Gas exchange in humans – 2021 IGCSE 0610

1. March/2021/Paper_12/No.22

Air entering human lungs contains approximately 21% oxygen and 0.04% carbon dioxide.

Which row shows the concentrations of these gases in air leaving the lungs?

	percentage of oxygen in expired air	percentage of carbon dioxide in expired air
A	4	21.0
B	12	4.0
C	16	4.0
D	20	0.4

2. March/2021/Paper_22/No.22

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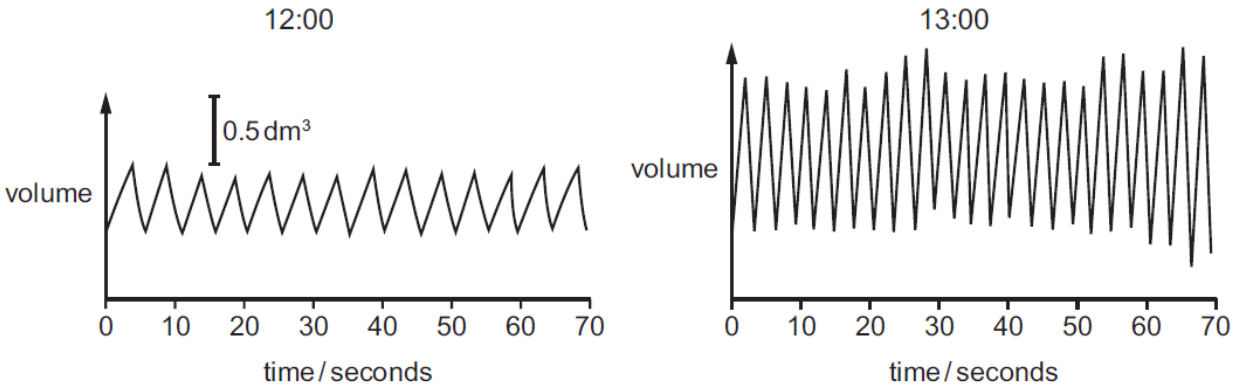
Which row shows the concentrations of these gases in air leaving the lungs?

	percentage of oxygen in expired air	percentage of carbon dioxide in expired air
A	4	21.0
B	12	4.0
C	16	4.0
D	20	0.4

3. June/2021/Paper_11/No.22

The diagrams show the depth and rate of breathing in a person at 12:00 and 13:00.

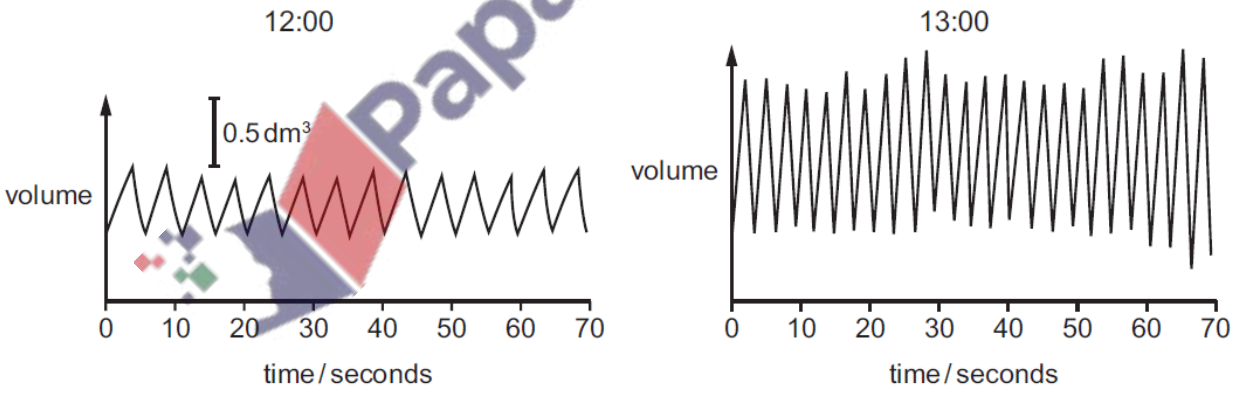


What happens to the person's breathing between 12:00 and 13:00?

	depth of breathing	rate of breathing
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

4. June/2021/Paper_12/No.22

The diagrams show the depth and rate of breathing in a person at 12:00 and 13:00.

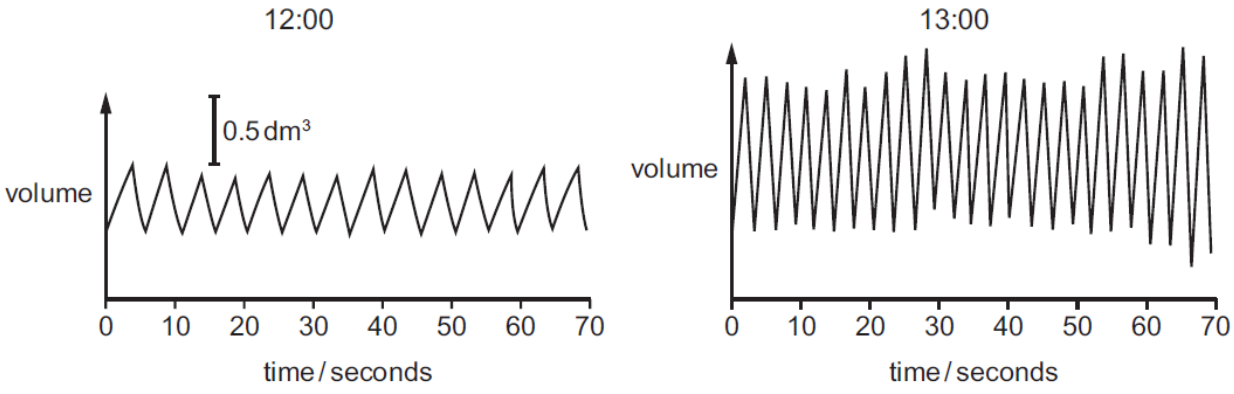


What happens to the person's breathing between 12:00 and 13:00?

	depth of breathing	rate of breathing
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

5. June/2021/Paper_13/No.22

The diagrams show the depth and rate of breathing in a person at 12:00 and 13:00.



What happens to the person's breathing between 12:00 and 13:00?

	depth of breathing	rate of breathing
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

6. June/2021/Paper_21/No.22

Which sequence of changes takes place when we breathe in?

A diaphragm contracts → volume of thorax increases → pressure in lungs decreases

B diaphragm contracts → volume of thorax increases → pressure in lungs increases

C diaphragm relaxes → volume of thorax increases → pressure in lungs decreases

D diaphragm relaxes → volume of thorax increases → pressure in lungs increases

7. June/2021/Paper_22/No.7

By which process do oxygen and carbon dioxide move between cells and capillaries?

A breathing

B diffusion

C excretion

D respiration

8. June/2021/Paper_23/No.22

Which sequence of changes takes place when we breathe in?

A diaphragm contracts → volume of thorax increases → pressure in lungs decreases

B diaphragm contracts → volume of thorax increases → pressure in lungs increases

C diaphragm relaxes → volume of thorax increases → pressure in lungs decreases

D diaphragm relaxes → volume of thorax increases → pressure in lungs increases

9. June/2021/Paper_43/No.5

(a) Table 5.1 shows four functions of the human gas exchange system.

Complete Table 5.1 by identifying the part of the human gas exchange system that carries out each function.

Table 5.1

function	part of the human gas exchange system
contracts to decrease air pressure in the lungs	
allows air to flow between the larynx and the lungs	
contracts to lower the ribs in forced expiration	
site of gas exchange	

[4]

(b) Scientists investigated the effect of increasing carbon dioxide concentration in the air on the rate and depth of breathing. The people who took part in the investigation were healthy volunteers.

The people breathed atmospheric air containing 0.04% carbon dioxide for five minutes. They then breathed air containing 2% carbon dioxide for five minutes and then returned to breathing atmospheric air for a further five minutes.

The results are shown in Fig. 5.1.

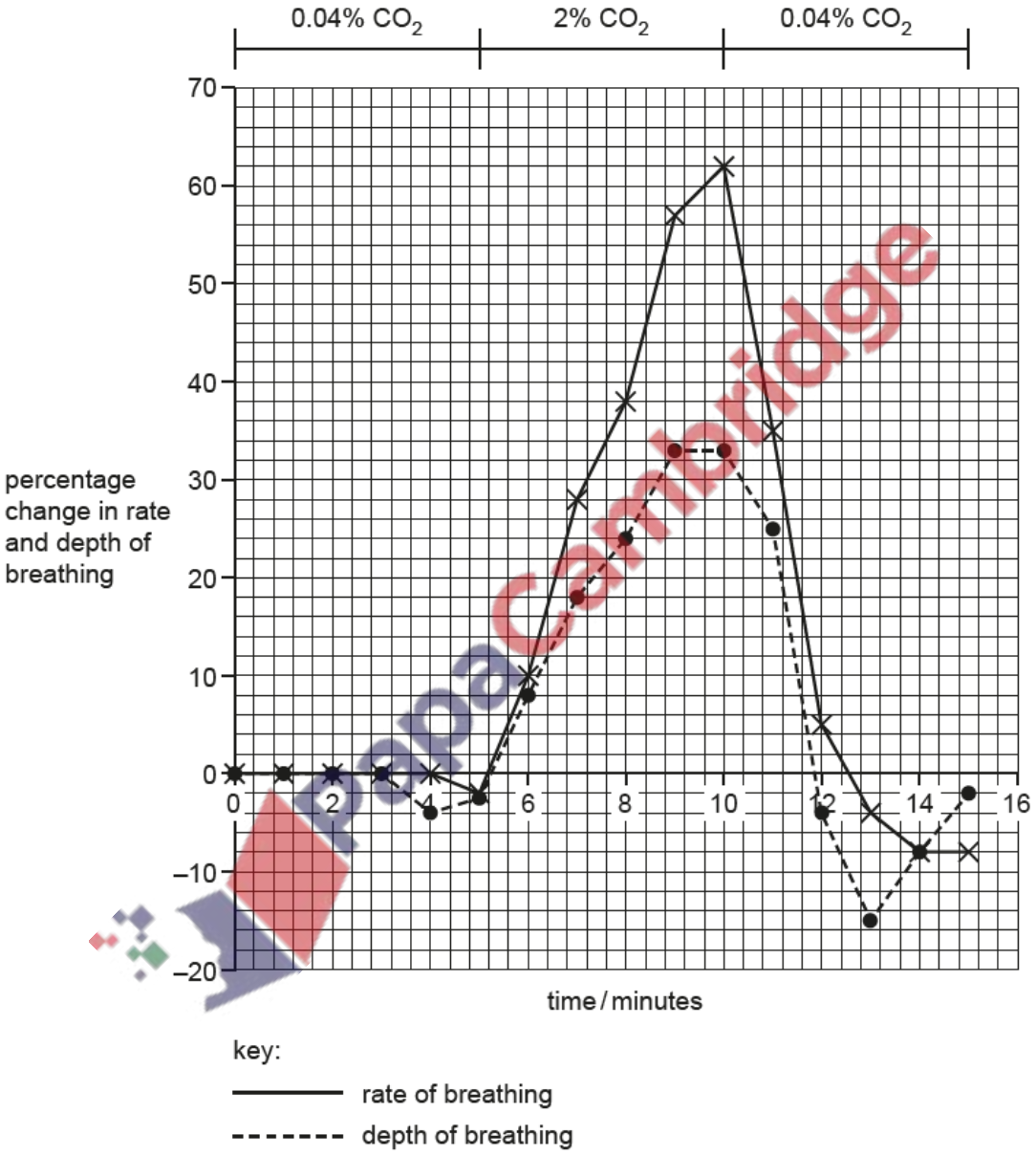


Fig. 5.1

Describe the effects of changing the carbon dioxide concentration of the air on the rate and depth of breathing, as shown in Fig. 5.1.

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..... [4]

(c) Complete the sentences by writing the appropriate word or phrase in the spaces provided.

During physical activity the carbon dioxide concentration in the blood increases. The reason for this is an increase in the rate of ..... that occurs in the ..... in muscle cells.

The increase in the concentration of carbon dioxide in the blood is detected by the ..... , which increases the rate and depth of breathing so that carbon dioxide can be ..... from the body. This is important because carbon dioxide is a ..... substance and can cause harm if it accumulates.

[5]

[Total: 13]