PPQ Units 11 and 12 – Gas exchange and Respiration

1 What do all living things release during respiration?

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

key
✓ = released
✗ = not released

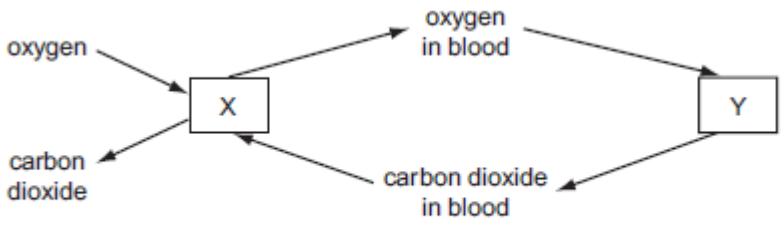
2 Which route is taken by air passing into the lungs of a human?
A alveolus → trachea → bronchus
B bronchus → trachea → alveolus
C trachea → alveolus → bronchus
D trachea → bronchus → alveolus

3 A person has been smoking heavily for many years. A lot of dust and micro-organisms enter their lungs. Which statement explains why this occurs?
A Their arteries are blocked with tar.
B The cilia in the trachea have been destroyed.
C The person is addicted to nicotine.
D The surface area of the lungs is reduced.

4 Gas exchange in annelid worms occurs through the whole of the skin surface. What are the most likely characteristics of the skin surface?

	surface area to volume ratio	condition of surface
A	large	dry
B	large	wet
C	small	dry
D	small	wet

5 The diagram represents the exchange of gases during breathing and during respiration in the body.



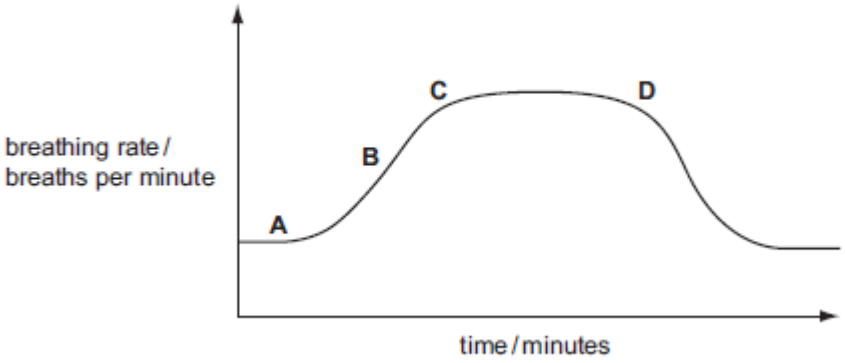
What is represented by X and by Y?

	X	Y
A	lungs	air
B	lungs	body cells
C	body cells	air
D	body cells	lungs

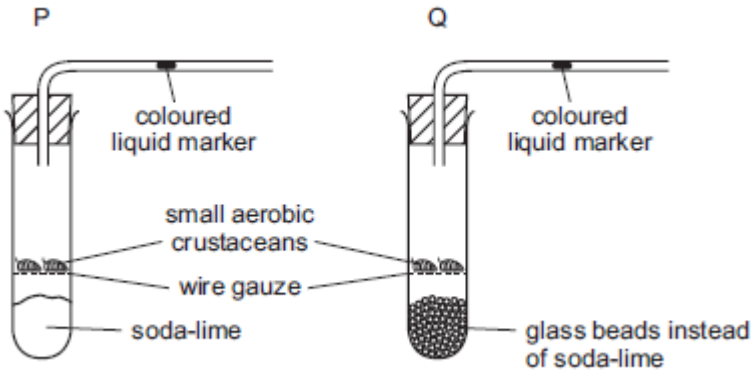
6 What increases the rate of diffusion of oxygen into red blood cells in the lungs?
A Air leaving the lungs is saturated with water vapour.
B Air leaving the lungs still contains 16 % oxygen.

C Blood arriving in the lungs is saturated with oxygen.
D Blood is taken away from the lungs as it circulates.

7 From the graph, when did the person begin a period of vigorous exercise after resting?



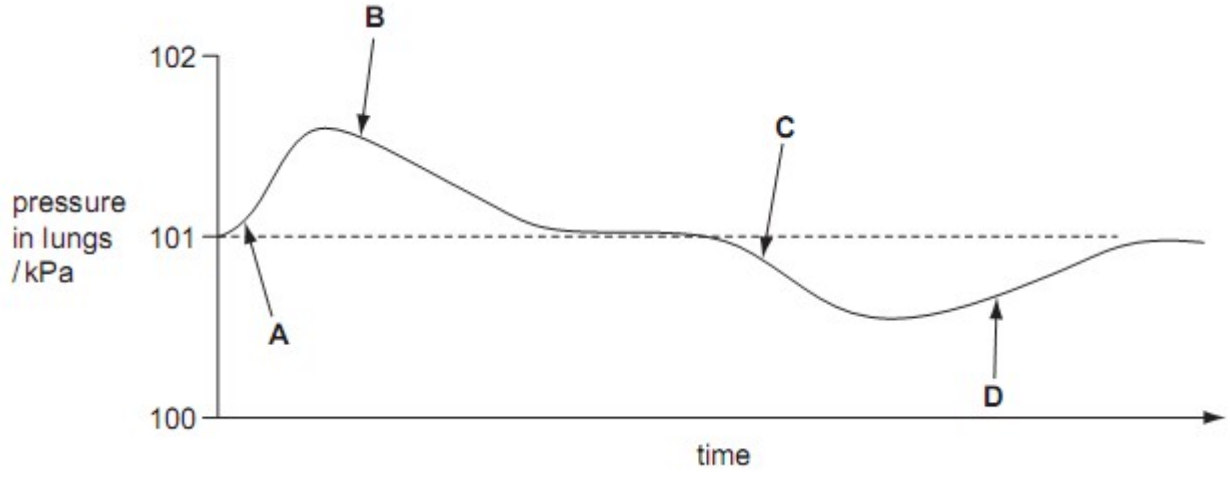
8 The diagram shows two experiments on the gaseous exchange in small aerobic crustaceans.
Soda-lime absorbs carbon dioxide.



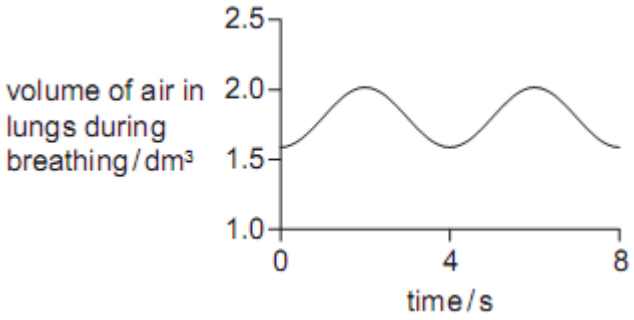
Which way does the liquid marker move?

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

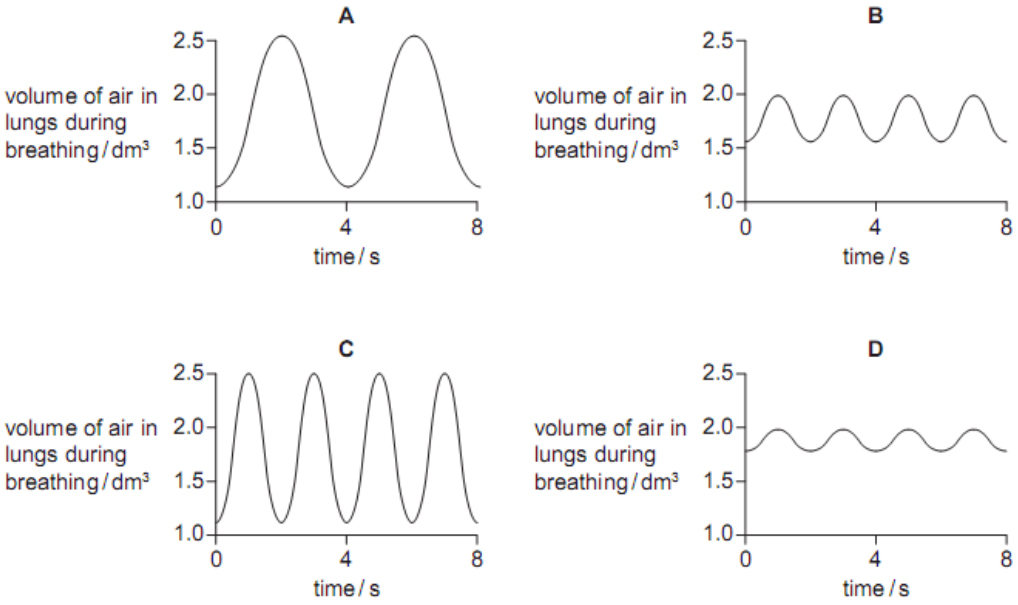
9 The diagram illustrates changes in air pressure taking place inside the lungs during a complete cycle of breathing.
Atmospheric pressure is 101kPa.
Which position on the graph corresponds to the point at which the ribs are beginning to be raised?



10 The graph shows the rate and depth of a person's breathing before exercise.



Which graph shows the rate and depth of breathing of the same person immediately after a period of exercise?



11 (a) Table 2.1 shows the percentage of haemoglobin that is inactivated by carbon monoxide present in the blood of taxi drivers in a city.

Table 2.1

city taxi drivers		percentage of haemoglobin inactivated by carbon monoxide
day time drivers	smokers	5.7
	non-smokers	2.3
night time drivers	smokers	4.4
	non-smokers	1.0

(i) The carbon monoxide in the blood of these taxi drivers comes from two sources. One source is from vehicle exhaust fumes. Name the other source of carbon monoxide that may be inhaled by drivers.

…….. [1]

(ii) Using data from Table 2.1, suggest which of these two sources contributes most to the inactivation of the haemoglobin. Explain your choice.

source ……..

explanation …….. [3]

(iii) Calculate the difference in the percentage of haemoglobin inactivated by carbon monoxide in day and night time taxi drivers and suggest a reason for the difference.

difference ……..

reason …….. [2]

(b) (i) Name two other harmful components of cigarette smoke, apart from carbon monoxide.
For each, describe an effect it can have on the body of a person who smokes.

1. component …….
effect ……
2. component ……
effect …….. [4]

(ii) Suggest a possible effect that might happen to the fetus of a pregnant woman who smokes.
…….. [1]

[Total: 11]

12 Gaseous exchange takes place while air flows in and out of the lungs.

(a) State three ways in which inspired air is different from expired air. [3]

(b) List three features of gaseous exchange surfaces that help to make them more efficient. [3]

[Total: 6]