



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

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**BIOLOGY**

**0610/01**

Paper 1 Multiple Choice

**May/June 2009**

**45 minutes**

Additional Materials: Multiple Choice Answer Sheet  
Soft clean eraser  
Soft pencil (type B or HB is recommended)

\* 7 5 4 5 0 2 9 6 1 1 \*

**READ THESE INSTRUCTIONS FIRST**

Write in soft pencil.

Do not use staples, paper clips, highlighters, glue or correction fluid.

Write your name, Centre number and candidate number on the Answer Sheet in the spaces provided unless this has been done for you.

There are **forty** questions on this paper. Answer **all** questions. For each question there are four possible answers **A, B, C** and **D**.

Choose the **one** you consider correct and record your choice in **soft pencil** on the separate Answer Sheet.

**Read the instructions on the Answer Sheet very carefully.**

Each correct answer will score one mark. A mark will not be deducted for a wrong answer.

Any rough working should be done in this booklet.

This document consists of **17** printed pages and **3** blank pages.



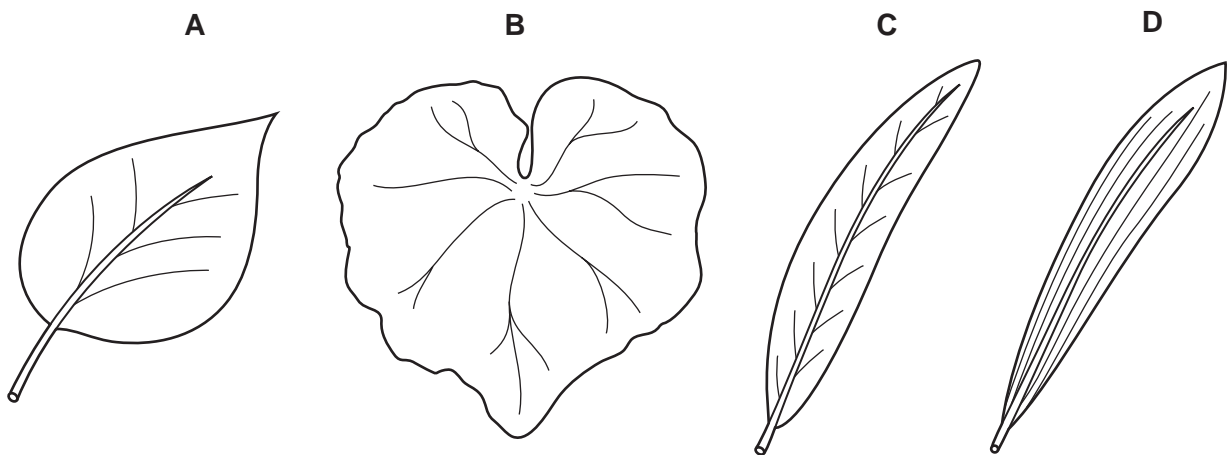
1 Which process removes the waste products of metabolism from the body?

- A excretion
- B nutrition
- C reproduction
- D respiration

2 According to the binomial system, how should a human be named?

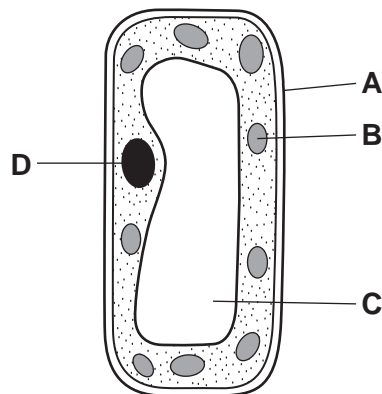
- A *Homo Sapiens*
- B *Homo sapiens*
- C *homo Sapiens*
- D *homo sapiens*

3 Which leaf comes from a monocotyledonous plant?



4 The diagram shows a palisade cell from a leaf.

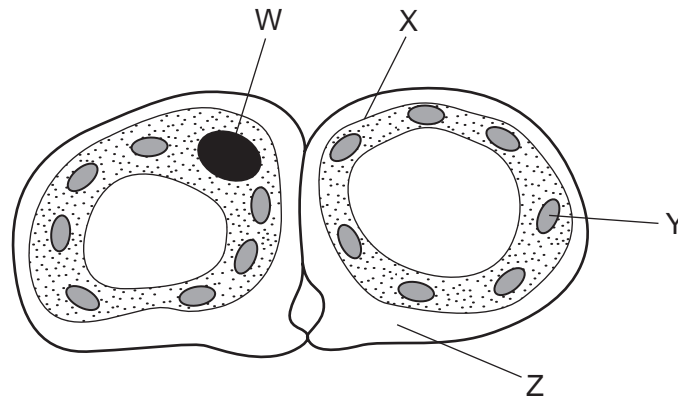
Which labelled structure produces oxygen?



5 Which structure contains genes?

- A the cell membrane of an animal cell
- B the cytoplasm of an animal cell
- C the nucleus of a plant cell
- D the vacuole of a plant cell

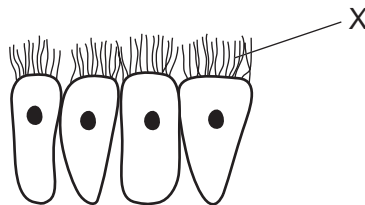
6 The diagram shows a cross section through two guard cells of a leaf.



Which labelled structures would also be found in an animal cell?

- A W and X
- B X and Y
- C Y and Z
- D Z and W

7 The diagram shows some cells from the lining of the trachea (windpipe) in the respiratory tract.



What is the function of the structures labelled X?

- A absorbing oxygen
- B killing micro-organisms
- C moving mucus
- D trapping bacteria

8 Which structures contain a cell nucleus?

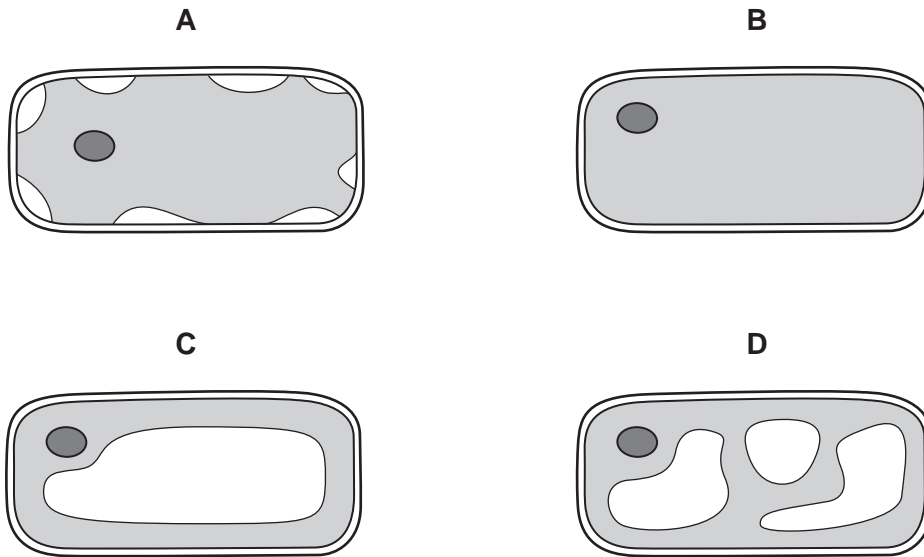
	red blood cell	root hair cell	xylem vessel
<b>A</b>	✓	✓	✓
<b>B</b>	✓	x	x
<b>C</b>	x	✓	x
<b>D</b>	x	x	✓

key

✓ = contains nucleus

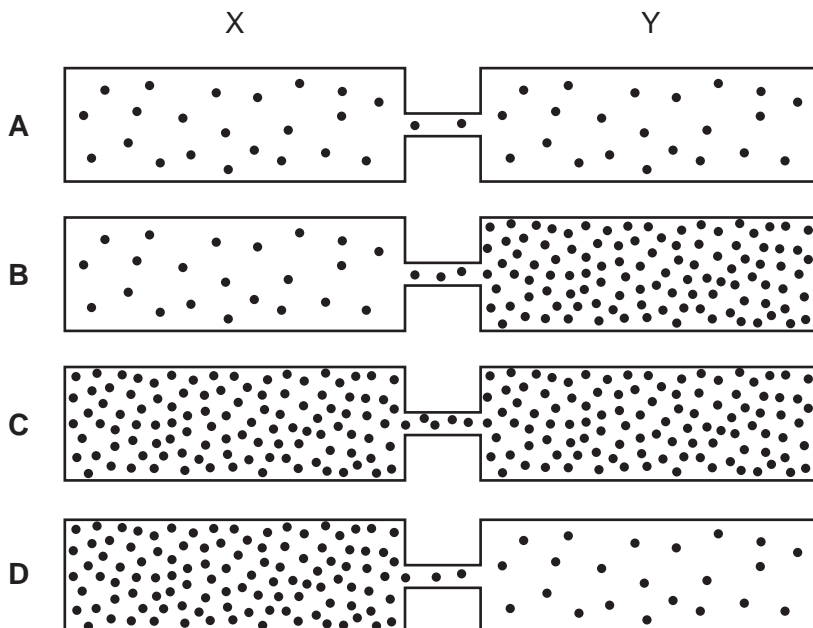
x = no nucleus

9 Which diagram shows the appearance of a plant cell several minutes after it has been placed in a concentrated solution of sugar?



10 The dots represent molecules of a gas in four tubes at the beginning of an experiment.

In which tube will more molecules move from X to Y than in the opposite direction?



11 What is the optimum pH for stomach protease?

- A pH2                      B pH7                      C pH9                      D pH12

12 The diagram shows part of a starch molecule.



Which diagram shows this molecule after it has been **completely** digested?

- A
- B
- C
- D

13 Which cell type contains the **most** chloroplasts?

- A palisade mesophyll  
 B phloem  
 C spongy mesophyll  
 D xylem

14 Four foods were tested for

- fat (using ethanol),
- protein (using the biuret test),
- reducing sugar (using Benedict's solution),
- starch (using iodine solution).

Which food contains protein and starch?

	colour of result of food test			
	blue/black	purple/lilac	brick-red/orange	milky-white
<b>A</b>	✓	x	✓	x
<b>B</b>	✓	✓	x	x
<b>C</b>	x	x	✓	✓
<b>D</b>	x	✓	x	✓

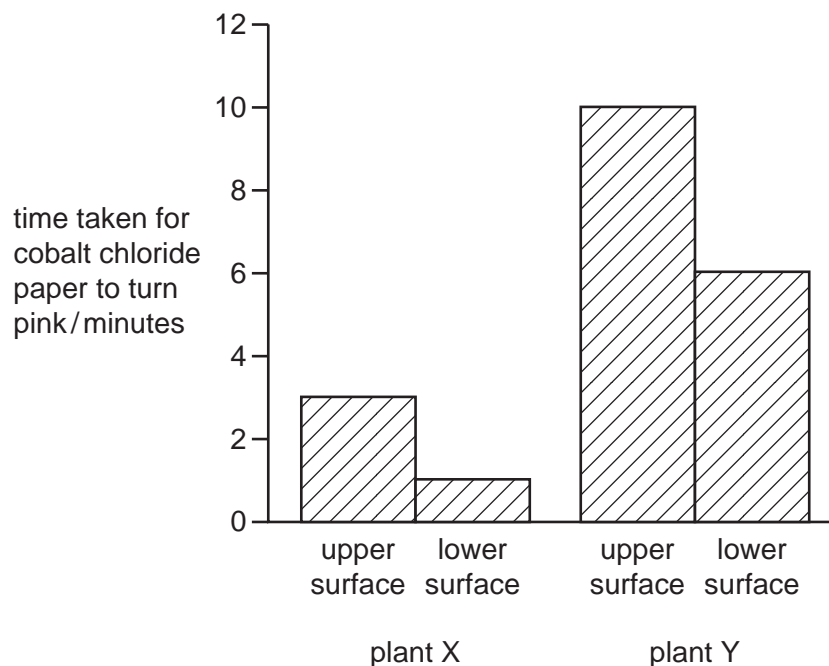
key

✓ = nutrient present

x = nutrient absent

15 Cobalt chloride paper is blue when dry but turns pink when wet. Some blue cobalt chloride paper was fastened to the upper and lower surfaces of a leaf on a plant X and a leaf on plant Y.

The diagram shows the results of the experiment.



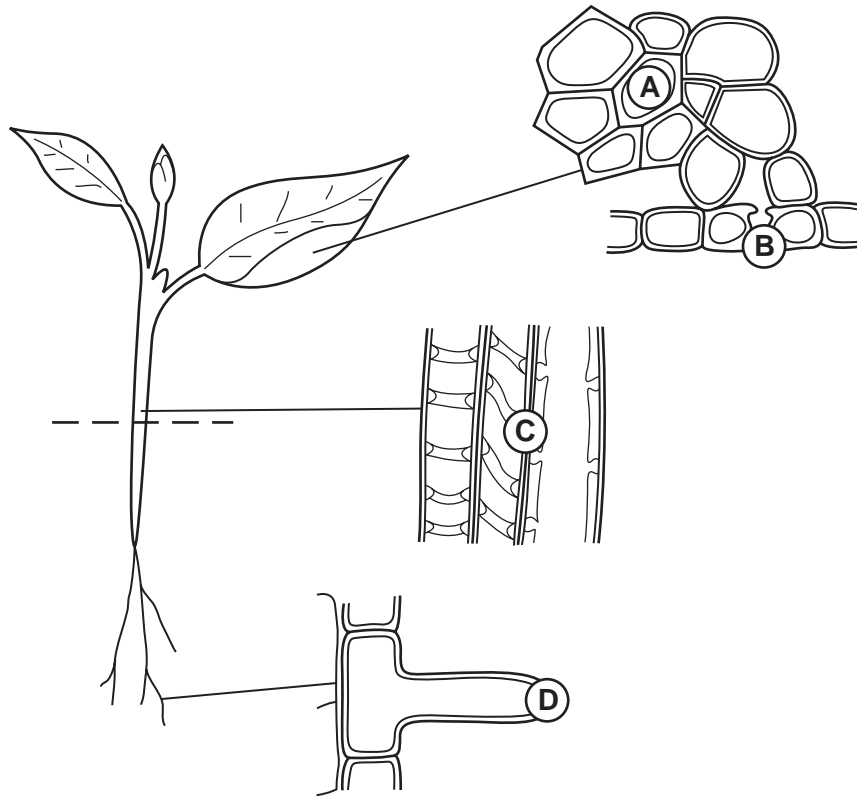
Through which leaf surface was water lost most quickly?

- A** plant X, upper surface
- B** plant X, lower surface
- C** plant Y, upper surface
- D** plant Y, lower surface

16 The diagrams show stages in the passage of water through a plant.

The circles are the starting points for arrows to show the direction in which the water moves.

Which circle **must** have an arrow pointing downwards **only**?

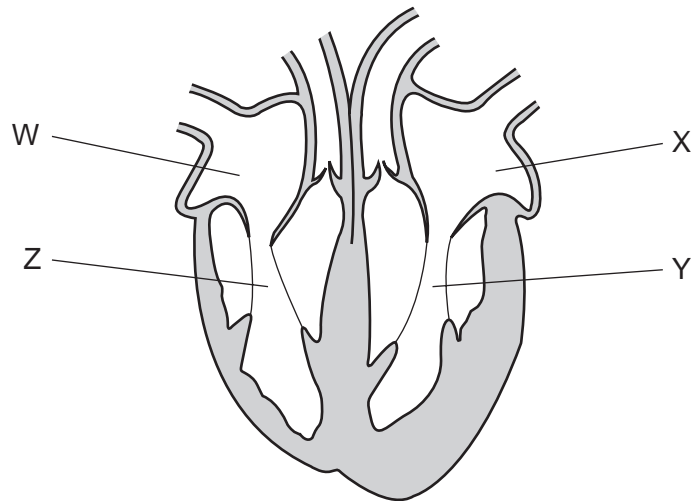


17 Translocation occurs in phloem tubes. Aphids feed on the contents of phloem tubes.

What type of food would be lacking in their diet?

- A amino acid
- B fat
- C sucrose
- D water

18 The diagram shows the human heart.



Which two chambers contract at the same time?

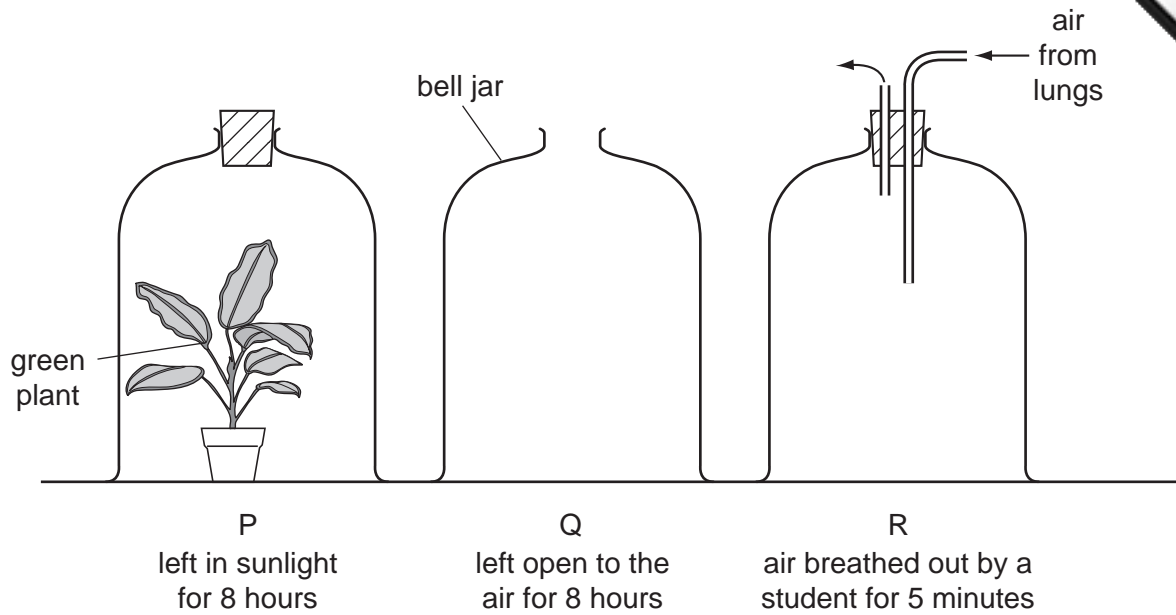
- A** W and X      **B** W and Z      **C** X and Z      **D** X and Y

19 Which substances are formed during anaerobic respiration in animals and yeast?

	animals	yeast
<b>A</b>	alcohol	alcohol and lactic acid
<b>B</b>	alcohol and carbon dioxide	alcohol
<b>C</b>	lactic acid	alcohol and carbon dioxide
<b>D</b>	lactic acid and water	lactic acid



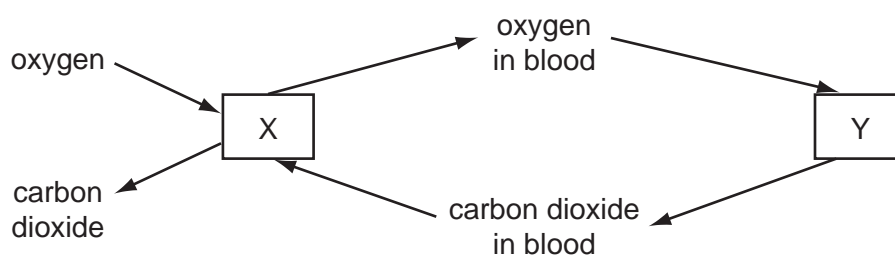
20 In an experiment, three glass bell jars were set up as shown in the diagram.



At the end of the experiment, which bell jar has the most oxygen and which has the least?

	most oxygen	least oxygen
<b>A</b>	P	Q
<b>B</b>	P	R
<b>C</b>	Q	P
<b>D</b>	R	P

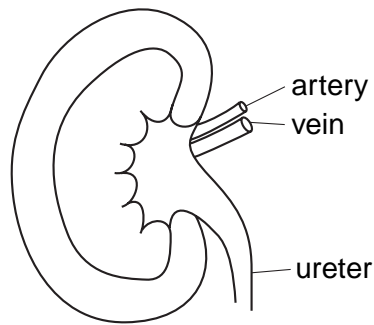
21 The diagram represents the exchange of gases during breathing and during respiration in the body.



What is represented by X and by Y?

	X	Y
<b>A</b>	lungs	air
<b>B</b>	lungs	body cells
<b>C</b>	body cells	air
<b>D</b>	body cells	lungs

22 The diagram shows a kidney and its blood vessels.



In a healthy person, which structures transport glucose?

- A artery only
  - B artery and ureter
  - C artery and vein
  - D ureter and vein
- 23 What is true for a runner, at the end of a marathon race, in a hot climate?
- A sweating and vasoconstriction
  - B sweating and vasodilation
  - C vasoconstriction only
  - D vasodilation only
- 24 When a person is frightened, adrenalin is released by the adrenal glands.

What are the effects of the adrenalin?

	breathing rate	heart beat rate
<b>A</b>	decreased	decreased
<b>B</b>	decreased	increased
<b>C</b>	increased	decreased
<b>D</b>	increased	increased

25 What crosses the placenta from fetal blood to maternal blood in larger quantities than from maternal blood to fetal blood?

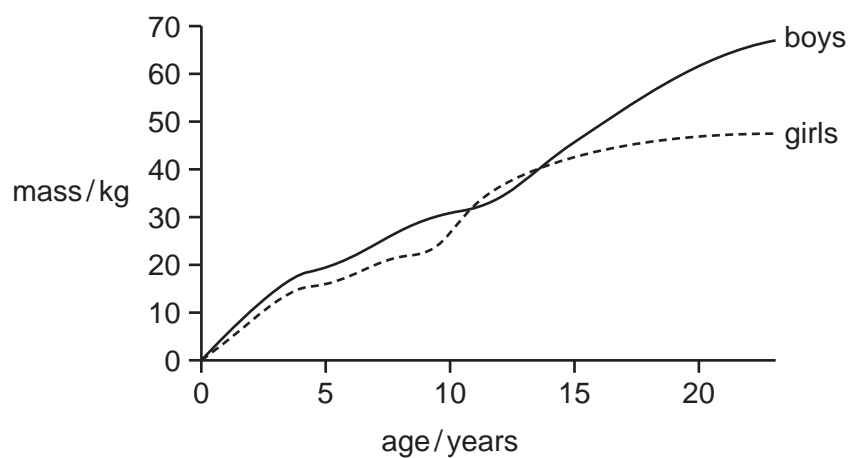
- A amino acids
- B carbon dioxide
- C glucose
- D oxygen

26 Fruits can be dispersed by animals or by wind. The table contains descriptions of four fruits.

Which fruit will be dispersed by wind?

fruit	description
<b>A</b>	fleshy and scented
<b>B</b>	light weight and has a wing
<b>C</b>	sticky and has hooks
<b>D</b>	sweet tasting and brightly coloured

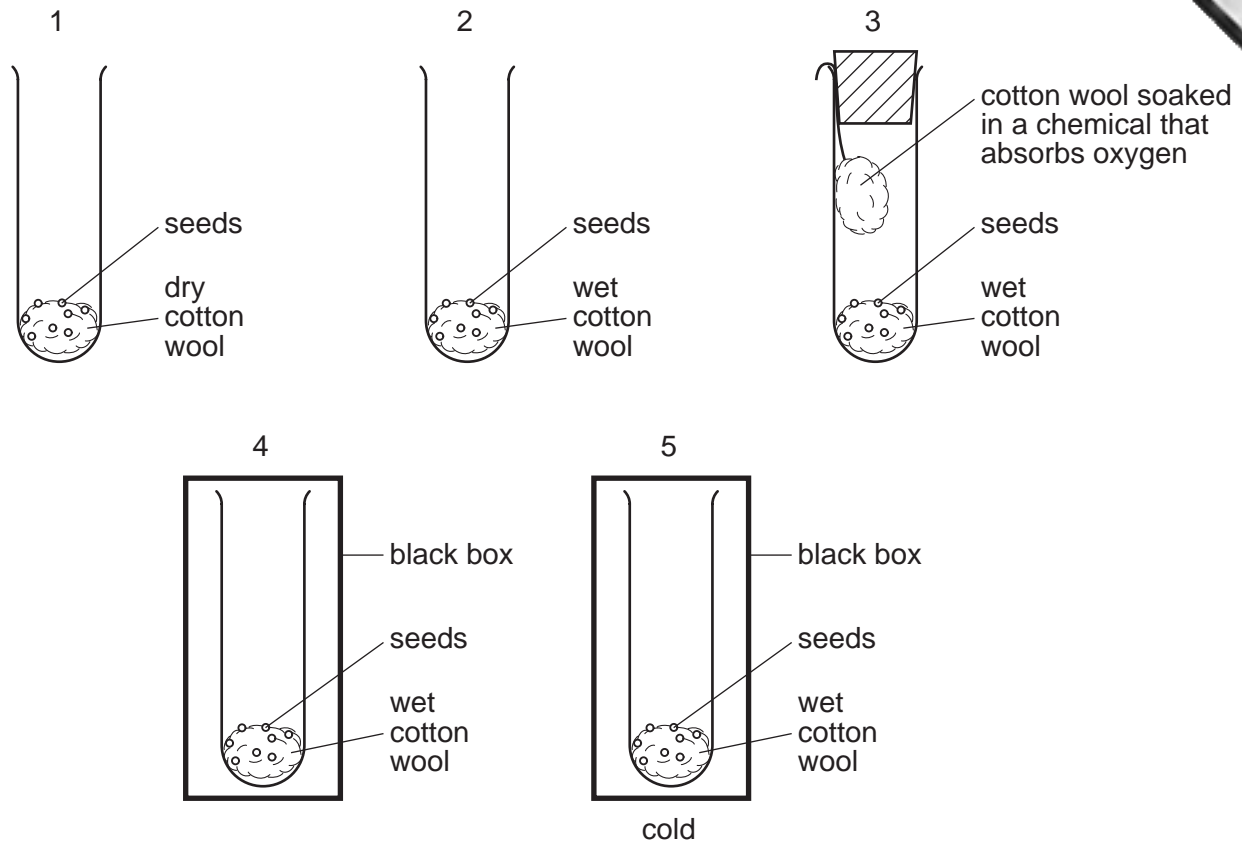
27 The graph shows the relationship between age and weight for boys and girls.



At what age does the graph show that girls are heavier than boys?

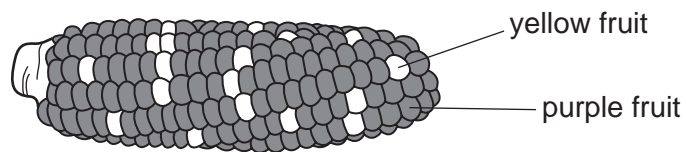
- A 3
- B 7
- C 12
- D 15

- 28 The experiment shown in the diagram was set up to see what conditions are needed for seeds to germinate. Except for tube number 5, all tubes are kept at room temperature.



In which tubes are the seeds most likely to germinate?

- A** 1 and 3      **B** 1 and 5      **C** 2 and 4      **D** 3 and 4
- 29 The diagram shows a maize (corn) cob with purple and yellow fruits. Purple (P) is dominant to yellow (p).



What are the genotypes of the parent maize plants?

- A**  $PP \times Pp$       **B**  $PP \times pp$       **C**  $Pp \times Pp$       **D**  $pp \times Pp$



30 What is true of the chromosomes present in the daughter nuclei after meiosis and after mitosis?

	meiosis	mitosis
<b>A</b>	identical	identical
<b>B</b>	identical	non-identical
<b>C</b>	non-identical	identical
<b>D</b>	non-identical	non-identical

31 What is a mutation?

- A** a change in a gene or chromosome
- B** a condition caused by a recessive allele
- C** a process used in genetic engineering
- D** a type of discontinuous variation

32 The diagram shows a food chain.



A disease reduced the number of consumer 2.

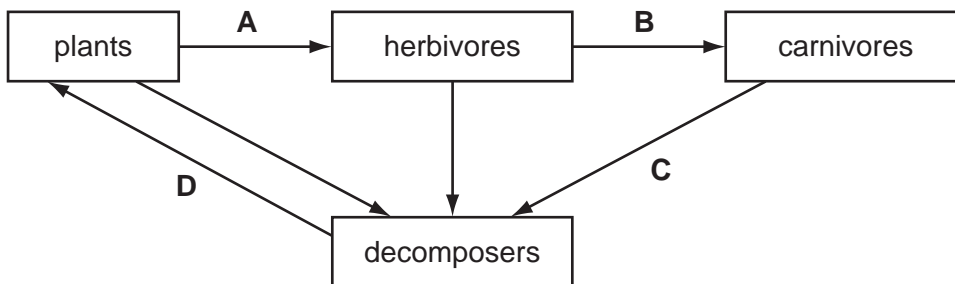
What effect would this be likely to have on the numbers of consumer 1 and consumer 3?

	consumer 1	consumer 3
<b>A</b>	+	+
<b>B</b>	+	-
<b>C</b>	-	+
<b>D</b>	-	-

key  
 + = increase in numbers  
 - = decrease in numbers

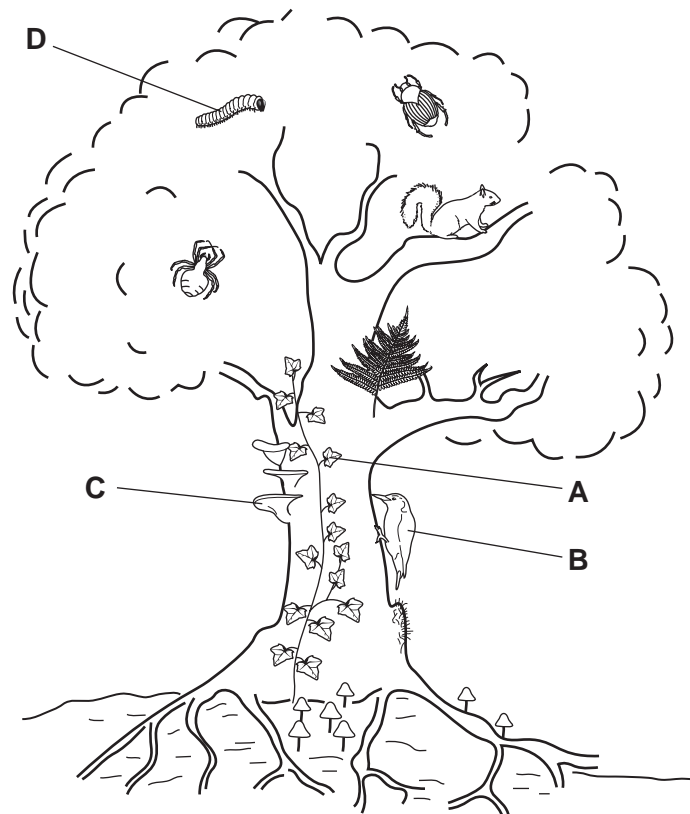
33 The diagram shows a food web.

Which arrow does **not** show the direction of energy flow?

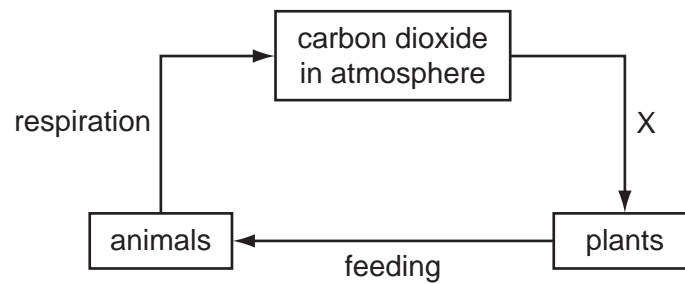


34 The diagram shows a tree and organisms associated with it.

Which labelled organism is a producer?



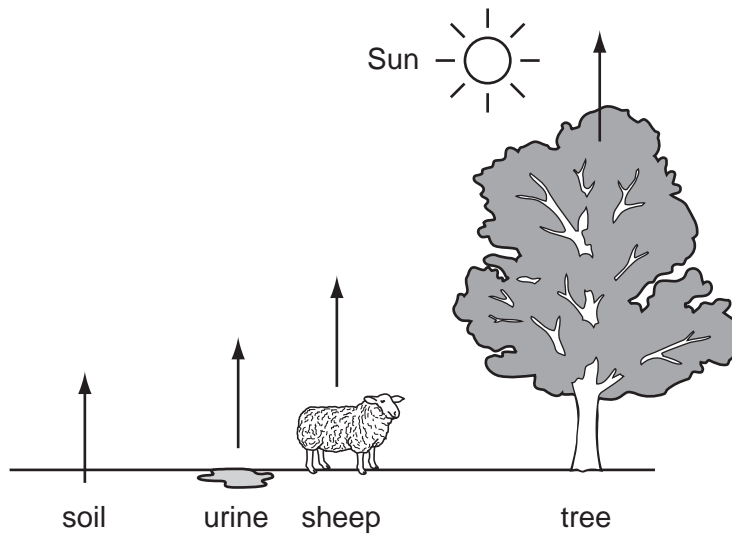
35 The diagram shows a simplified carbon cycle.



What is process X?

- A combustion
- B decay
- C excretion
- D photosynthesis

36 The diagram shows the release of a substance into the atmosphere from different sources.

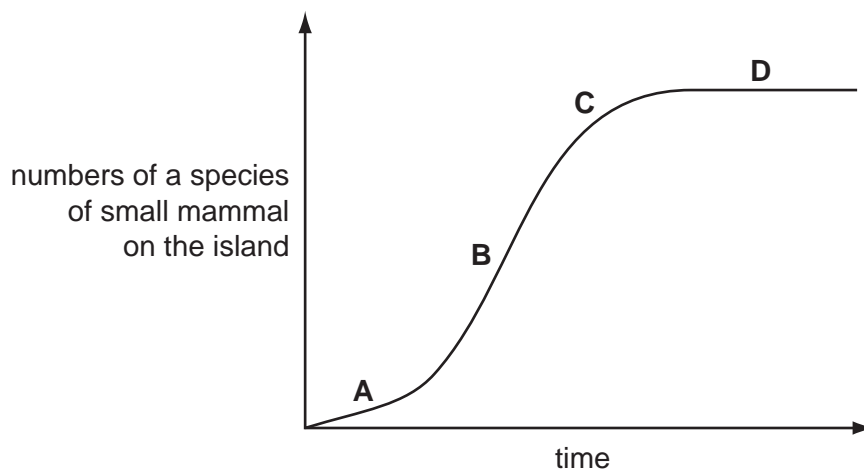


What is this substance?

- A carbon dioxide
- B oxygen
- C urea
- D water vapour

37 The graph shows the change in the numbers of a species of small mammal living on an island.

Which letter represents the phase where the population growth is slowing down?

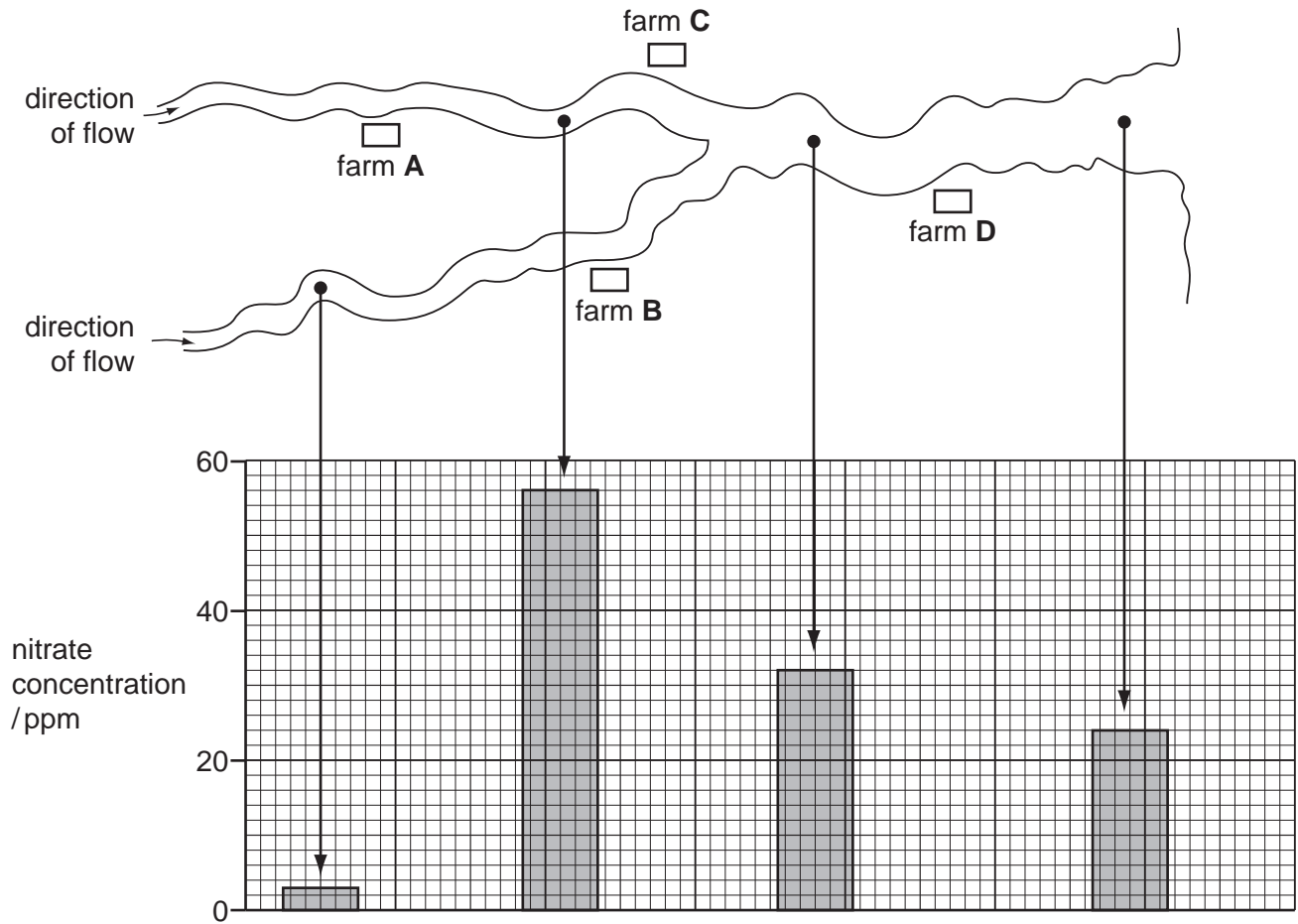


38 What could be a consequence of deforestation?

- A More habitats are produced for animals and plants.
- B More transpiration may increase rainfall.
- C Rainwater runs off the land causing flooding.
- D Soil erosion is less likely.

39 The diagram shows the positions of four farms and the concentrations of nitrate at different points in a river.

Which farm is likely to have been using too much fertilizer on its land?





40 Untreated sewage can cause pollution of streams and rivers. Some changes in rivers after sewage is added are shown.

- 1 fish die
- 2 the dissolved oxygen in the water decreases
- 3 the number of anaerobic organisms increases
- 4 the number of bacteria increases

What gives the order in which these events occur?

- A 1 → 2 → 4 → 3
- B 1 → 4 → 3 → 2
- C 2 → 1 → 4 → 3
- D 4 → 2 → 1 → 3





