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Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

BIOLOGY **0610/12**

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)

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

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.

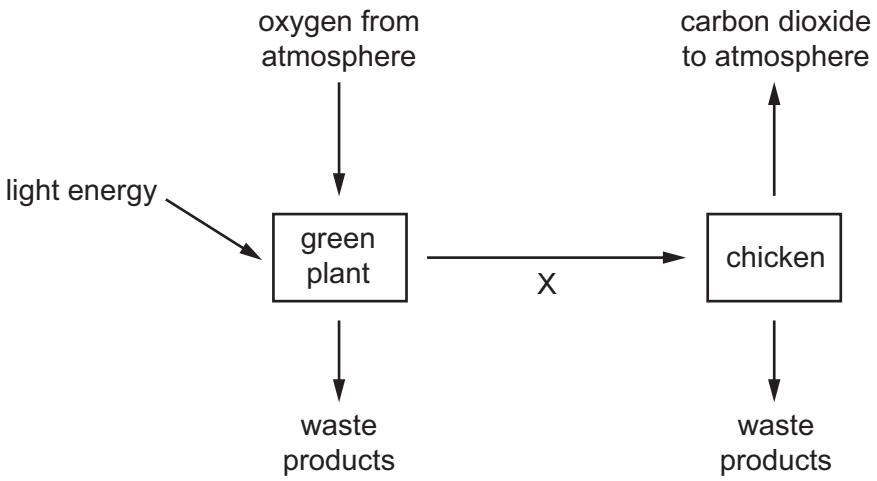
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This document consists of **18** printed pages and 2 blank pages.

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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 The statements describe four different plants.

Which plant must be a monocotyledon?

A The flowers are wind-pollinated.

B The flowers each have five petals.

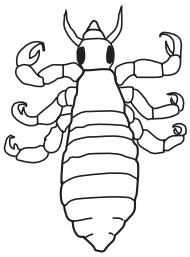
C The leaves are large with a clear network of veins on them.

D The leaves have parallel veins.

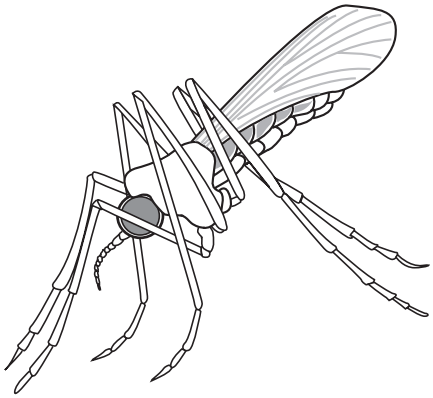
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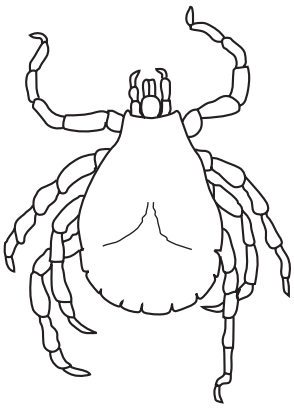
3 The diagram shows four arthropods.



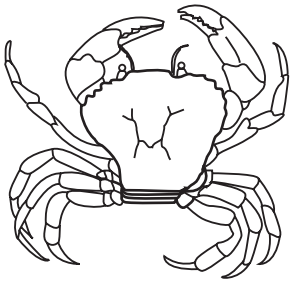
Pediculus ×20



Anopheles ×10



Dermacentor ×7



Carcinus ×0.5

How many of these arthropods are insects?

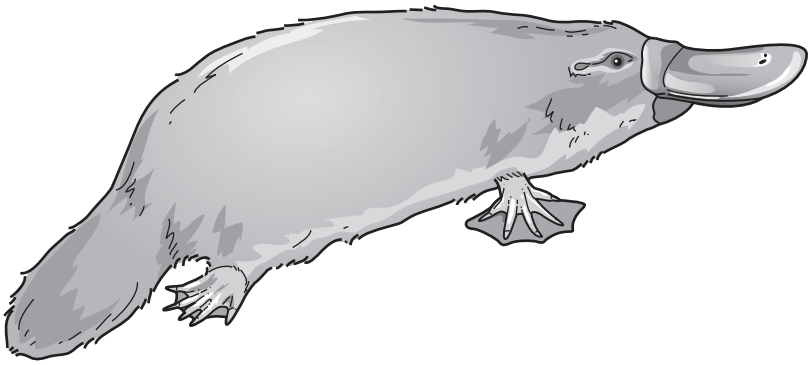
A 1 **B** 2 **C** 3 **D** 4

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4 The diagram shows an animal.

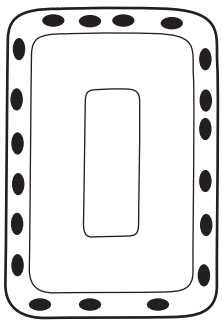


Use the key to identify this animal.

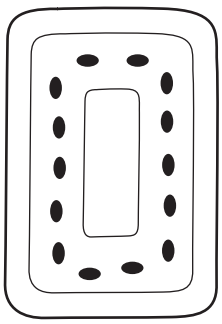
1	body covered with scales	go to 2
	body covered with hair	go to 3
2	has a rounded bill	**A**
	has a pointed bill	**B**
3	has webbed feet	**C**
	does not have webbed feet	**D**

5 Which diagram shows chloroplasts in their correct position in a plant cell?

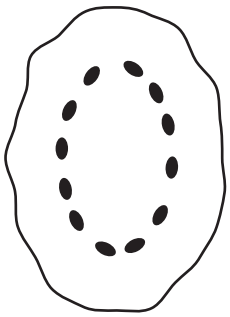
A



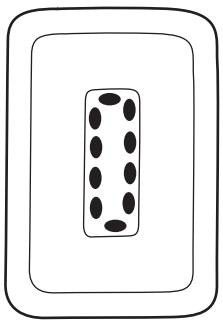
B



C



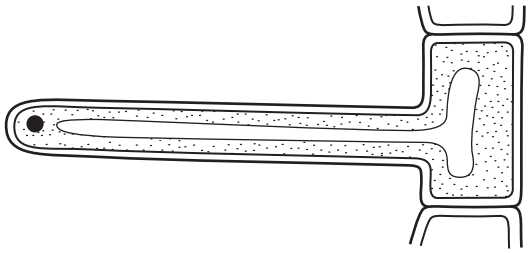
D



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6 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.

7 Which is **not** an organ?

A blood

B heart

C tooth

D vein

8 What results from the destruction of cilia in the trachea due to smoking?

A Cilia cannot filter bacteria.

B Cilia cannot trap dust.

C Mucus cannot be manufactured.

D Mucus cannot be carried towards the throat.

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

A active transport

B diffusion

C respiration

D transpiration

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10 Which statements are correct for **both** diffusion and osmosis?

	involves movement of water only	requires energy from the cell	molecules move from higher concentration to lower concentration
A	✓	✓	✓
B	✓	✓	✗
C	✗	✗	✓
D	✗	✗	✗

11 An enzyme in potato cells causes oxygen to be produced from hydrogen peroxide.

Cubes of potato were incubated with hydrogen peroxide at different temperatures.

The numbers of bubbles of oxygen released per minute were counted at each temperature.

The table shows the results.

temperature / °C	15	25	35	45	55
number of bubbles / bubbles per minute	96	98	82	36	1

The results suggest the optimum temperature for the enzyme is between which two values?

A 15 °C and 35 °C

B 35 °C and 45 °C

C 35 °C and 55 °C

D 45 °C and 55 °C

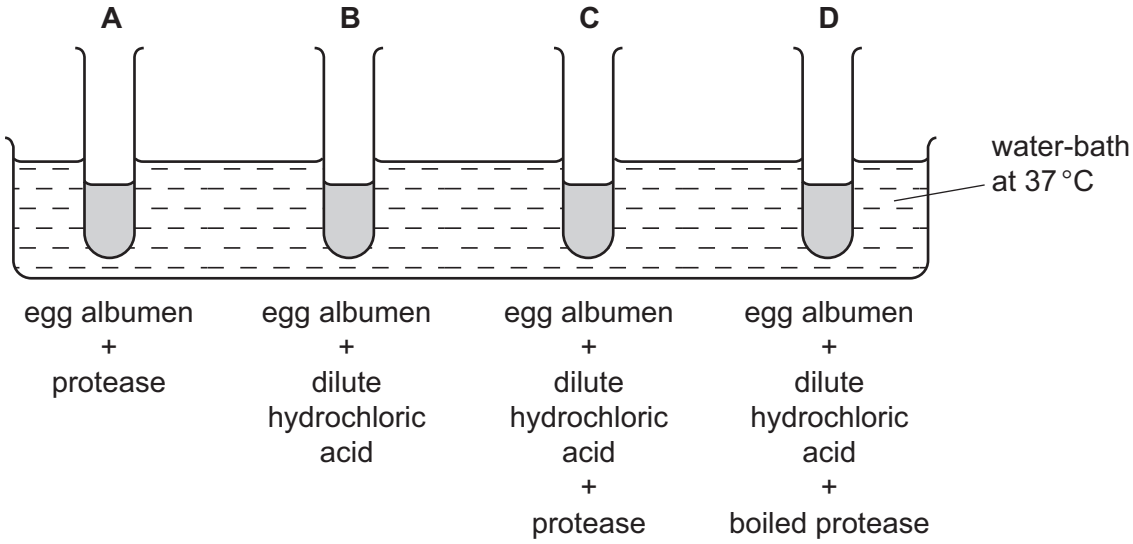
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12 The diagram shows an experiment on the digestion of the protein in egg albumen by protease.

The protease was taken from a human stomach.

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



13 Which row shows the elements and basic units that are used in the construction of large food molecules?

	food molecules	elements	basic units
A	fats	carbon, hydrogen, oxygen, nitrogen	glucose
B	fats	carbon, hydrogen, oxygen, nitrogen	glycerol
C	starch	carbon, hydrogen, oxygen	glucose
D	starch	carbon, hydrogen, oxygen	glycerol

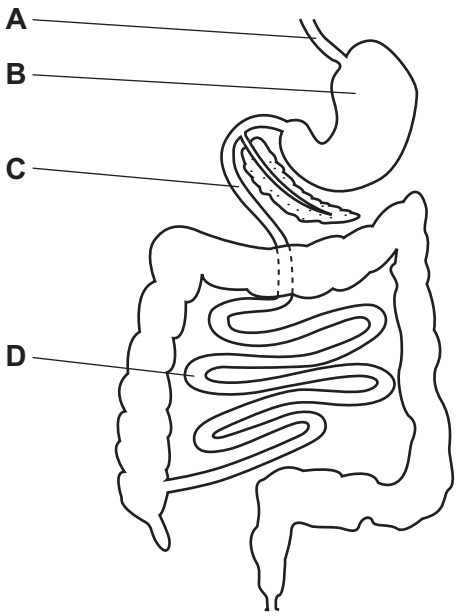
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14 The diagram shows part of the human alimentary canal.

In which part does protein digestion begin?



15 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	✗	✓	✗	✓

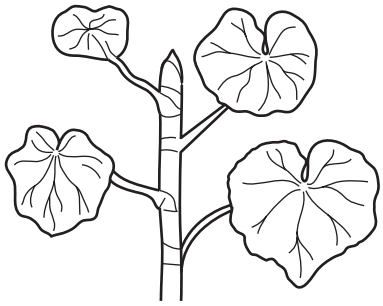
key

✓ = substance present

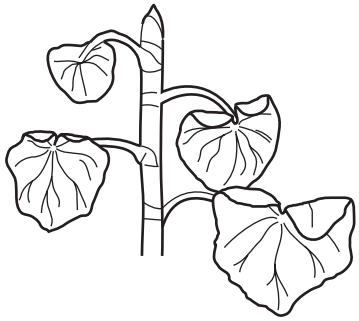
✗ = substance absent

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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?

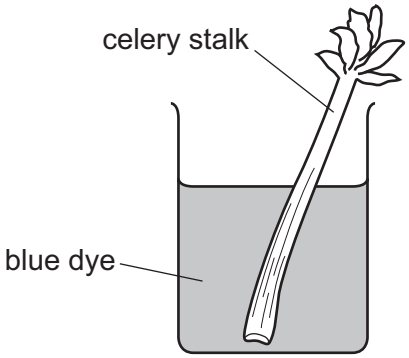
A a decrease in available water

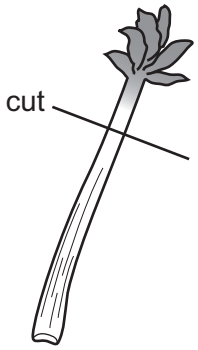
B a decrease in light intensity

C a decrease in wind speed

D an increase in humidity

17 A celery stalk is placed in a beaker of blue dye. Once the dye reaches the leaves, the stalk is taken out and cut in half.



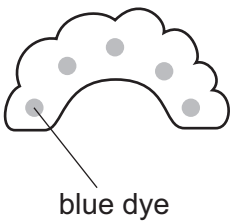


Which diagram shows the appearance of the cut end of the stalk?

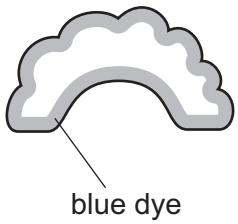
A



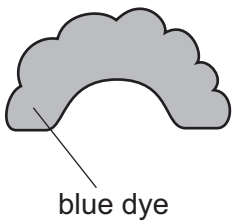
B



C



D



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18 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.

19 The table shows the composition of four samples of air.

air sample	percentage of oxygen	percentage of carbon dioxide	percentage humidity
P	21	0.04	20
Q	16	4.04	100
R	4	0.40	80
S	20	4.00	60

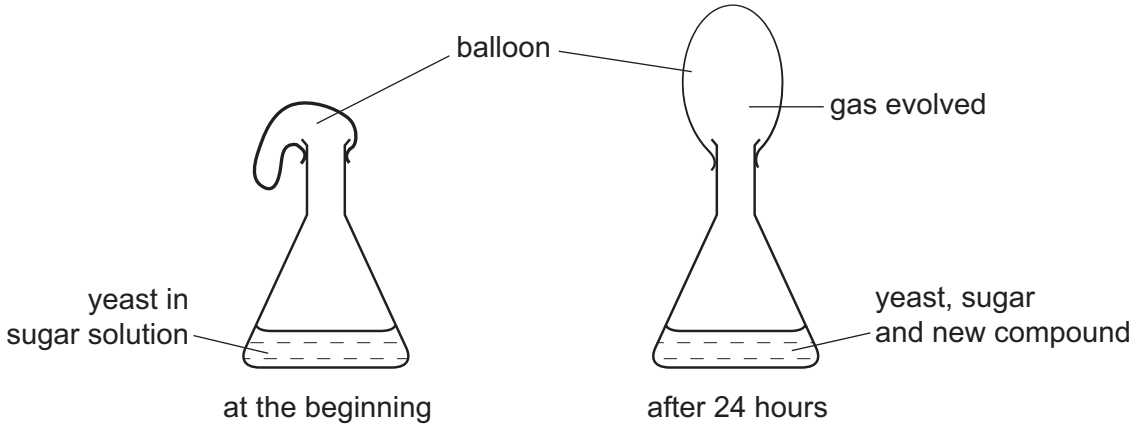
Which sample is inspired air and which sample is expired air?

	sample breathed in	sample breathed out
A	P	Q
B	P	S
C	Q	R
D	Q	S

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20 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

21 In which conditions do the leaves of a green plant respire?

	bright light	darkness
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

22 Which two substances are both reabsorbed in the kidneys?

A glucose and salts

B glucose and starch

C glycogen and salts

D glycogen and starch

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23 Which organ makes urea?

A bladder

B kidney

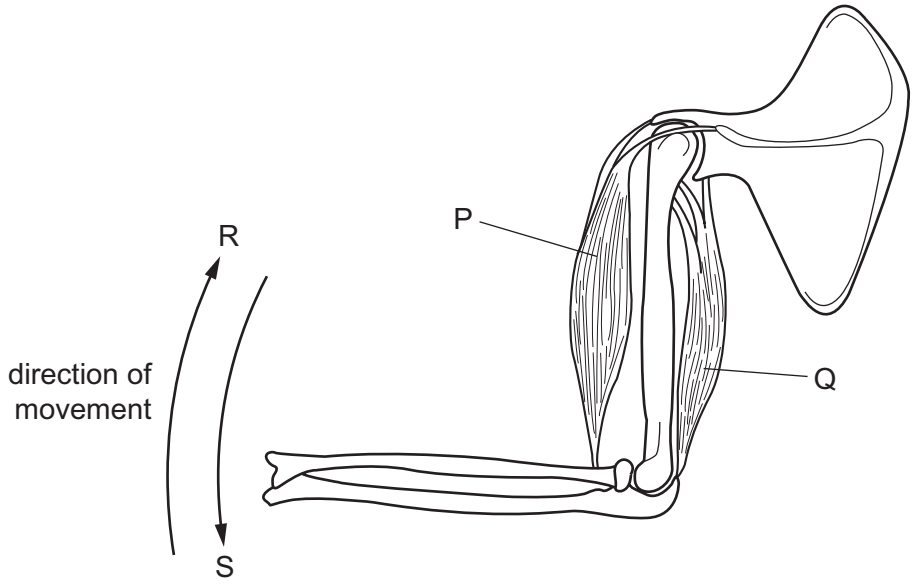
C liver

D stomach

24 What are correct descriptions of mitosis and meiosis?

	mitosis	meiosis
A	cells produced are genetically identical	repairs damaged cells
B	halves the chromosome number	cells produced are genetically identical
C	involved in asexual reproduction	halves the chromosome number
D	involved in sexual reproduction	doubles the chromosome number

25 The diagram shows two antagonistic muscles and the directions of movement that they produce.



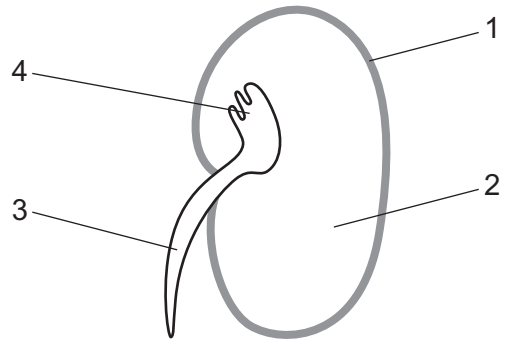
Which row correctly identifies these muscles and the directions of movement they produce on contraction?

	muscle P		muscle Q	
	name	movement	name	movement
A	biceps	R	triceps	S
B	biceps	S	triceps	R
C	triceps	R	biceps	S
D	triceps	S	biceps	R

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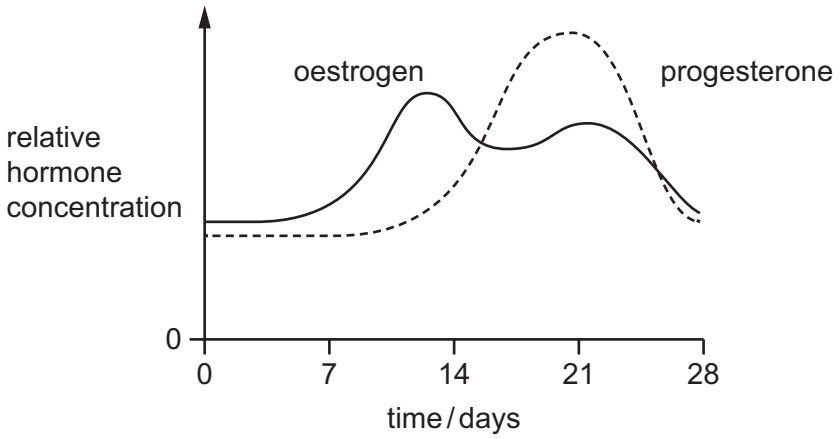
26 The diagram shows a germinating broad bean seed which has been cut in half.



Which labels show the cotyledon and the plumule?

	cotyledon	plumule
A	1	3
B	1	4
C	2	3
D	2	4

27 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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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

29 What defines the development of an organism?

A increase in age

B increase in complexity

C increase in height

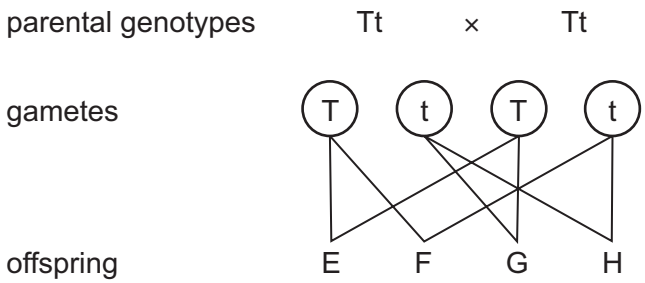
D increase in length

30 A man has three sons.

What is the chance of his next child being a son?

A 0% **B** 25% **C** 50% **D** 75%

31 The diagram shows a cross between heterozygous tall pea plants.



Which statement is **not** correct?

A Offspring E and H are both homozygous.

B Offspring F and G are both heterozygous.

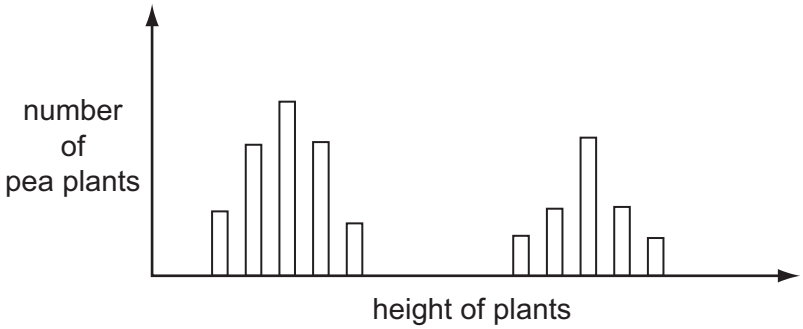
C The phenotypes of offspring E, F and G are the same.

D The ratio of different phenotypes in the offspring is 1 : 1.

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32 The bar chart shows the heights of pea plants grown from 500 pea seeds.



What variation do the plants show?

A continuous variation only

B discontinuous variation only

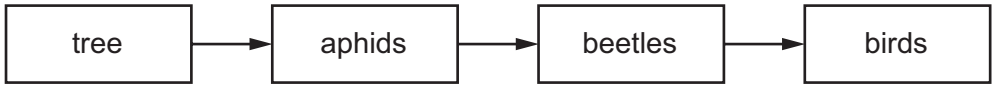
C both continuous variation and discontinuous variation

D neither continuous variation nor discontinuous variation

33 Which pair of statements about energy flow in ecosystems is correct?

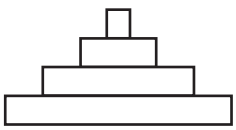
	energy entering the ecosystem from the Sun	nature of energy flow
A	light and chemical	cyclical
B	light and chemical	non-cyclical
C	light and heat	cyclical
D	light and heat	non-cyclical

34 The diagram shows a food chain based on a tree.

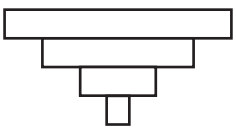


Which diagram shows a pyramid of numbers for this food chain?

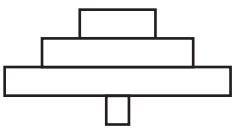
A



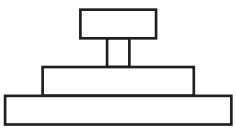
B



C



D



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35 Which process forms part of the carbon cycle?

A combustion

B evaporation

C osmosis

D transpiration

36 Herbivores take in carbon atoms from plants.

How do carbon atoms leave the herbivores?

	in faeces	in respiration	through death and decay
A	✓	✓	✓
B	✓	✗	✓
C	✓	✗	✗
D	✗	✓	✓

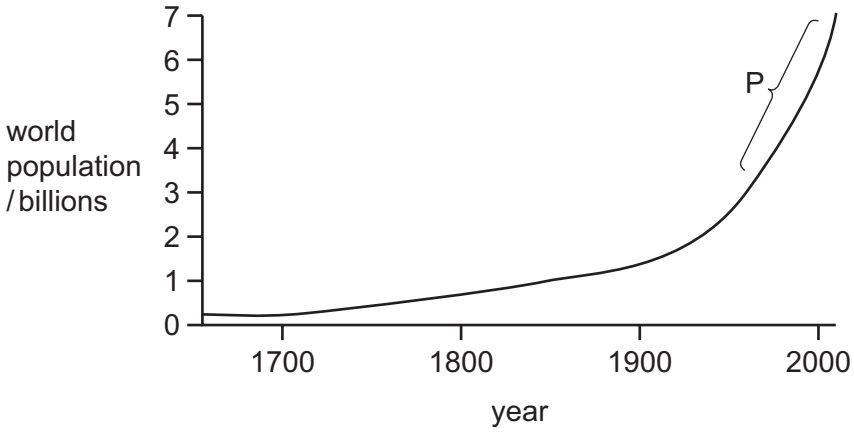
37 In which stages in the water cycle is the water in vapour form?

	absorption by plant roots	movement from sea to clouds	precipitation	transpiration
A	✓	✓	✗	✗
B	✓	✗	✓	✗
C	✗	✓	✗	✓
D	✗	✗	✓	✓

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38 The graph shows how the population of the world has increased from 1650 until the present day.



What stage in the sigmoid population growth curve is represented by region P?

A death phase

B exponential (log) phase

C lag phase

D stationary phase

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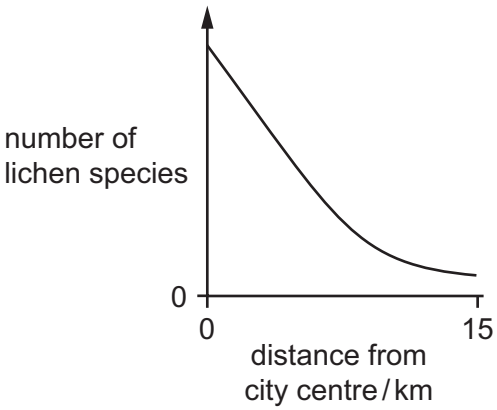
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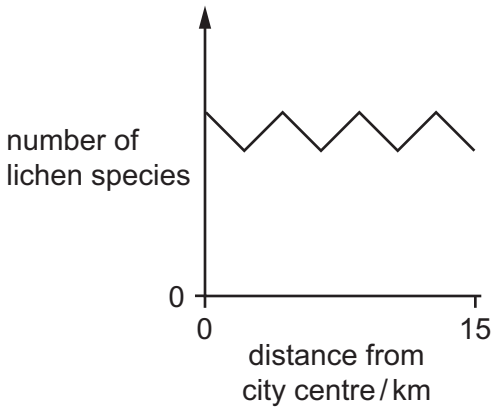
39 Lichens are organisms that do **not** grow well in air containing sulfur dioxide.

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

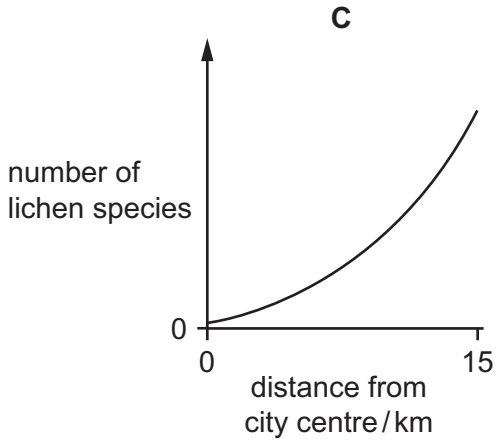
A



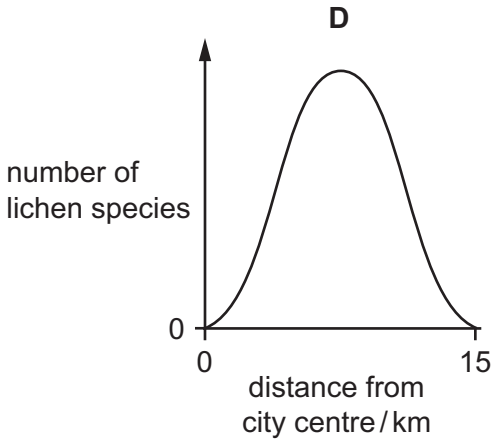
B



C



D



40 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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