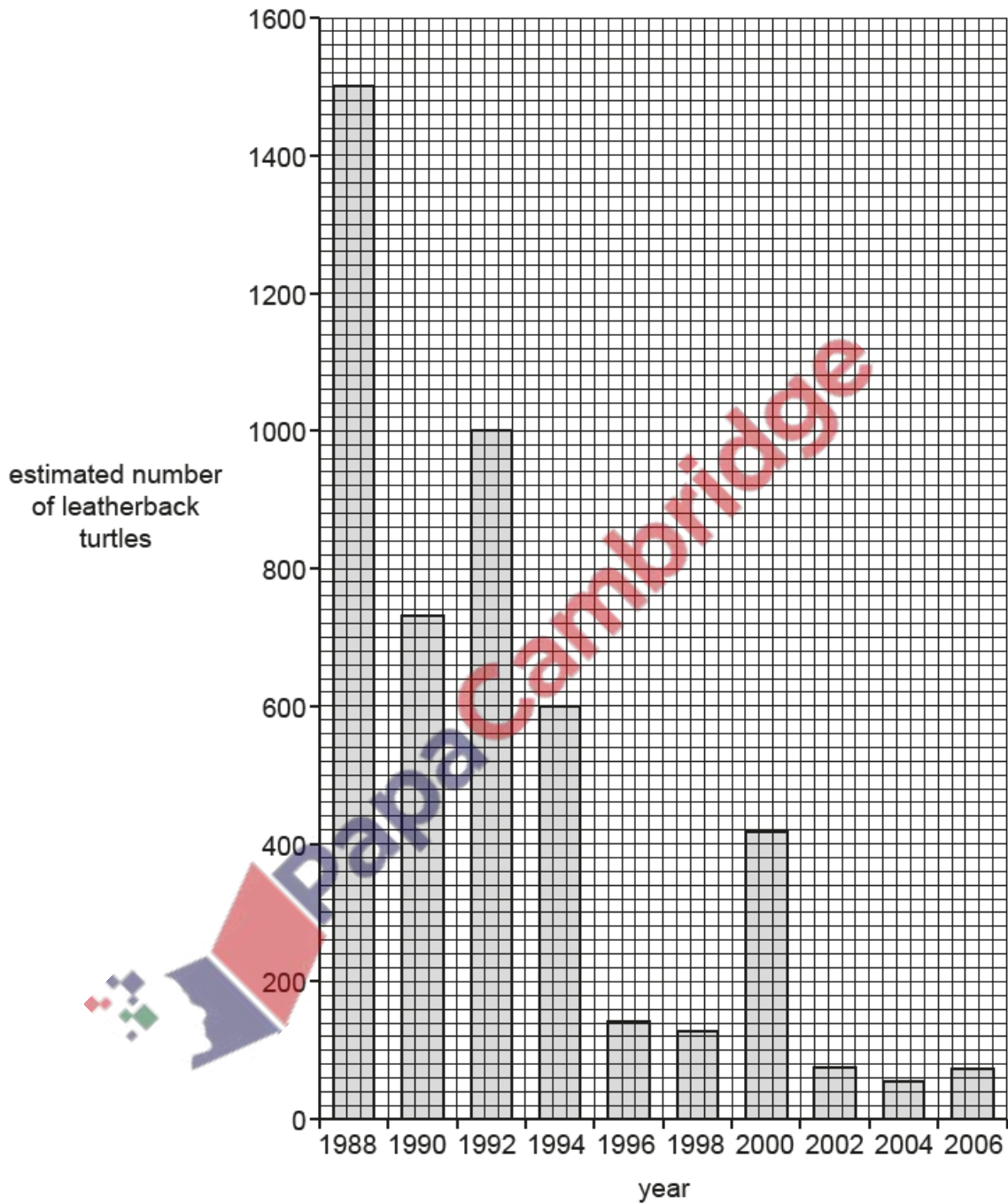


Fig. 3.1

- (i) State the year with the lowest estimated number of leatherback turtles shown in Fig. 3.1.

..... [1]



Fig. 5.1 shows Mackinlay's cuckoo-dove, *Macropygia mackinlayi*, which is found on most of the islands in the south-west of the Pacific Ocean.



Fig. 5.1

(a) Karkar Island is one island where Mackinlay's cuckoo-dove is found. This species is part of many communities that are adapted to the different habitats on the island.

(i) Define the term community.

.....  
.....  
..... [1]

(ii) Complete the passage with the most appropriate word or phrase.

Adaptation is sometimes defined as the process resulting from .....  
....., by which populations become more suited to their  
..... over many generations.

[2]

(b) The highest point on Karkar Island is 1800m above sea level.

In 1969, a researcher surveyed the bird species on Karkar Island. He recorded the vertical distribution of the birds between sea level and 1600 m.

In 2013, other researchers repeated the survey.

Fig. 5.2 shows the ranges of four species, as recorded in the two surveys. The vertical lines represent the range of heights where the birds were seen on the island.

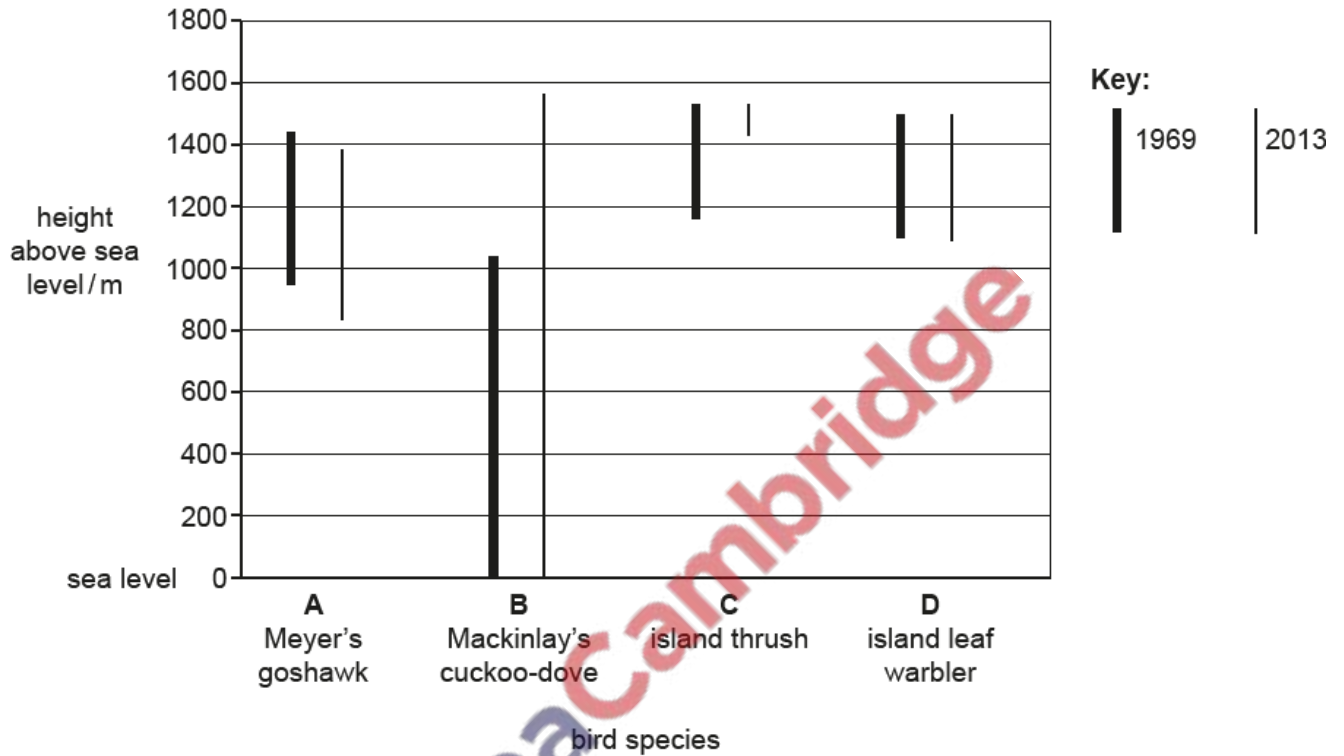


Fig. 5.2

(i) Compare the range in 1969 with the range in 2013 for each of the bird species shown in Fig. 5.2.

A .....

.....

B .....

.....

C .....

.....

D .....

.....

[4]

(ii) Using the information in Fig. 5.2, suggest reasons for the change in the range of the island thrush (C) on Karkar Island.

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..... [3]

(c) Small oceanic islands are often inhabited by species of birds that are found nowhere else. Many of these species have decreasing populations and are often endangered.

Explain the risks to these species of birds that have decreasing populations.

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..... [3]

[Total: 13]

