1 What is produced by anaerobic respiration in yeast?

	lactic acid	carbon dioxide
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

2 What is the word equation for aerobic respiration in plants?

A carbon dioxide + water → glucose + oxygen

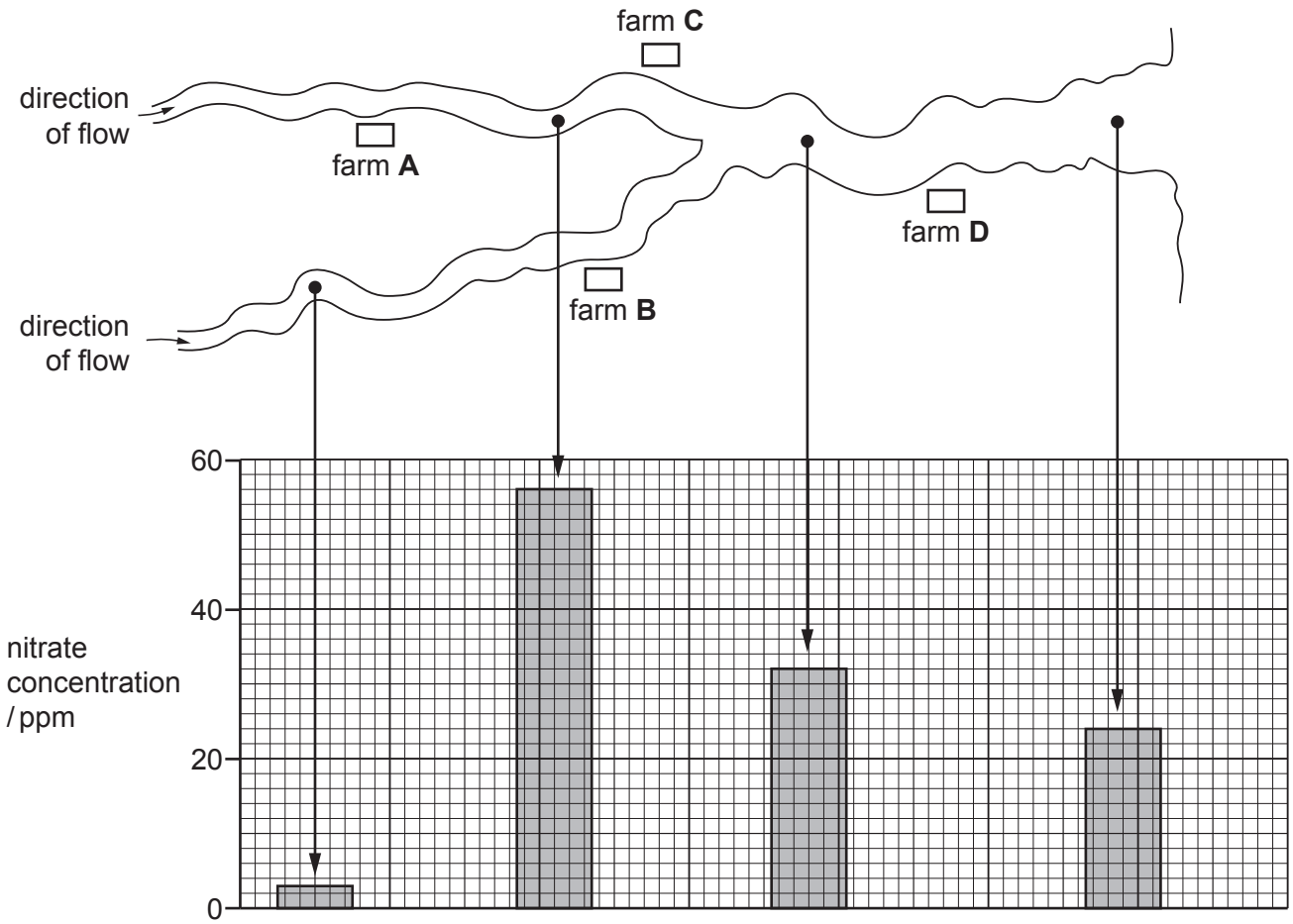
B glucose + carbon dioxide → water + oxygen

C glucose + oxygen → carbon dioxide + water

D glucose + water → carbon dioxide + oxygen

3 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 fertiliser on its land?



4 During aerobic respiration glucose is broken down.

What is released in this process?

	carbon dioxide	energy	water
A	✓	✓	✓
B	✓	✓	✗
C	✓	✗	✓
D	✗	✓	✓

5 Which processes depend on the action of enzymes?

1 digestion

2 osmosis

3 respiration

A 1 and 2 **B** 1 and 3 **C** 1 only **D** 2 and 3

6 Which description of anaerobic respiration in yeast is correct?

	it produces alcohol	it releases more energy than aerobic respiration
A	no	no
B	no	yes
C	yes	no
D	yes	yes

7 What is produced by yeast during anaerobic respiration?

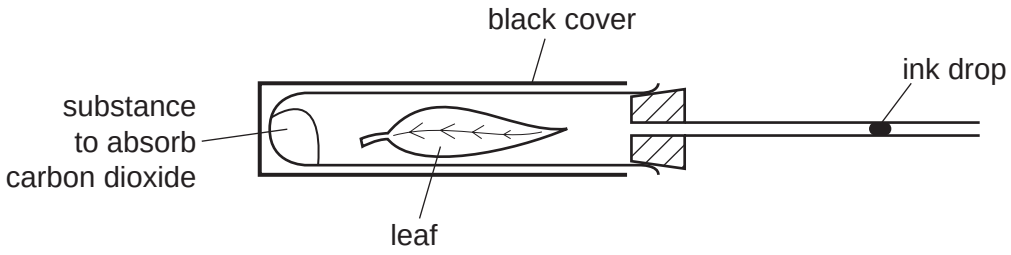
A carbon dioxide and water

B ethanol and carbon dioxide

C ethanol and water

D lactic acid

8 The diagram shows an experiment to investigate gas exchange in a leaf.



In which direction does the ink drop move and for what reason?

	direction	reason
A	to the left	photosynthesis
B	to the left	respiration
C	to the right	photosynthesis
D	to the right	respiration

9 Which process releases the most energy from one molecule of glucose?

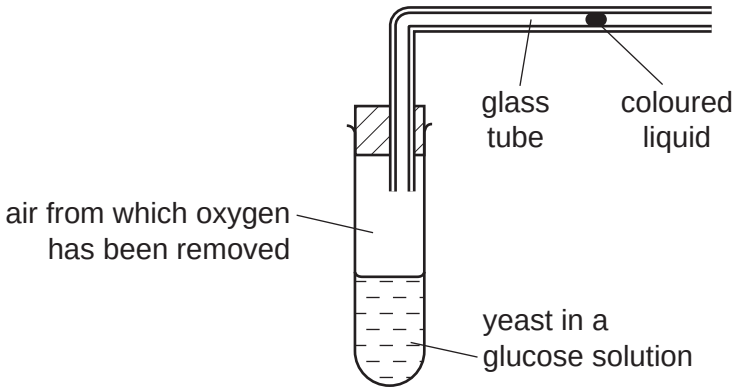
A aerobic respiration

B anaerobic respiration in muscle

C anaerobic respiration in yeast

D photosynthesis

10 The diagram shows apparatus used to investigate anaerobic respiration in yeast.



What happens to the coloured liquid?

A moves rapidly to the left

B moves slowly to the left

C moves to the right

D stays still

11 The list shows four metabolic processes.

1 carbon dioxide + water → glucose + oxygen

2 glucose → alcohol + carbon dioxide

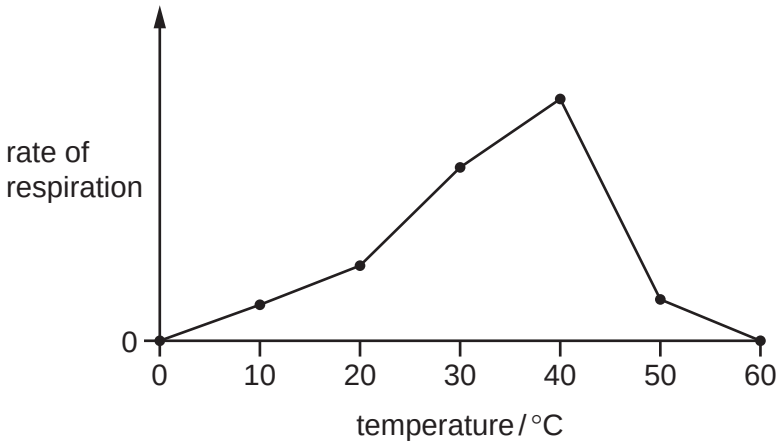
3 glucose → lactic acid

4 glucose + oxygen → carbon dioxide + water

Which of these processes occur in muscles?

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

12 The graph shows the results of an experiment to investigate the rate of respiration of an organism at different temperatures.



What explains the difference between the rate of respiration at 50 °C and that at 30 °C?

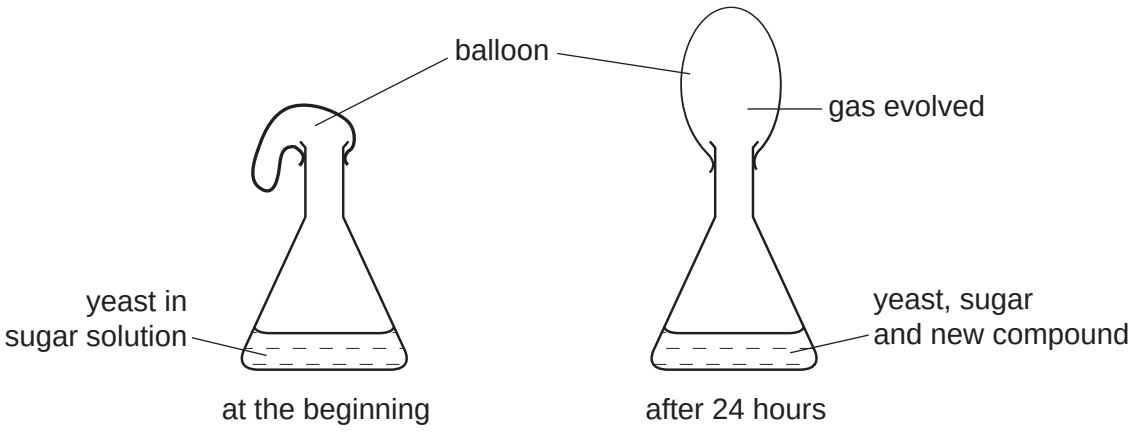
A enzymes working faster at 50 °C

B enzymes working more slowly at 50 °C

C less oxygen available at 50 °C

D more oxygen available at 50 °C

13 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

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

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

15 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.

16 Which word equation represents anaerobic respiration in human muscle?

A glucose → carbon dioxide + ethanol (alcohol)

B glucose → carbon dioxide + lactic acid

C glucose → ethanol (alcohol)

D glucose → lactic acid

17 What are the products of anaerobic respiration in muscles?

A ethanol and carbon dioxide

B ethanol only

C lactic acid and carbon dioxide

D lactic acid only

18 Four metabolic reactions are shown.

1 carbon dioxide + water → glucose + oxygen

2 glucose → ethanol + carbon dioxide

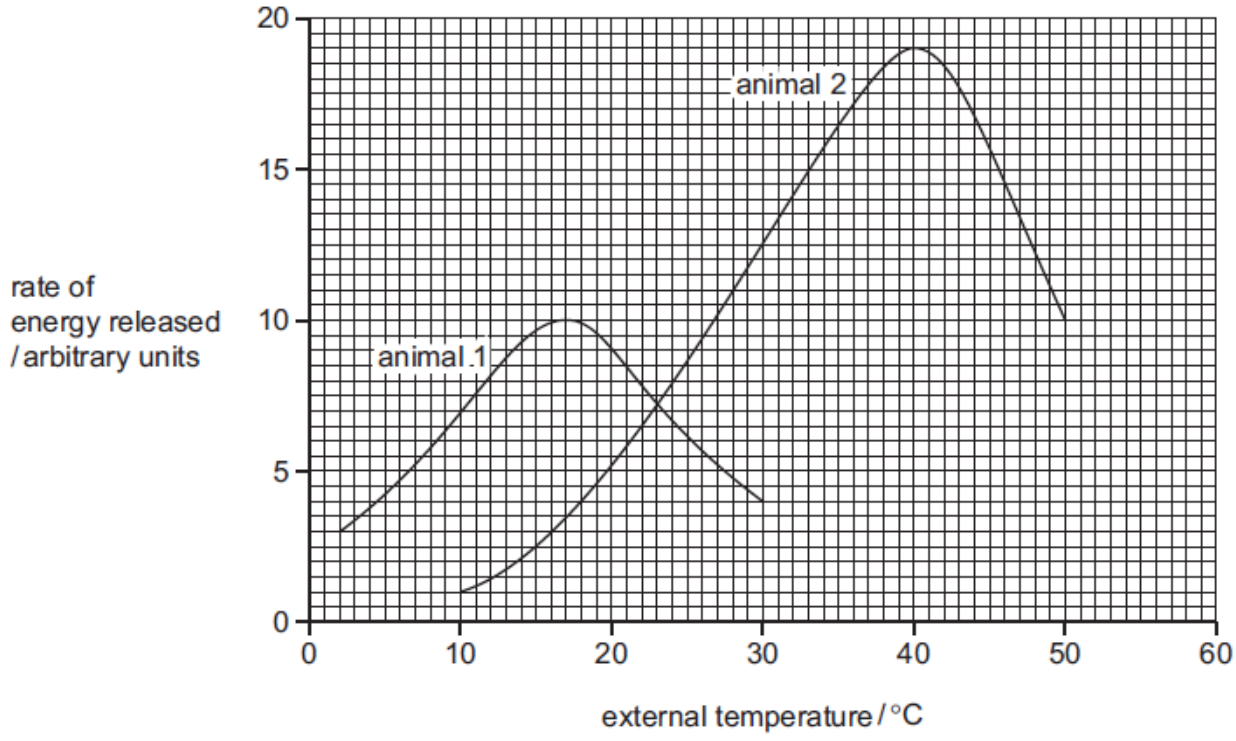
3 glucose → lactic acid

4 glucose + oxygen → carbon dioxide + water

Which reactions take place in human cells to release energy?

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

19 The graph shows the energy released by two animals through respiration as the external temperature changes.



Which conclusion can be drawn from the graph?

A Animals 1 and 2 release the least energy at 23 °C.

B Animal 2 always respires faster than animal 1.

C As the temperature rises, respiration always increases.

D The rate of respiration is the same for both animals at 23 °C.

20 Four word equations are shown.

P carbon dioxide + water → glucose + oxygen

Q glucose + oxygen → carbon dioxide + water

R glucose → lactic acid

S glucose → alcohol + carbon dioxide

What are the equations for anaerobic respiration in humans and anaerobic respiration in yeast?

	anaerobic respiration in humans	anaerobic respiration in yeast
A	Q	P
B	Q	S
C	R	P
D	R	S

21 What contains the greatest concentration of lactic acid?

A a bottle of alcoholic drink

B a loaf of freshly baked bread

C muscle cells during vigorous exercise

D yeast cells kept in glucose at 70 °C for 30 minutes

22 Which process uses the greatest amount of energy?

A gaseous diffusion

B protein synthesis

C respiration

D starch digestion

23 Which chemical could be used to show that cells are respiring aerobically?

A Benedict's solution

B dilute sulfuric acid

C ethanol

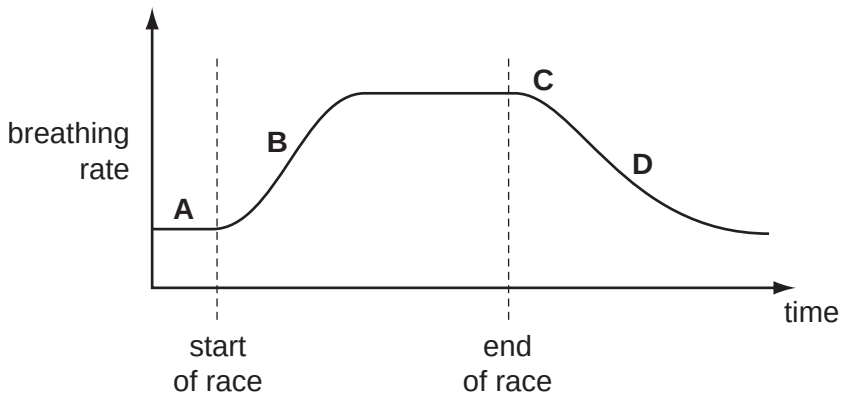
D limewater

24 When does respiration take place in animals and plants?

	animals	plants
A	all the time	all the time
B	all the time	night time only
C	day time only	day time only
D	day time only	night time only

25 An athlete takes part in a race. The graph shows her breathing rate before, during and after the race.

At which point does her body contain the greatest amount of lactic acid?



26 What is produced by anaerobic respiration in a muscle?

	lactic acid	carbon dioxide
A	✓	✓
B	✓	✗
C	✗	✓
D	✗	✗

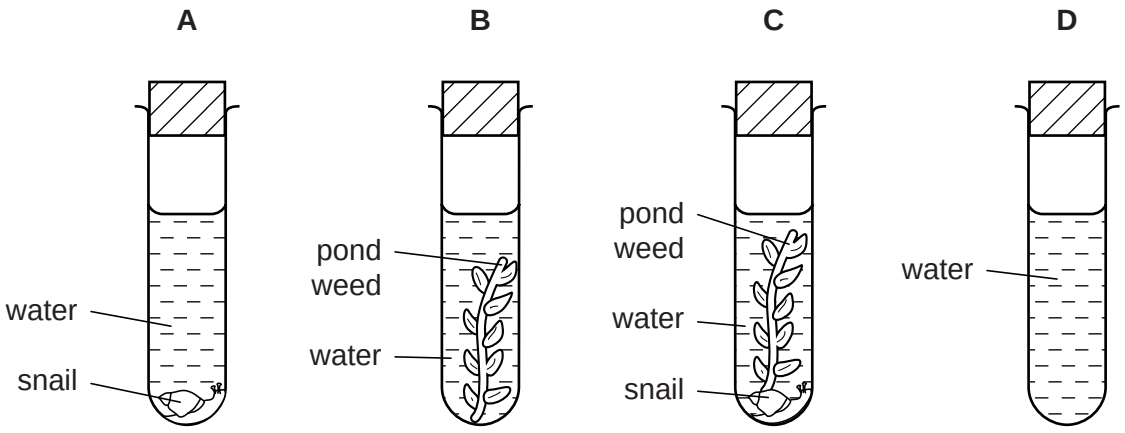
key

✓ = produced

✗ = not produced

27 Four test-tubes were set up as shown in the diagram and left in full sunlight.

After several hours, which test-tube would contain the most dissolved carbon dioxide?



28 Which process depends on energy from respiration?

A diffusion

B osmosis

C peristalsis

D photosynthesis

29 Which process, inside cells, releases energy useful to the human body?

A digestion

B excretion

C mitosis

D respiration

30 How are aerobic and anaerobic respiration similar?

A Both involve breaking down glucose.

B Both need a low concentration of oxygen.

C In muscles, both produce carbon dioxide.

D In yeast, both produce alcohol.

31 What is the equation for anaerobic respiration in yeast?

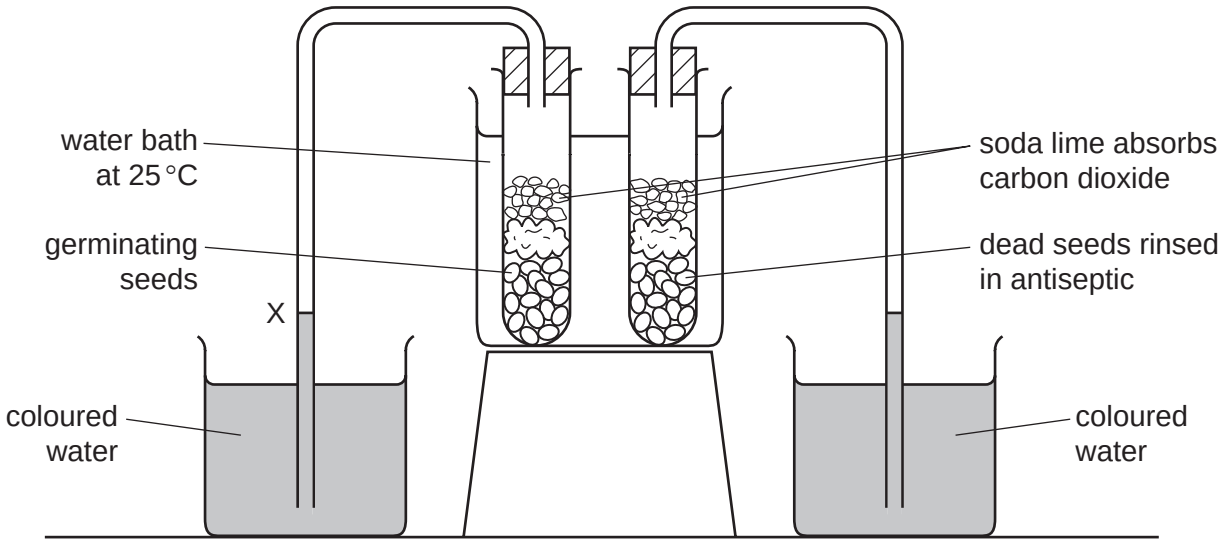
A glucose + oxygen → carbon dioxide + water

B glucose → alcohol + carbon dioxide

C glucose → alcohol + water

D glucose → lactic acid + water

32 An experiment is set up to investigate the uptake of oxygen by germinating seeds.



What happens to the levels at X and Y?

	X	Y
A	falls	rises
B	falls	unchanged
C	rises	falls
D	rises	unchanged

33 Which process does **not** release carbon dioxide to the atmosphere?

A decomposition of animals

B photosynthesis of plants

C respiration of animals

D respiration of plants

34 Which statement about respiration is **not** correct?

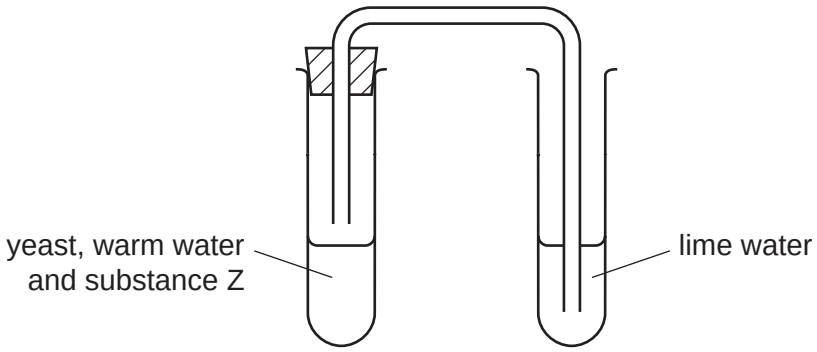
A All living cells respire.

B Heat is always produced.

C Plants respire in the light and in the dark.

D Plants take in carbon dioxide and give out oxygen.

35 Yeast, warm water and substance Z were put into a test-tube. The apparatus was then set up as shown. After a while, the lime water began to go cloudy.



What is substance Z?

A alcohol

B carbon dioxide

C glucose

D oxygen

36 The table shows some of the features of respiration.

Which row is correct for anaerobic respiration?

	energy remaining in products	amount of energy released	chemical pathway	releases carbon dioxide
A	high	high	always the same	sometimes
B	high	low	different in different organisms	sometimes
C	low	high	different in different organisms	always
D	low	low	always the same	always

37 Four words are shown below.

alcohol anaerobic sugar yeast

These words can be used in the spaces P, Q, R and S to complete the sentence below.

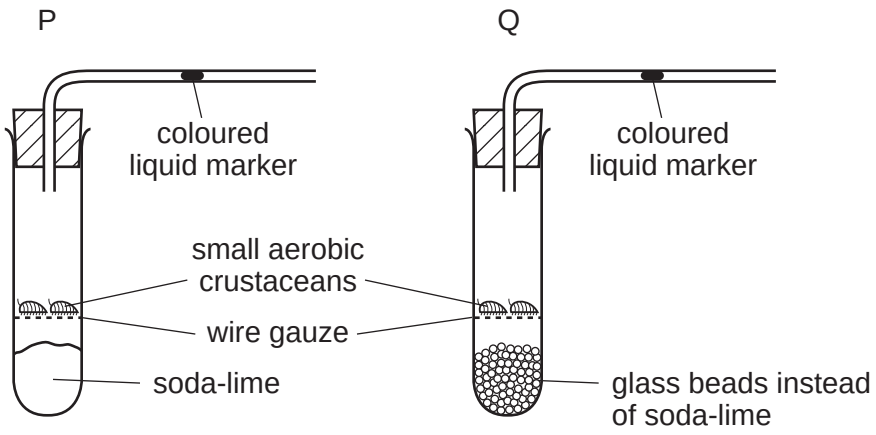
'In brewing and bread making, respiration takes place. The micro-organism called ……P…… uses ……Q…... as a source of food. The product of this ……R…… respiration is ……S…… .'

Which combination of words correctly completes the sentences?

	alcohol	anaerobic	sugar	yeast
A	P	Q	R	S
B	Q	P	S	R
C	R	S	Q	P
D	S	R	Q	P

38 The diagram shows two experiments on the gaseous exchange in small aerobic crustaceans.

Soda-lime absorbs carbon dioxide.



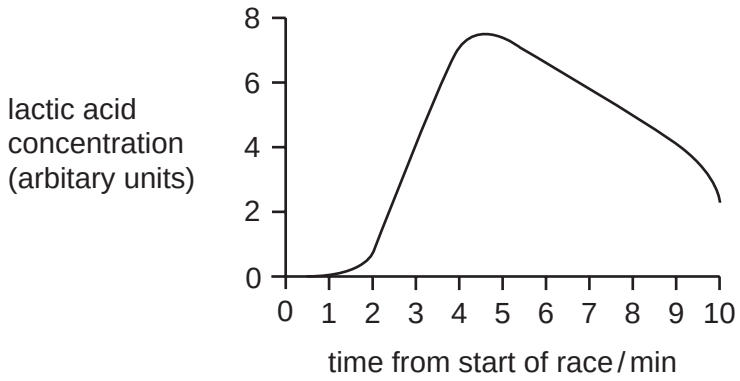
Which way does the liquid marker move?

	P	Q
A	left	right
B	left	stays still
C	right	left
D	right	stays still

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

	animals	yeast
A	alcohol	alcohol and lactic acid
B	alcohol and carbon dioxide	alcohol
C	lactic acid	alcohol and carbon dioxide
D	lactic acid and water	lactic acid

40 An athlete runs a race. The graph shows how the concentration of lactic acid in his leg muscles changes.



For how long did the athlete run?

A 2 minutes

B 4 minutes

C 6 minutes

D 10 minutes

41 An athlete produces lactic acid in the leg muscles while running a race. After the race he is seen to breathe faster and deeper.

How does this help to remove the lactic acid?

A More carbon dioxide is used up.

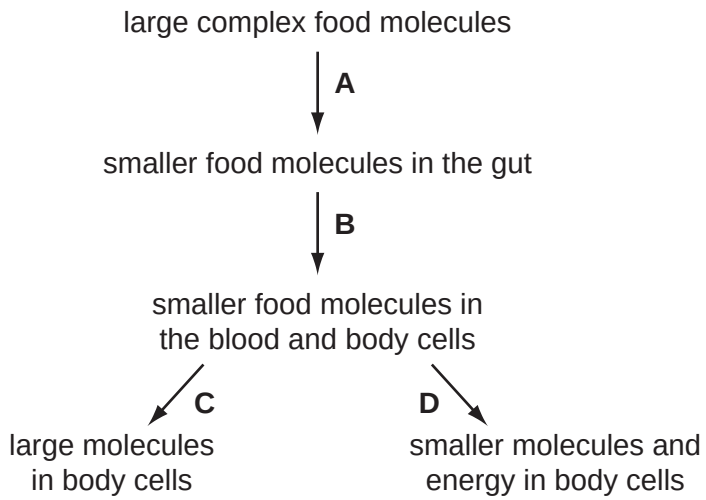
B More energy is needed.

C More lactic acid is breathed out.

D More oxygen is breathed in.

42 The flow diagram shows what happens to food in humans.

Which stage shows human respiration?



43 What is produced during anaerobic respiration in muscles?

	alcohol	carbon dioxide	lactic acid
A	✓	✓	✗
B	✗	✓	✓
C	✗	✓	✗
D	✗	✗	✓

44 Which chemical contains energy that is released in aerobic respiration?

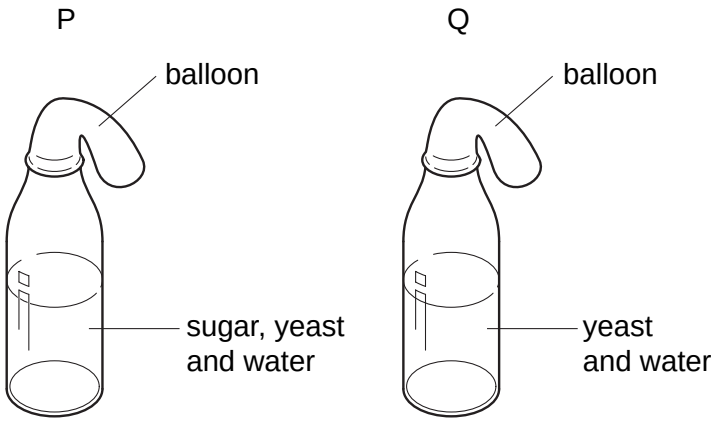
A carbon dioxide

B glucose

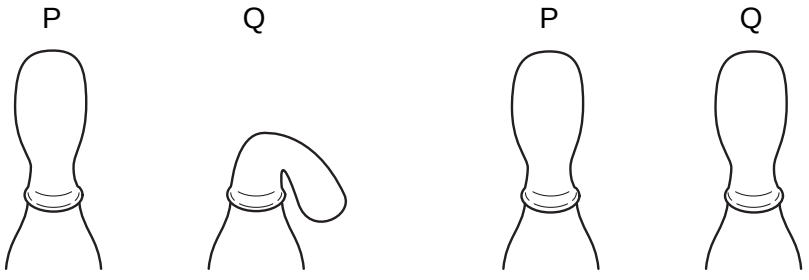
C oxygen

D water

45 In an experiment to investigate anaerobic respiration, two bottles are set up in a warm room, as shown in the diagram.

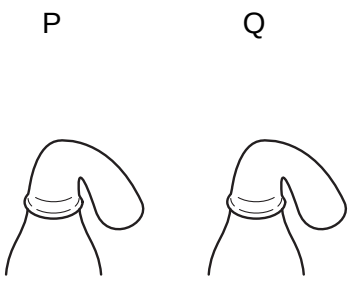


What would happen to each balloon after one day?

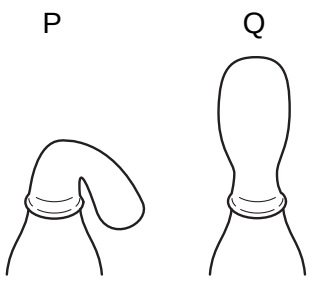


A

B



C



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