

- 1 Fig. 2.1 shows a section through the eye with a ray of light passing through it and four muscles labelled **A**, **B**, **C** and **D**.

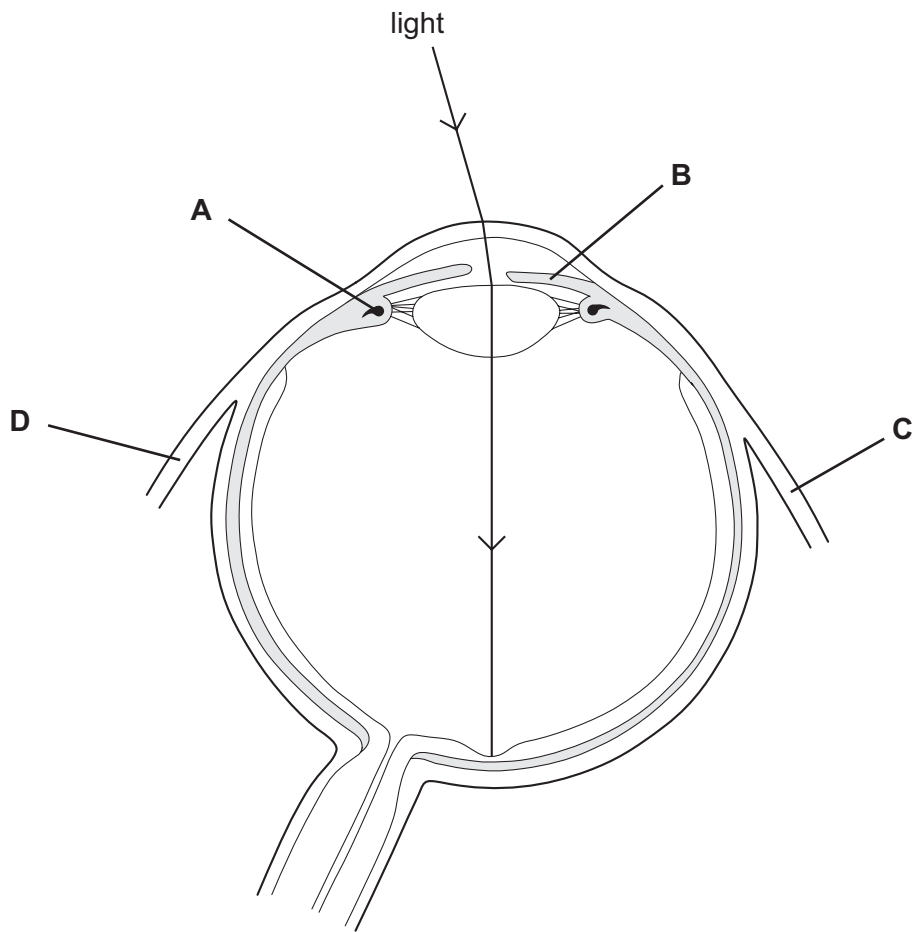


Fig. 2.1

(a) Complete the table.

part	name of muscle	effect of contraction
A	allows the lens to become fatter for focusing on close objects
B	iris circular muscle

[2]

Muscles **C** and **D** are voluntary muscles that are antagonistic. They are attached to the eye socket of the skull.

(b) (i) Explain the terms *voluntary* and *antagonistic*.

voluntary

.....

antagonistic

..... [2]

(ii) Suggest the effect on the eye when muscle **C** contracts.

.....

..... [1]

(iii) Explain how the eye would return to its original position after this contraction.

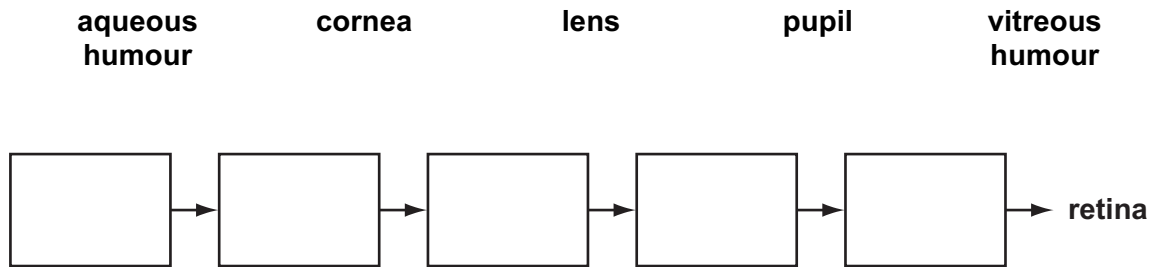
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..... [2]

(c) Light passes through parts of the eye to reach the retina.

Complete the flow chart by putting the following terms in the boxes to show the correct order that the light passes through them.



[2]

(d) The retina contains rods and cones.

Complete the table to distinguish between rods and cones.

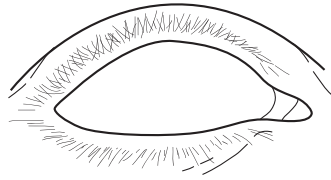
	type of light detected	distribution in the retina
rods
cones

[4]

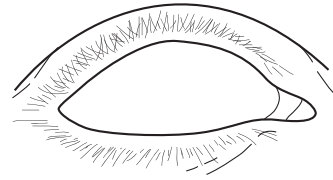
[Total: 13]

2 Jasmine went into a dark room from a bright corridor.

(a) Fig. 4.1 represents Jasmine's right eye before and after entering the dark room.



before entering



a few seconds after entering

Fig. 4.1

(i) Complete Fig. 4.1 by **drawing** the appearance of the pupil and iris

- 1. before entering the dark room, [1]
- 2. a few seconds after entering the dark room. [1]

(ii) Label the following parts of the eye on the first diagram in Fig. 4.1.

iris pupil sclera [3]

(b) Explain how the size of the pupil was changed when Jasmine went into the dark room.

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..... [2]

(c) Explain why Jasmine could see shapes but **not** colours in the dark room.

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..... [3]

[Total: 10]

3 Fig. 3.1 shows part of the thoracic and abdominal cavities of a human.

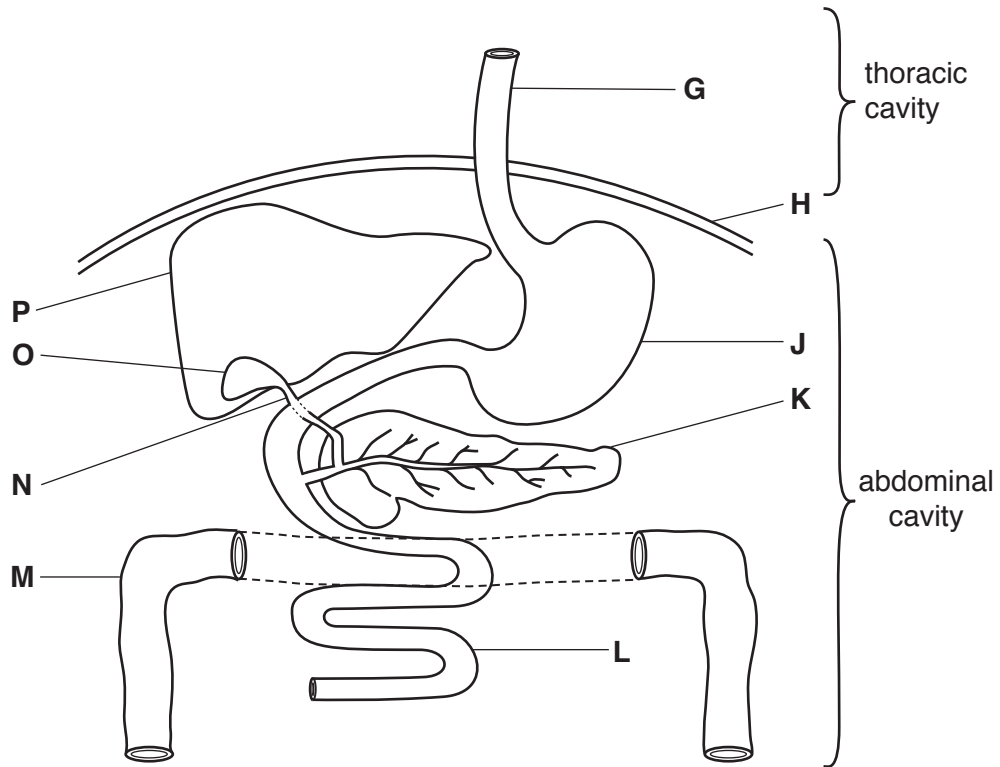


Fig. 3.1

(a) (i) Name the structures labelled **G**, **H** and **M**.

G

H

M

[3]

(ii) Table 3.1 shows five functions of organs in the abdominal cavity.

Complete the table by:

- naming the organ that carries out each function
- using the letters from Fig. 3.1 to identify the organ named.

One row has been completed for you.

Table 3.1

function	name	letter from Fig. 3.1
conversion of glucose to glycogen		
secretion of insulin and glucagon	pancreas	K
absorption of products of digestion		
storage of bile		
chemical digestion of protein in an acidic pH		

[4]

(b) Fat is particularly difficult to digest as it is not water soluble and forms spherical globules in the alimentary canal.

Fig. 3.2 is a diagram showing what happens to fat globules when mixed with bile.

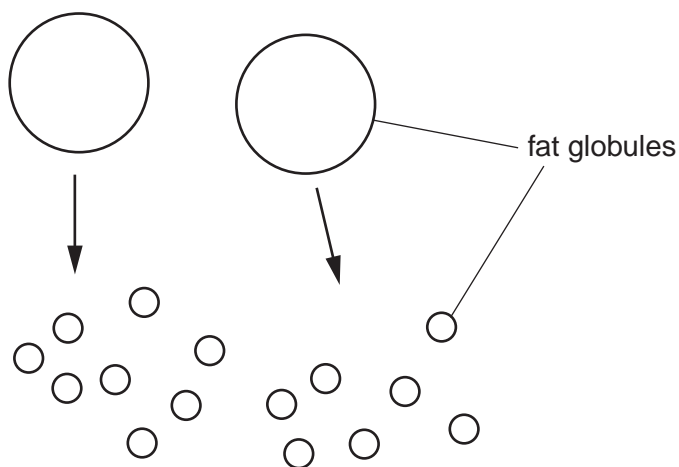


Fig. 3.2

(i) Name the process shown in Fig. 3.2.

.....[1]

(ii) Explain the advantage of the process shown in Fig. 3.2.

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.....
.....[2]

(c) Insulin and glucagon are hormones secreted by the pancreas to control the concentration of glucose in the blood.

(i) Complete Table 3.2 to show how the uptake of glucose by cells and the concentration of glucose in the blood respond when the two hormones are secreted.

Use the words *increases*, *decreases* and *stays the same* to complete the table.

Table 3.2

hormone	uptake of glucose by cells	concentration of glucose in the blood
insulin		
glucagon		

[2]

(ii) State another hormone that influences the concentration of glucose in the blood.

.....[1]

(d) Explain why the control of the concentration of glucose in the blood is an example of negative feedback.

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.....[3]

[Total: 16]

- 4 (a) In the space below write a balanced chemical equation for anaerobic respiration in muscles.

..... → [2]

Some students investigated the breathing of a 16-year old male athlete. Fig. 3.1 shows the pattern of his breathing for 60 seconds when resting. Fig. 3.2 shows the pattern of his breathing while he took some exercise for 60 seconds.

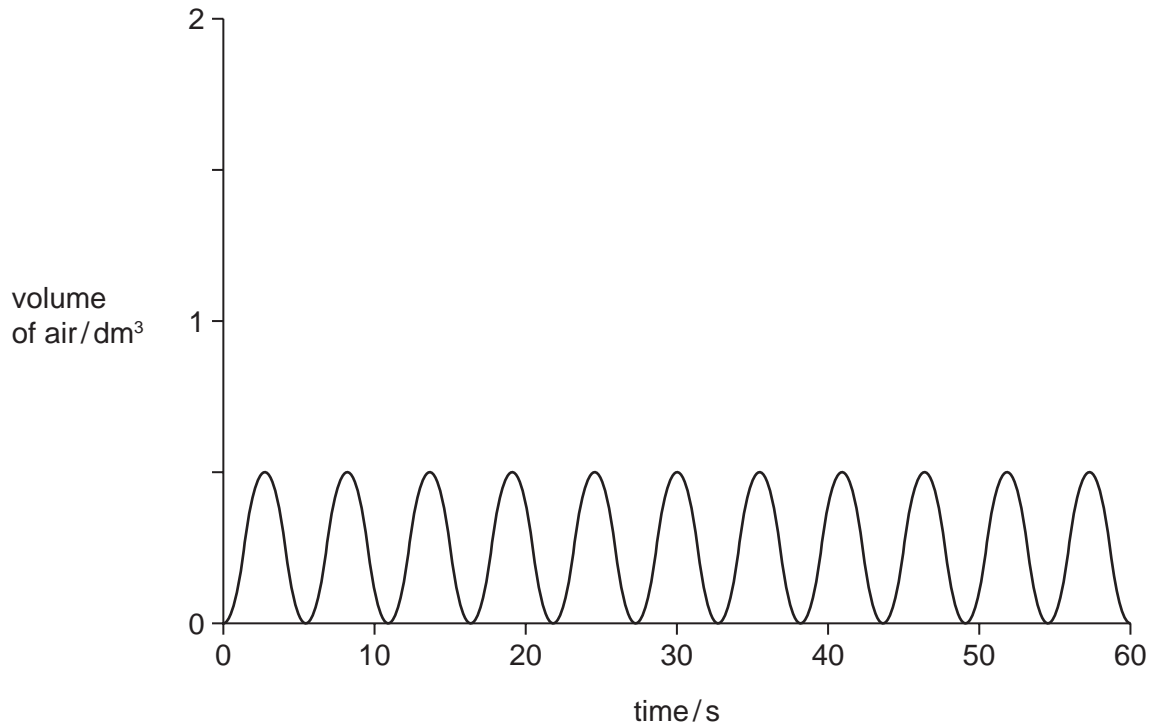


Fig. 3.1

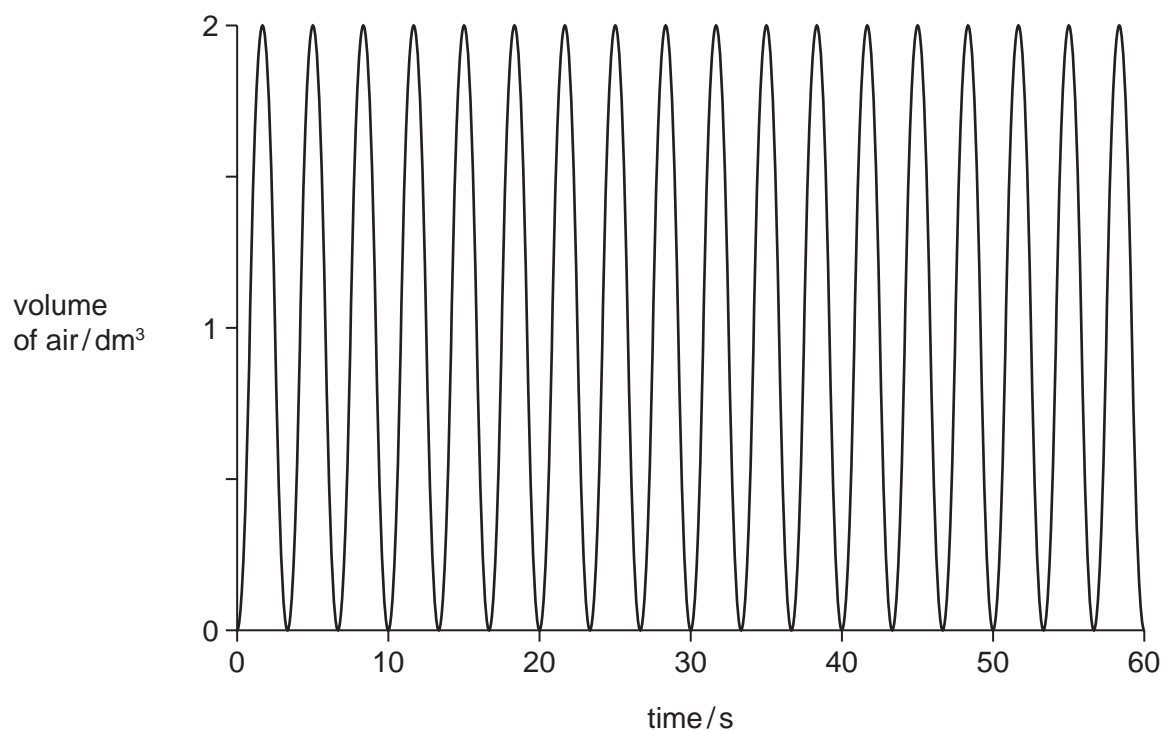


Fig. 3.2

Table 3.1 shows a summary of the results obtained by the students.

Table 3.1

	breathing at rest	breathing during exercise
volume of air breathed in with each breath / dm^3	0.5
rate of breathing / number of breaths per minute	11
volume of air breathed in per minute / dm^3	5.5

(b) Using information from Fig. 3.2, complete Table 3.1.

Write your answers in Table 3.1. [3]

(c) Explain the effect of exercise on the student's breathing.

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..... [5]

- (d) During strenuous exercise, the hormone adrenaline causes changes in the pulse rate and in the concentration of glucose in the blood.

Explain the importance of these changes during strenuous exercise.

pulse rate

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concentration of glucose in the blood

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..... [5]

[Total: 15]