Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/13**

Paper 1 Multiple Choice **May/June 2015**

45 minutes

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

* 5 7 5 6 4 2 0 1 8 2 *

READ THESE INSTRUCTIONS FIRST

Write in soft pencil.
Do not use staples, paper clips, 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.
DO **NOT** WRITE IN ANY BARCODES.

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.
Electronic calculators may be used.

This syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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

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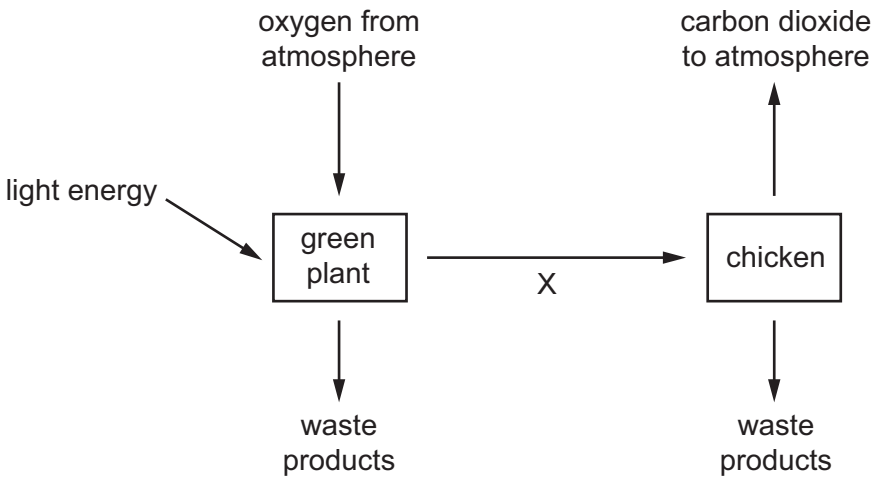
1 The diagram illustrates some of the processes carried out by living organisms.



Which characteristic of living organisms is represented by arrow X?

A excretion

B nutrition

C respiration

D sensitivity

2 All fish, all birds and all mammals are

A animals with internal fertilisation.

B carnivores.

C vertebrates.

D warm-blooded animals.

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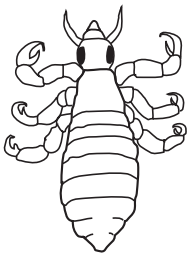
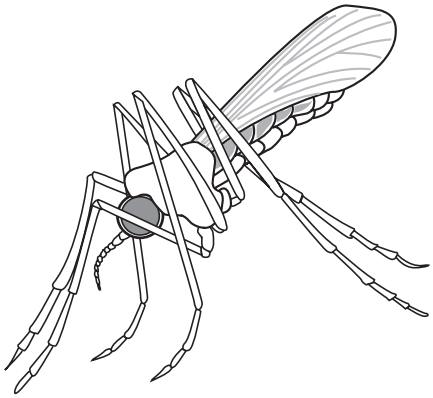
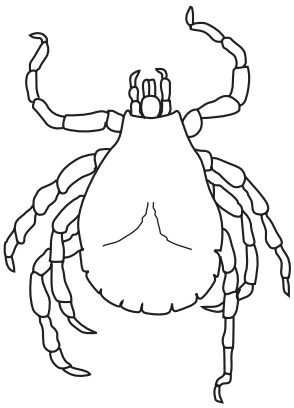
3 The diagram shows four arthropods.



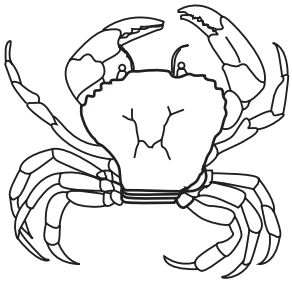
Pediculus ×20



Anopheles ×10



Dermacentor ×7

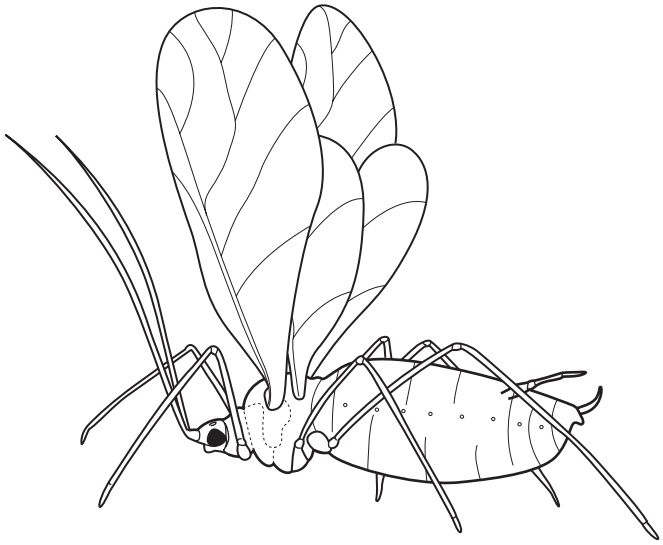


Carcinus ×0.5

How many of these arthropods are insects?

A 1 **B** 2 **C** 3 **D** 4

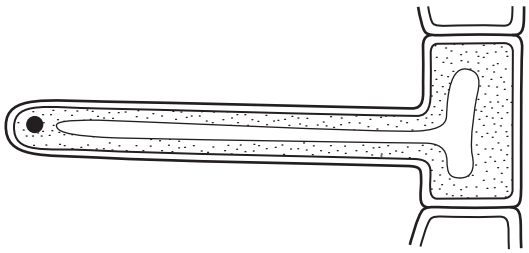
4 The diagram shows an animal.



Use the key to identify the animal.

1	has two wings	go to 2
	has four wings	go to 3
2	has antennae much shorter than legs	**A**
	has antennae about the same length as legs	**B**
3	has feathery antennae	**C**
	has smooth antennae	**D**

5 The diagram shows a plant cell.



Which features show that it is a plant cell?

A It has a cell wall and a vacuole.

B It has a nucleus and cytoplasm.

C It has a nucleus but no chloroplasts.

D It has chloroplasts but no vacuole.

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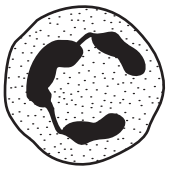
6 The cell shown in the diagram has been magnified 3000 times. The diagram is 21 mm wide.



What is the actual diameter of the cell?

A 21 mm

B $\frac{21}{3000}$ mm

C 21 x 3000 mm

D $\frac{3000}{21}$ mm

7 Xylem is an example of

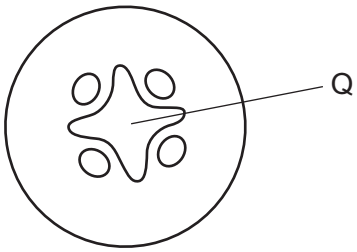
A a cell.

B a tissue.

C an organ.

D an organ system.

8 The diagram shows a cross-section through a plant root.



Q shows the part that is stained red when the root is placed in water containing a red dye.

What is found at Q?

A guard cells

B palisade cells

C phloem

D xylem

9 How do carbon dioxide and oxygen move in and out of a mesophyll cell?

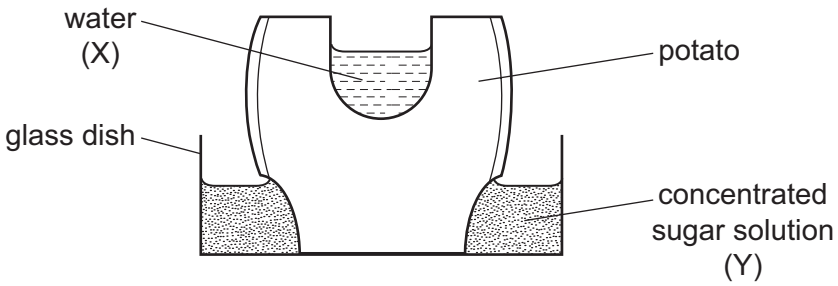
A active transport

B diffusion

C respiration

D transpiration

10 The diagram shows an experiment set up to investigate osmosis in living cells.



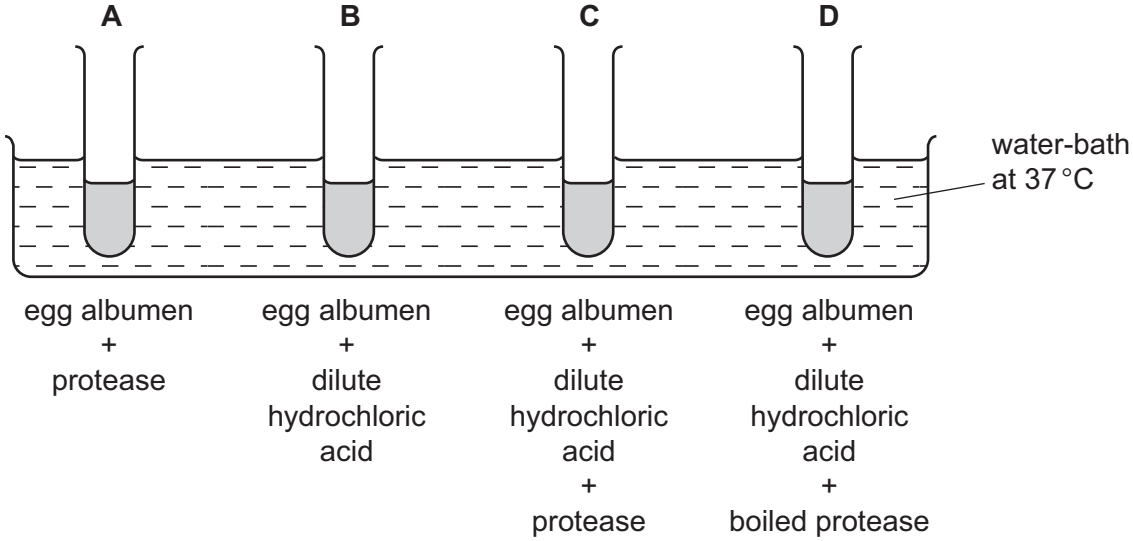
What happens to the volumes of water (X) and sugar solution (Y) after 12 hours?

	volume of water (X)	volume of sugar solution (Y)
A	decreases	increases
B	increases	increases
C	increases	remains the same
D	remains the same	decreases

11 The diagram shows an experiment on the digestion of the protein in egg albumen by protease.

The protease was taken from a human stomach.

In which test-tube will the protein be digested most quickly?



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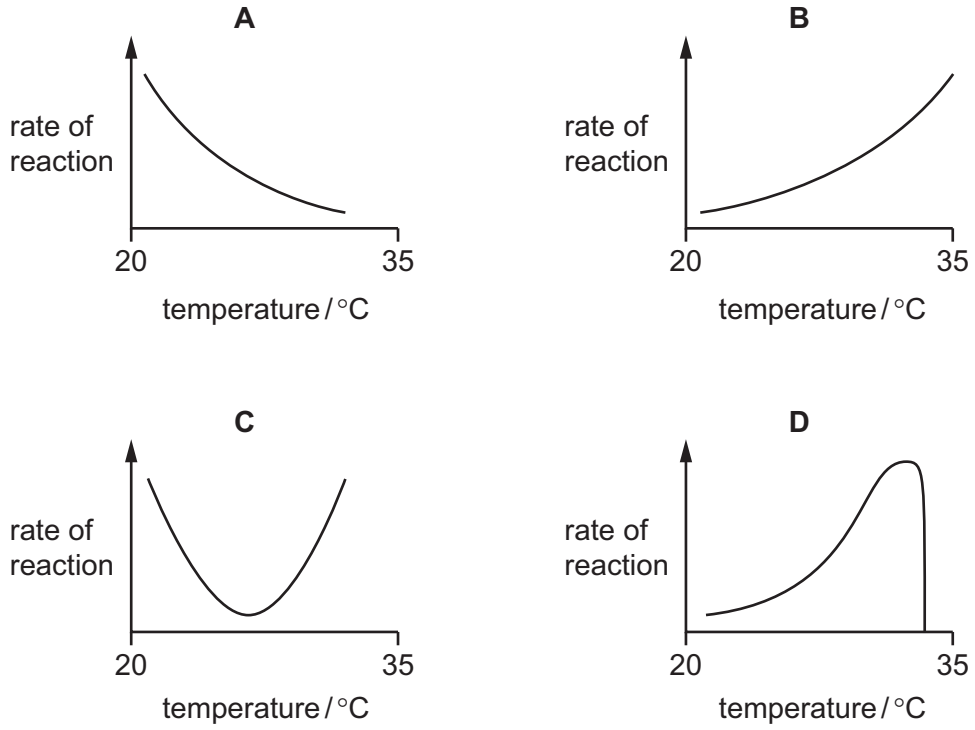
12 Which graph shows the effect of temperature between 20 °C and 35 °C on the activity of a human digestive enzyme?



13 Which product of photosynthesis moves out of a green leaf through its stomata?

A carbon dioxide

B glucose

C oxygen

D water

14 Poor nutrition can lead to a condition called rickets in which bones fail to develop properly.

The table shows some minerals and vitamins present in four foods.

Which food would be best for a child who has rickets?

	calcium	iron	vitamin C	vitamin D
A	✓	✗	✓	✗
B	✓	✗	✗	✓
C	✗	✓	✓	✗
D	✗	✓	✗	✓

key

✓ = substance present

✗ = substance absent

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[Turn over

15 A person ate food X. Food X was **not** affected by enzymes until it reached the duodenum.

What was in food X?

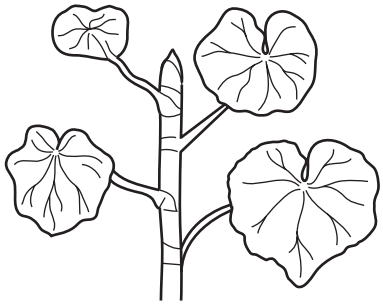
A fat

B mineral ion

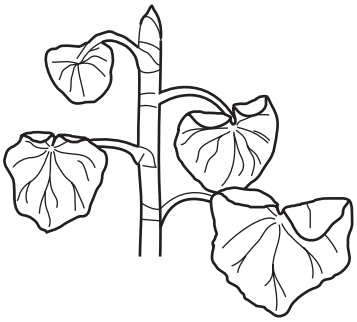
C protein

D starch

16 The diagram shows a plant shoot and the same shoot six hours later.



plant shoot



same shoot six hours later

Which change in environmental conditions could cause this change in the shoot?

A a decrease in available water

B a decrease in light intensity

C a decrease in wind speed

D an increase in humidity

17 Why does chewing food speed up digestion?

A Bacteria in the food are killed.

B Food is mixed with protease.

C The surface area of the food is increased.

D The taste of food is improved.

18 Where does haemoglobin become oxyhaemoglobin?

A heart

B kidneys

C liver

D lungs

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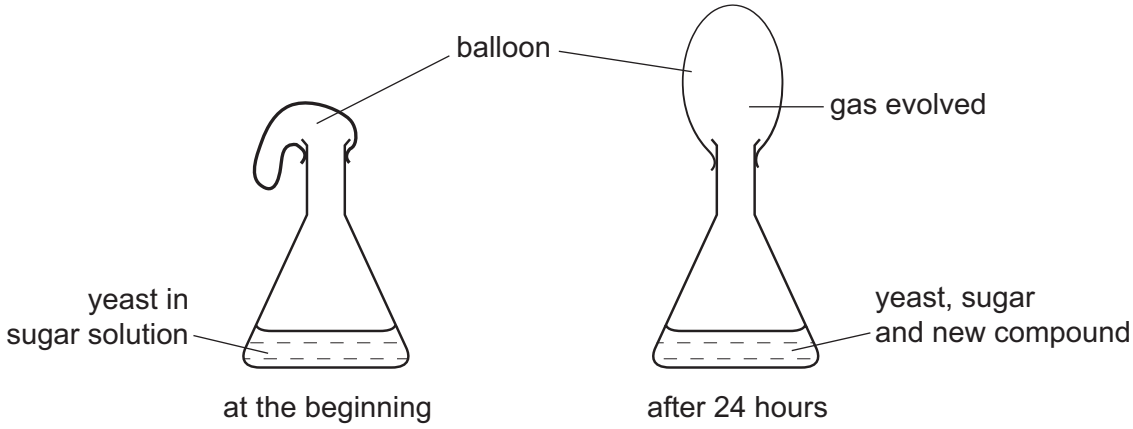
19 The diagram shows an experiment to investigate the respiration of yeast.



Which gas is evolved and which new compound is present after 24 hours?

	gas evolved	new compound
A	carbon dioxide	ethanol (alcohol)
B	carbon dioxide	lactic acid
C	oxygen	ethanol (alcohol)
D	oxygen	lactic acid

20 A girl holds her breath for 30 seconds, breathes out, and then breathes in.

Compared with the air she breathes out, the air she breathes in contains less

A carbon dioxide and water vapour.

B nitrogen and water vapour.

C oxygen and carbon dioxide.

D oxygen and nitrogen.

21 Why does anaerobic respiration in muscles release less energy than aerobic respiration?

A Energy is lost in carbon dioxide.

B Energy is lost in oxygen.

C Energy remains trapped in ethanol.

D Energy remains trapped in lactic acid.

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22 What is the function of the kidney?

A making glucose and reabsorbing urea

B making urea and removing salts

C removing glucose and reabsorbing salts

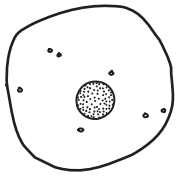
D removing urea and reabsorbing glucose

23 How does the skin react when the body becomes very warm?

	blood vessels	sweat production
A	dilate	almost stops
B	dilate	increases
C	move towards skin surface	almost stops
D	move towards skin surface	increases

24 Which diagram shows a sensory neurone?

A



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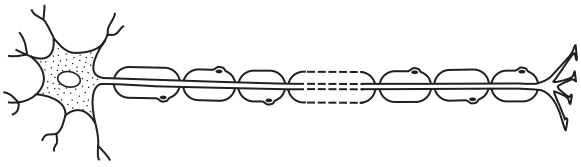
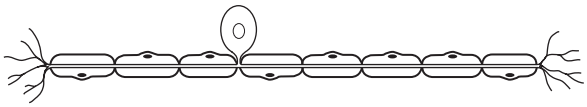


C



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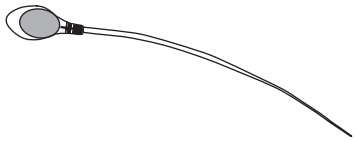
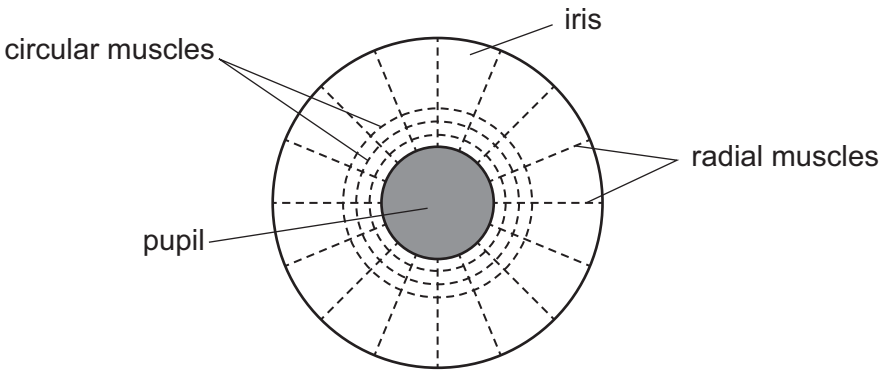


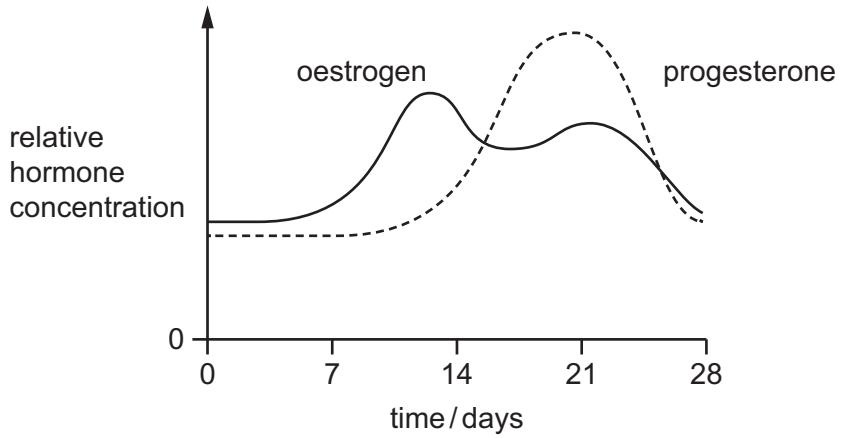
25 The diagram shows the muscles that control the size of the pupil in an eye.



How do the muscles make the pupil smaller?

	circular muscles	radial muscles
A	contract	contract
B	contract	relax
C	relax	contract
D	relax	relax

26 The diagram shows some changes which take place during a woman's menstrual cycle.



Assuming ovulation occurs on day 14, what is occurring at the time of ovulation?

A a fall in the levels of oestrogen and progesterone

B a fall in the level of progesterone only

C a rise in the level of oestrogen

D a rise in the level of progesterone and fall in the level of oestrogen

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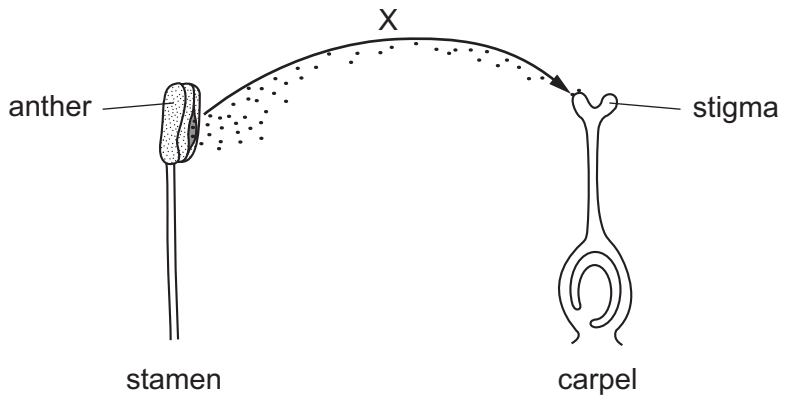
[Turn over

27 The diagram shows a process in plant reproduction.



Which process is represented by arrow X?

A fertilisation

B pollen tube growth

C pollination

D seed dispersal

28 In addition to a suitable temperature, what else is always necessary for seed germination?

A carbon dioxide and sunlight

B mineral ions

C sunlight and water

D water and oxygen

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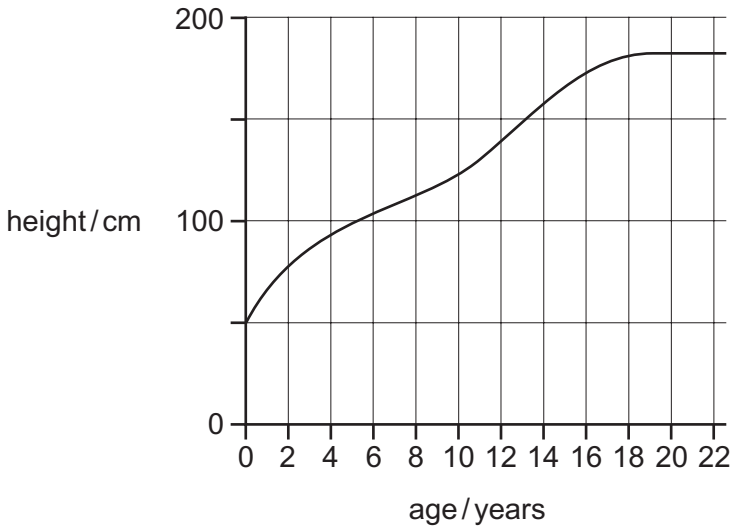
29 The graph shows how human height changes with age.



In which age range is the growth rate slowest?

A 0–2 years

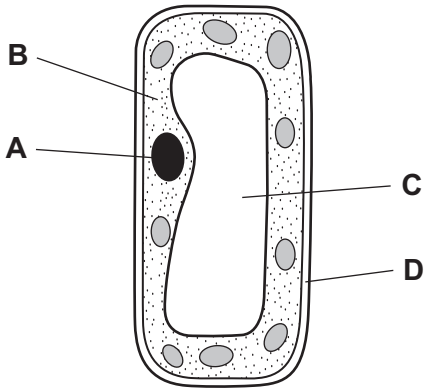
B 8–10 years

C 12–14 years

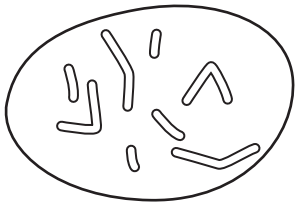
D 18–20 years

30 The diagram shows a plant cell.

Where is most of the DNA found?

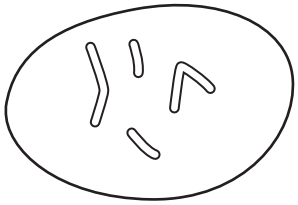


31 The diagram shows the chromosomes in the nucleus of a cell that divides by mitosis.



Which diagram shows the chromosomes in the nucleus of one of the daughter cells produced?

A



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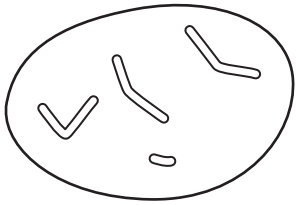

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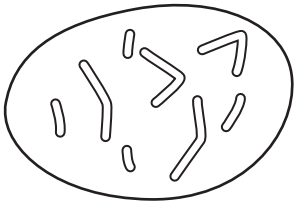

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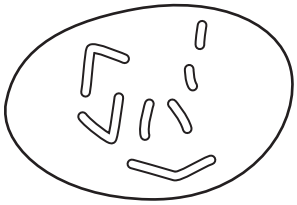
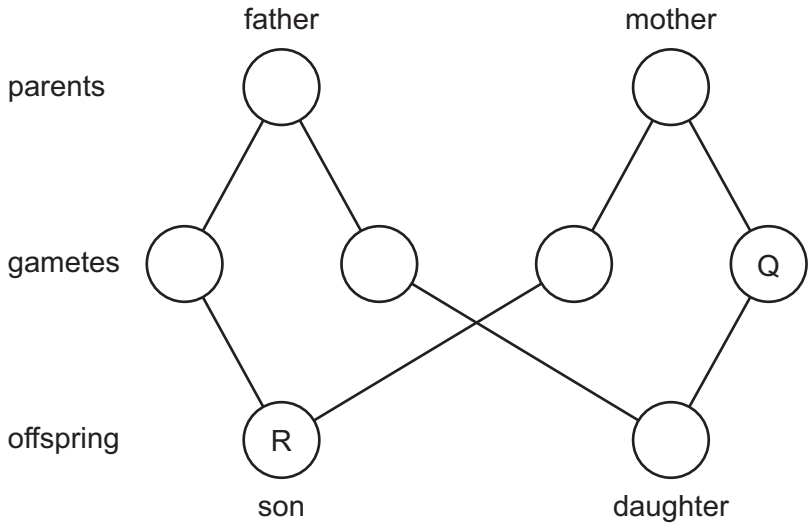


32 The diagram shows the fusion of gametes to produce a son and a daughter.



What are the sex chromosomes in gamete Q and son R?

	Q	R
A	X	XX
B	X	XY
C	Y	XX
D	Y	XY

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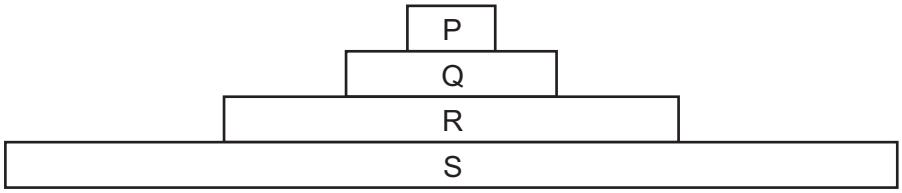
33 Which organisms can be sources of energy for decomposers?

	producers	herbivores	carnivores
A	✓	✓	✓
B	✓	✗	✗
C	✗	✓	✓
D	✗	✗	✗

34 The diagram shows a pyramid of biomass for all organisms in an ecosystem.



Which organisms are carnivores?

A P and Q **B** P and R **C** Q and R **D** R and S

35 The diagram shows a food chain.

A disease reduced the numbers of consumer 3.

What would be the likely effect of this on the numbers of consumer 1 and consumer 2?

	consumer 1	consumer 2
A	decrease	decrease
B	decrease	increase
C	increase	decrease
D	increase	increase

36 Which process removes carbon dioxide from the atmosphere?

A combustion

B decomposition

C photosynthesis

D respiration

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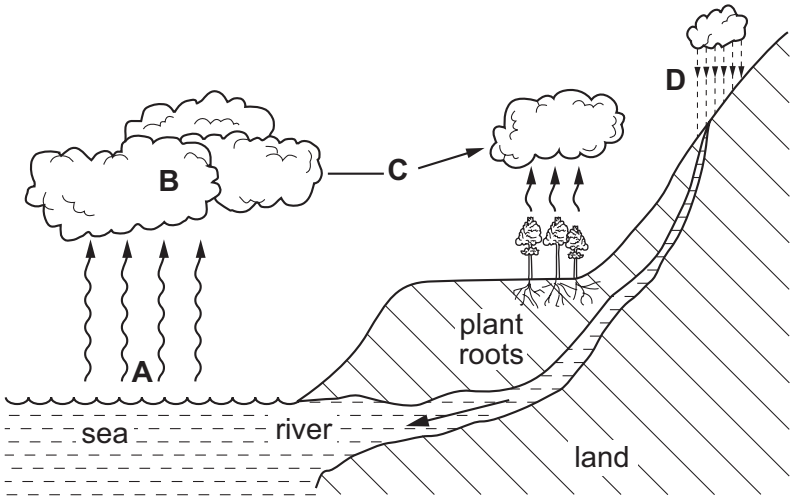
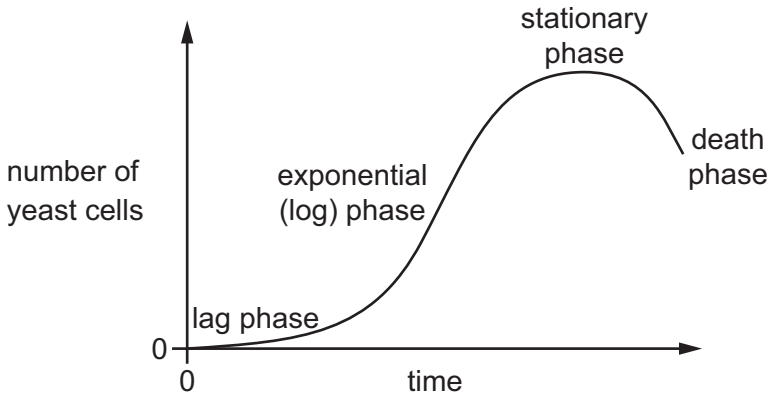
37 In which labelled stage in the water cycle is the water in vapour form?



38 The graph shows a growth curve for a population of yeast.



Which two phases of the growth curve are caused by factors such as predation, disease or lack of food?

A exponential (log) and death

B exponential (log) and stationary

C lag and exponential (log)

D stationary and death

39 Which two gases **both** contribute to global warming?

A carbon dioxide and methane

B methane and oxygen

C oxygen and sulfur dioxide

D sulfur dioxide and carbon dioxide

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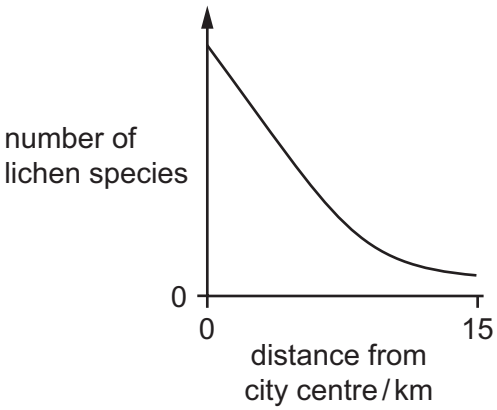
40 Lichens are organisms that do **not** grow well in air containing sulfur dioxide.

Which graph shows the change in number of lichen species from the centre of an industrial city to the countryside 15 km away?

A



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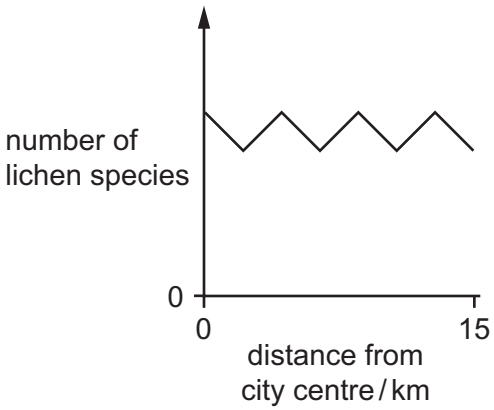

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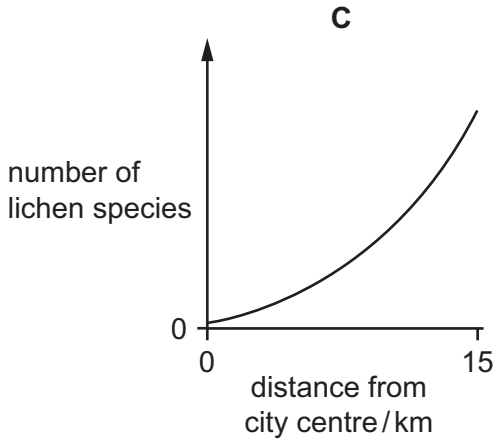

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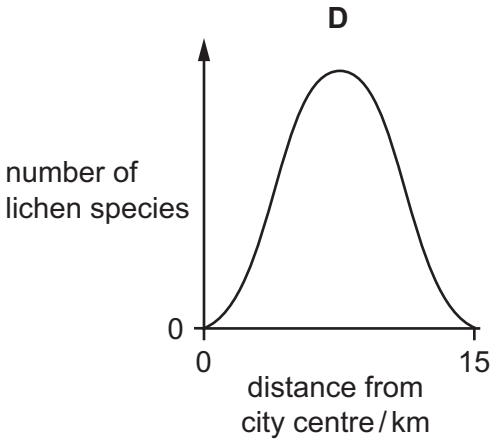

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