

Craigie High School

National 5 Biology

Unit 2

Multicellular Organisms

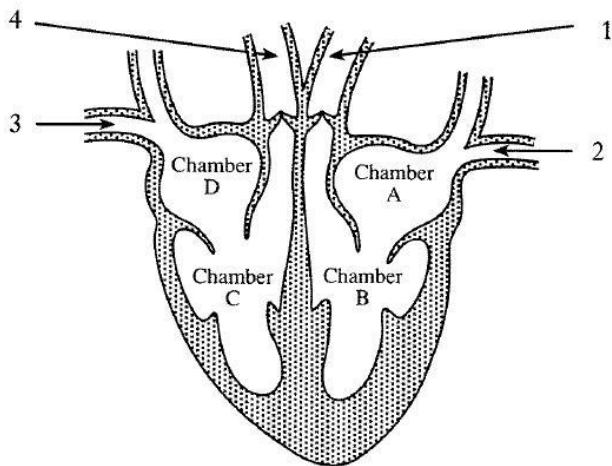
Ink Exercise Two

Animal Transport and Exchange

Name: _____

Class: _____

Questions 1 and 2 refer to the diagram below which shows a section through the heart.



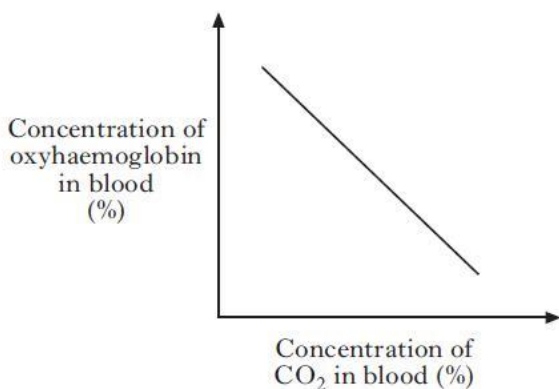
1. Which arrow identifies the vena cava?
 - a. 1
 - b. 2
 - c. 3
 - d. 4

2. Which heart chamber pumps blood to the lungs?

3. The table below some features of blood vessels Which line describes features of veins?

	Direction of blood flow	Detection of pulse	Presence of valves
A	Towards the heart	Yes	No
B	Away from the heart	No	Yes
C	Towards the heart	No	Yes
D	Away from the heart	Yes	No

4. The graph below shows the relationship between the concentration of carbon dioxide and oxyhaemoglobin in the blood

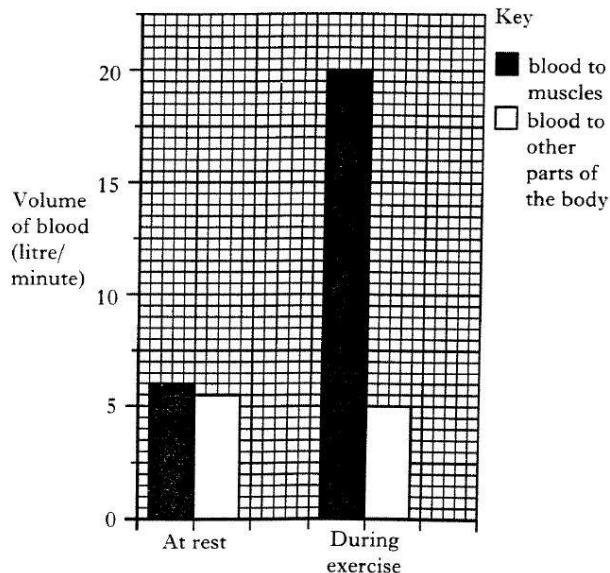


Which of the following describes this relationship?

- a. As the carbon dioxide concentration decreases, the concentration of oxyhaemoglobin decreases
- b. As the carbon dioxide concentration increases, the concentration of oxyhaemoglobin decreases

- c. As the carbon dioxide concentration increases, the concentration of oxyhaemoglobin increases
- d. As the carbon dioxide concentration increases, it has no effect upon the concentration of oxyhaemoglobin

Questions 5 and 6 refer to the bar chart below. The bar chart shows the volume of blood supplied per minute to the skeletal muscles and to other parts of the body of a healthy male at rest and during strenuous exercise.

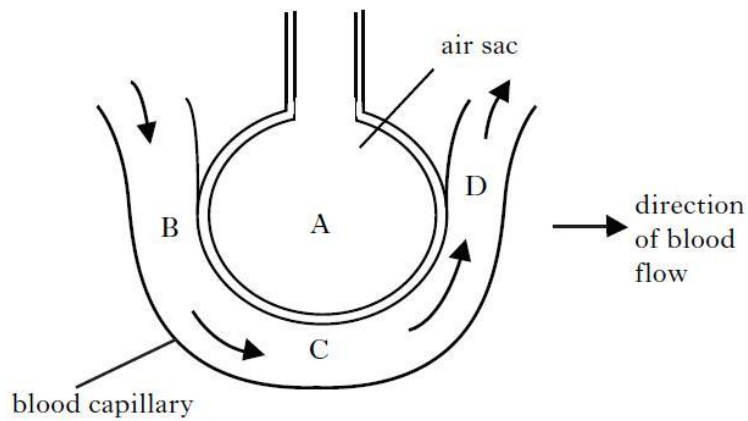


5. There is a difference in the volume of blood supplied per minute to the muscles and other parts of the body at rest.

Which statement below is correct?

- a. 0.5 litre more blood is supplied to the muscles than other parts of the body
 - b. 1.0 litre less blood is supplied to the muscles than other parts of the body
 - c. 0.5 litre less blood is supplied to the muscles than other parts of the body
 - d. 1.0 litre more blood is supplied to the muscles than other parts of the body
6. During exercise, the ratio of blood supplied to the muscles to blood supplied to other parts of the body is
- a. 1 : 4
 - b. 4 : 1
 - c. 6 : 5
 - d. 10 : 3
7. Carbon dioxide is removed from the body through the lungs. The correct pathway taken by a molecule of carbon dioxide out of the lungs is
- a. alveoli → bronchioles → bronchi → trachea
 - b. trachea → bronchi → bronchioles → alveoli
 - c. alveoli → bronchi → bronchioles → trachea
 - d. trachea → bronchioles → bronchi → alveoli

8. The diagram below shows an air sac with part of its capillary network



At which position would blood with the highest concentration of oxygen be found?

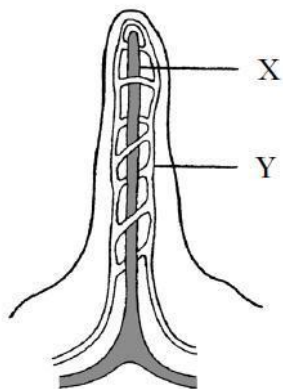
9. The following statements refer to the state of the muscles in the gut.

Statement	State of muscles
1	Contracted in front of food
2	Relaxed in front of food
3	Contracted behind food
4	Relaxed behind food

Which statements describe peristalsis?

- a. 2 and 3
- b. 1 and 3
- c. 1 and 4
- d. 2 and 4

10. The diagram below shows some structures in a villus

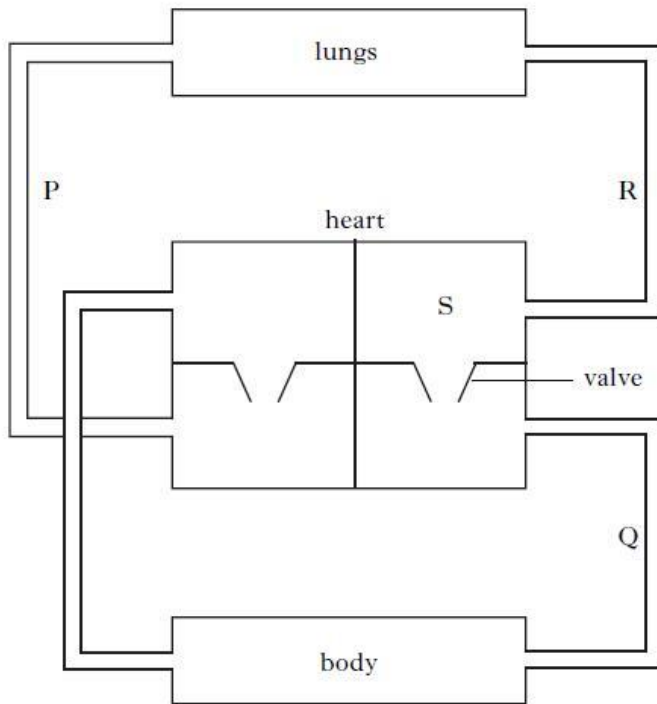


Which line in the table correctly identifies the products of digestion which pass into structures X and Y?

	X	Y
A	Glucose	Amino acids

B	Glycerol	Fatty acids
C	Amino acids	Glycogen
D	Fatty acids	Glucose

11. The diagram below represents the human circulatory system



a. Draw arrows at P and Q to show the direction of blood flow in these vessels

1

b. State whether the blood is oxygenated or deoxygenated in blood vessel P and Q

1

P _____

Q _____

c. Name heart chamber S and blood vessel R

1

S _____

R _____

d. What is the function of heart valves?

1

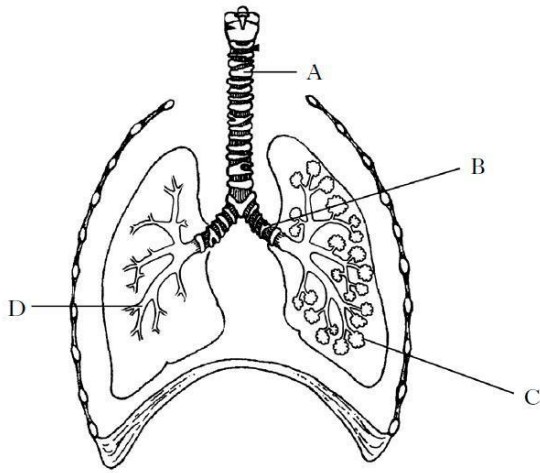
12. Decide if each of the following statements about blood vessels is true or false, and tick the appropriate box

If the statement is **False**, write the correct word in the **Correction** box to replace the word(s) underlined in the statement.

<i>Statement</i>	<i>True</i>	<i>False</i>	<i>Correction</i>
<u>Capillaries</u> contain valves.			
<u>Veins</u> allow gas exchange.			
Blood leaves the heart in <u>arteries</u> .			

3

13. The diagram below shows the human breathing system

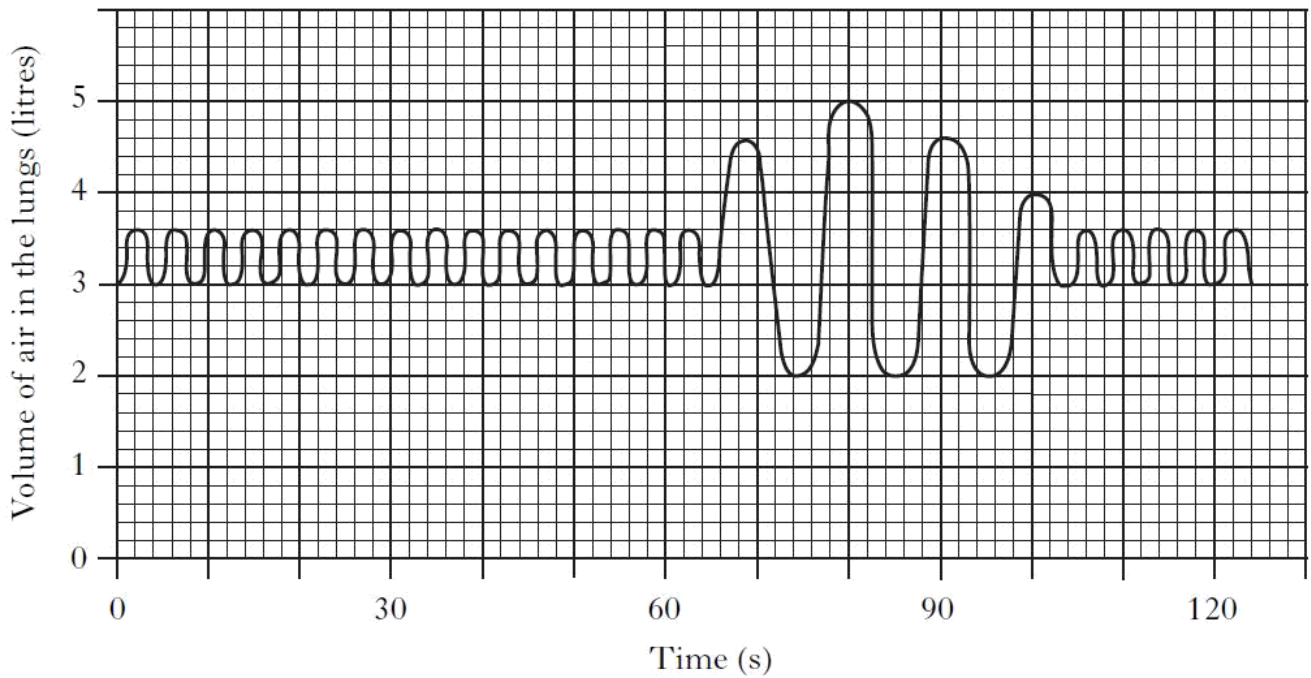


a. Complete the table to identify the labelled structures

Label	Structure
	Bronchiole
B	
	Trachea
C	

2

b. A person breathed normally, took deep breaths, then returned to normal breathing. The volume of air in the lungs was measured and the results are shown in the graph below.



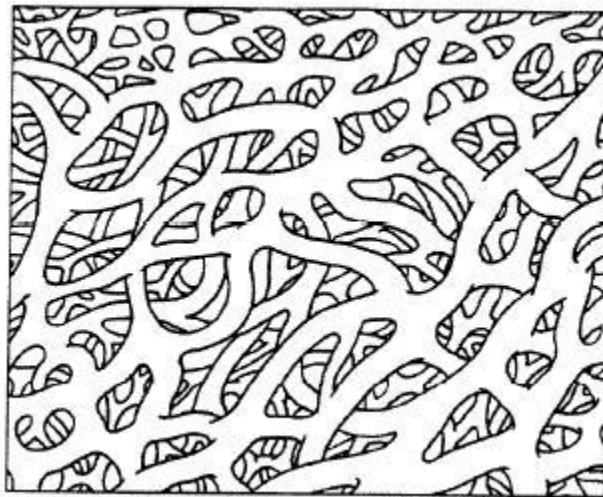
i. What was the normal breathing rate for this person?
 _____ breaths per minute

1

ii. What was the highest volume of air inhaled in a single breath?
 _____ litres

1

14. The diagram shows a capillary network similar to that found surrounding the air sacs of the lungs



State two features of the capillary network in the lungs that allow efficient gas exchange to take place

Feature 1: _____

Explanation: _____

2

Feature 2: _____

Explanation: _____

2

Areas I need to work on: