

GCSE Combined Science: Trilogy

Worksheet: Blood

TIME 35 min	TOTAL 32 marks	CALCULATOR Allowed	DIFFICULTY Easy, Medium
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Topics: Blood

NAME

CLASS

DATE

- Use black ink or black ball-point pen. Pencil should only be used for drawing.
- Answer all questions in the spaces provided.
- In all calculations, show clearly how you work out your answer.
- The marks for questions are shown in brackets.

01

Blood is made of four components. Table 1 gives information about them.

Table 1

Component of blood	Description	Function
Plasma	straw-coloured liquid	1
Red blood cell	2	carries oxygen
White blood cell	has a nucleus	3
Platelet	small fragment of a cell	4

01.1

Complete Table 1 by giving the missing information for boxes **1**, **2**, **3** and **4**.

[4 marks]

0 1 . 2

Which component of blood contains haemoglobin?

Tick (✓) **one** box.

Plasma

☐

Platelet

☐

Red blood cell

☐

White blood cell

☐

[1 mark]

0 2

Blood is a tissue.

0 2 . 1

Name the liquid part of the blood.

.....

.....

.....

[1 mark]

0 2 . 2

Which part of the blood helps the blood to clot at a wound?

Tick (✓) **one** box.

Plasma

☐

Platelets

☐

Red blood cells

☐

White blood cells

☐

[1 mark]

0 2 . 3

Name the substance in red blood cells that combines with oxygen.

.....

.....

.....

[1 mark]

0 2 . 4

Give **one** function of white blood cells.

.....

.....

[1 mark]

0 3

Plasma transports many substances around the body.

0 3 . 1

Which **two** substances are transported dissolved in the plasma?

Tick (✓) **two** boxes.

Carbon dioxide

☐

Cellulose

☐

Starch

☐

Urea

☐

[2 marks]

0 3 . 2

Urea is transported in the plasma.

Complete the sentence.

Urea is carried from the _____ to the _____ .

.....

.....

.....

.....

[2 marks]

0 3 . 3

Name **one** other substance that is transported in the plasma.

.....

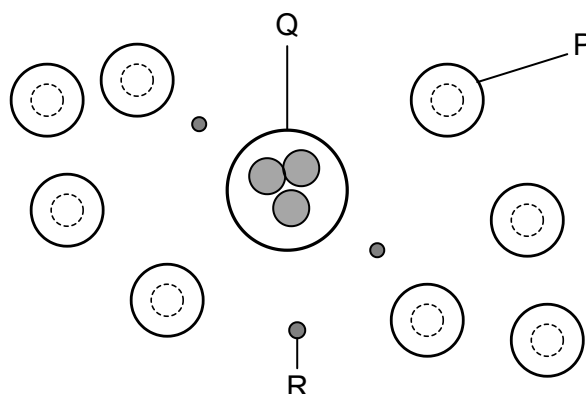
.....

[1 mark]

0 4

Figure 1 shows a drawing of a blood smear viewed with a light microscope.

Figure 1



0 4 . 1

Name the components of the blood labelled **P**, **Q** and **R**.

[3 marks]

0 4 . 2

Give **one** feature shown in Figure 1 that identifies **Q** as a white blood cell.

[1 mark]

0 4 . 3

1 mm³ of blood contains 5.0×10^6 red blood cells and 7.5×10^3 white blood cells.

Calculate the ratio of red blood cells to white blood cells.

Give your answer in the form $x : 1$

.....

.....

.....

.....

.....
[2 marks]

0 5

1 mm³ of a person's blood contains 4.5×10^6 red blood cells and 7.5×10^3 white blood cells.

0 5 . 1

Calculate the ratio of red blood cells to white blood cells.

Give your answer in the form $x : 1$ to the nearest whole number.

.....

.....

.....

.....

.....
[2 marks]

0 5 . 2

An athlete trained at high altitude for several weeks. The number of red blood cells in 1 mm^3 of the athlete's blood increased from 4.4×10^6 to 5.1×10^6 . Calculate the percentage increase. Give your answer to 1 decimal place.

.....

.....

.....

.....

Percentage increase = %

[2 marks]

0 5 . 3

Explain how having more red blood cells could help the athlete when running a long race.

.....

.....

.....

.....

[2 marks]

0 6

1 mm^3 of a person's blood contains 5.4×10^6 red blood cells and 8.0×10^3 white blood cells.

0 6 . 1

Calculate the ratio of red blood cells to white blood cells. Give your answer in the form $x : 1$ to the nearest whole number.

.....

.....

.....

.....

.....

[2 marks]

0 6 . 2

An athlete trained at high altitude for several weeks. The number of red blood cells in 1 mm^3 of the athlete's blood increased from 5.2×10^6 to 5.9×10^6 . Calculate the percentage increase. Give your answer to 1 decimal place.

.....

.....

.....

.....

Percentage increase = %

[2 marks]

0 6 . 3

Explain how having more red blood cells could help the athlete when running a long race.

.....

.....

.....

.....

[2 marks]

END OF QUESTIONS

Original practice questions written to match the specification. Not produced by, affiliated with or endorsed by AQA.

Mark scheme

GCSE Combined Science: Trilogy · Worksheet: Blood · 32 marks

Question 1 (5 marks)

01.1 [4 marks]

Answer: 1 transports dissolved substances / carries the cells; 2 biconcave disc with no nucleus; 3 protects against pathogens; 4 helps the blood to clot

- 1: transports dissolved substances, e.g. glucose / carbon dioxide / urea / hormones (and carries the blood cells) (1)
 - 2: has no nucleus / is a biconcave disc / contains haemoglobin (1)
 - 3: protects the body against pathogens / infection (1)
 - 4: helps the blood to clot (at a wound) (1)
-

01.2 [1 mark]

Correct: Red blood cell

Question 2 (4 marks)

02.1 [1 mark]

Answer: plasma

- plasma (1)
-

02.2 [1 mark]

Correct: Platelets

02.3 [1 mark]

Answer: haemoglobin

- haemoglobin (1)
-

02.4 [1 mark]

- to protect the body against pathogens / infection (e.g. by ingesting pathogens or producing antibodies) (1)

Notes: Allow 'part of the immune system'.

Question 3 (5 marks)

03.1 [2 marks]

Correct: Carbon dioxide; Urea

03.2 [2 marks]

Answer: liver; kidneys

- liver (1)
 - kidneys (1)
-

03.3 [1 mark]

- hormones / glucose / amino acids / soluble products of digestion (1)

Notes: Allow antibodies or proteins. Ignore 'blood cells'.

Question 4 (6 marks)

04.1 [3 marks]

Answer: P red blood cell; Q white blood cell; R platelet

- P – red blood cell (1)
 - Q – white blood cell (1)
 - R – platelet (1)
-

04.2 [1 mark]

- it has a nucleus (1)

Notes: Allow 'it is larger than the red blood cells'.

04.3 [2 marks]

Answer: 667 : 1

- $5.0 \times 10^6 \div 7.5 \times 10^3$ (1)
- 667 : 1 (1)

Notes: Allow 666.7 : 1 or 670 : 1.

Question 5 (6 marks)

05.1 [2 marks]

Answer: 600 : 1

- $4.5 \times 10^6 \div 7.5 \times 10^3$ (1)
 - 600 : 1 (1)
-

05.2 [2 marks]

Answer: 15.9%

- $(5.1 - 4.4) \div 4.4 \times 100$ (1)
 - 15.9 (%) (1)
-

05.3 [2 marks]

- more haemoglobin, so more oxygen can be carried to the muscles (1)
 - so more aerobic respiration can take place in the muscles, releasing more energy (1)
-

Question 6 (6 marks)

06.1 [2 marks]

Answer: 675 : 1

- $5.4 \times 10^6 \div 8.0 \times 10^3$ (1)
 - 675 : 1 (1)
-

06.2 [2 marks]

Answer: 13.5%

- $(5.9 - 5.2) \div 5.2 \times 100$ (1)
 - 13.5 (%) (1)
-

06.3 [2 marks]

- more haemoglobin, so more oxygen can be carried to the muscles (1)
 - so more aerobic respiration can take place in the muscles, releasing more energy (1)
-