GCSE (9 – 1) Mathematics

J560/04 Paper 4 (Higher Tier)

Question Set 2

1. (a) Anne, Barry and Colin share a prize in the ratio 3 : 4 : 5.
Colin gives $\frac{1}{3}$ of his share to a charity.

What fraction of the whole prize does Colin give to the charity?

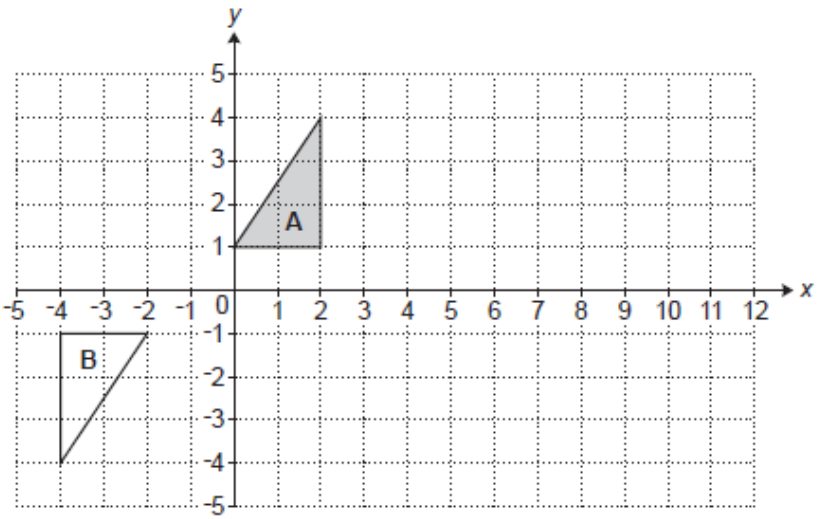
(a) ..... **[3]**

(b) Delia, Edwin and Freya share some money in the ratio 5 : 7 : 8.
Freya's share is £1600.

How much money did they share?

(b) £ ..... **[2]**

2 (a) Triangle **A** and triangle **B** are drawn on the coordinate grid.



(a) Describe fully the **single** transformation that maps triangle **A** onto triangle **B**.

.....

..... **[3]**

(b) Describe fully the **single** transformation that is equivalent to:

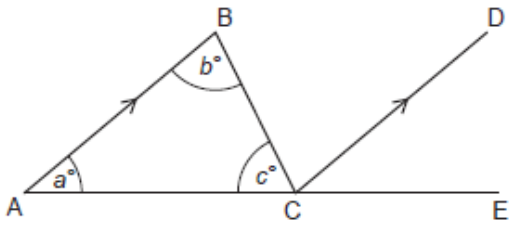
- a reflection in the line $x = 3$, followed by
- a translation by $\begin{pmatrix} 4 \\ 0 \end{pmatrix}$.

You may use the grid above to help you.

.....

..... **[3]**

3 (a) The diagram shows triangle ABC.
CD is parallel to AB.
A, C and E lie in a straight line.
Angles of size $a°$, $b°$ and $c°$ are shown.



Not to scale

(a) Insert $a°$, $b°$ or $c°$ to make this statement true.
Give a reason for your answer.

Angle DCE = ... because .....

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

(b) Use the diagram and the answer to part **(a)** to show that the angles of a triangle add up to 180°.
Give a reason for each statement you make. **[3]**

4 The area of a rectangle is 56 m^2, correct to the nearest m^2.
The length of the rectangle is 9.2 m, correct to the nearest 0.1 m.

Calculate the smallest possible width of the rectangle.

..... m **[4]**

5 **(a)** Here are the first four terms of a sequence.

$-1 \quad 4 \quad 9 \quad 14$

Write an expression for the nth term of this sequence.

(a) ..... **[2]**

(b) The nth term of another sequence is given by

$$an^2 + bn$$

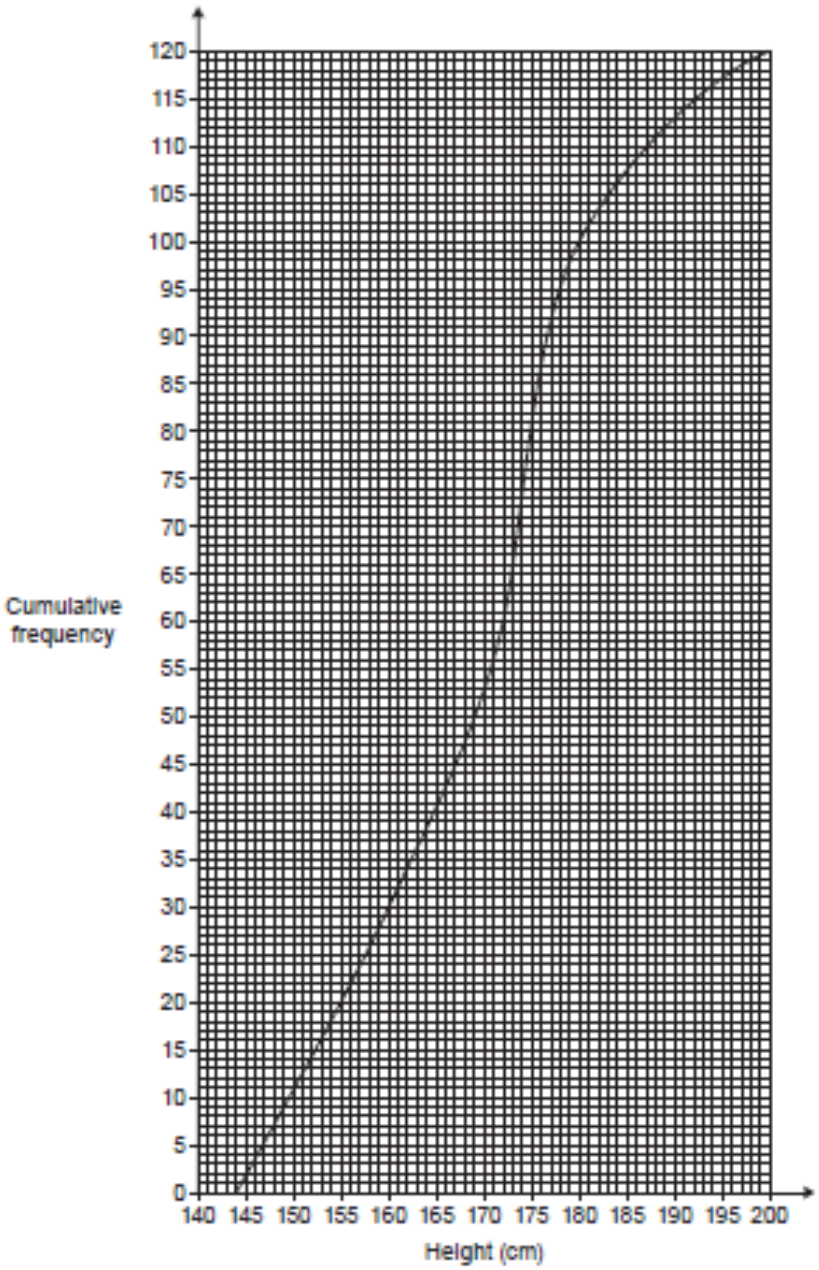
The third term is 9 and the sixth term is 126.

Find the value of a and the value of b.

(b) $a =$ .....

$b =$ ..... **[5]**

6 **(a)** The cumulative frequency graph shows the distribution of the heights of members of a rowing club.



(i) (i) Find the median.

(a)(i) ..... cm **[1]**

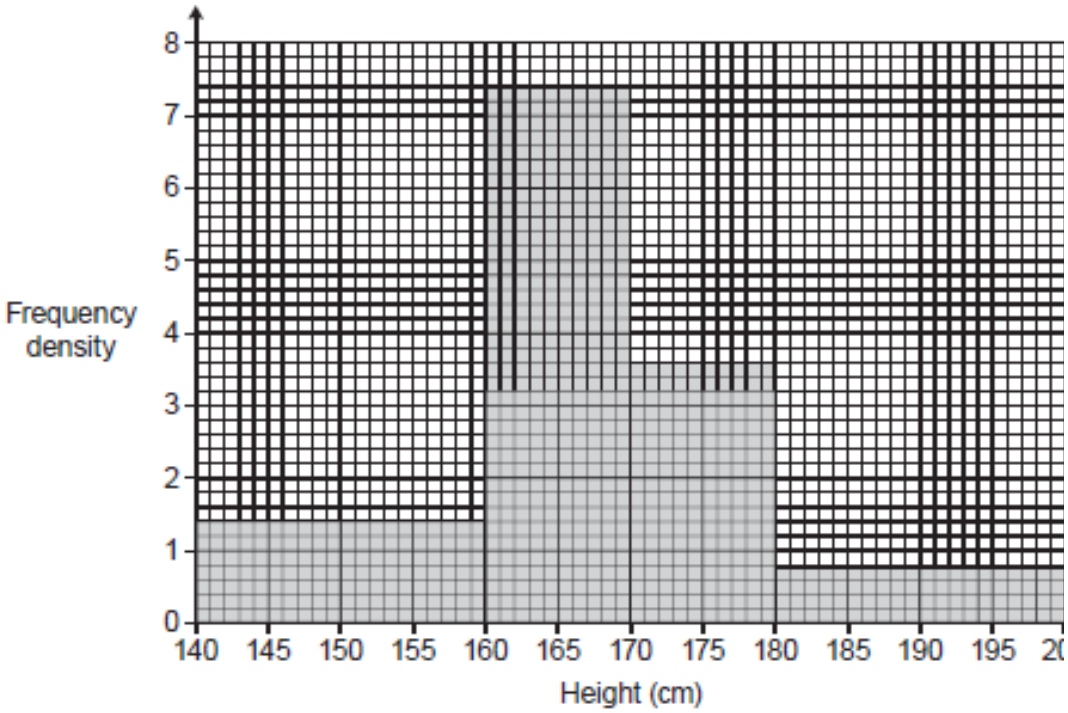
(ii) Find the interquartile range.

(ii) ..... cm **[2]**

(iii) Calculate the percentage of the members who are at least 180 cm tall.

(iii) ..... % **[3]**

(b)) The histogram summarises the heights of the 153 members of a swimming club.



Which club has the greater median height?
You must show all your working.

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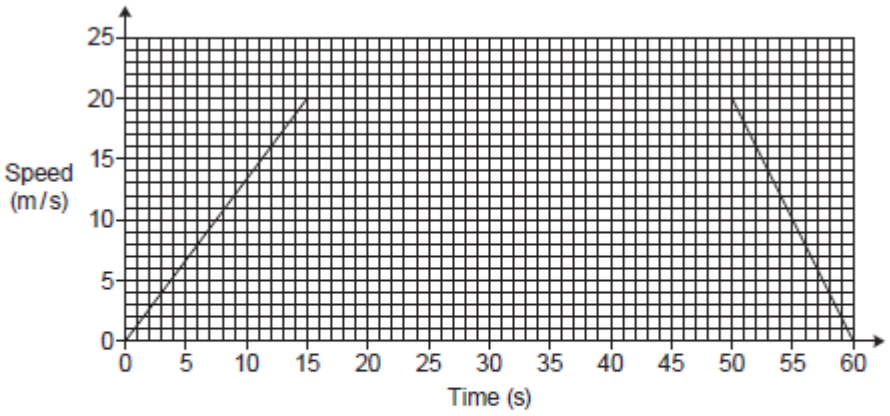
7 **(a)** The graph shows the speed of a train during the first 60 seconds of motion.



(a) What is the speed of the train after 9 seconds?

(a) ..... m/s **[1]**

(b) What does the straight line suggest about the speed of the train over the first 15 seconds?

.....

..... **[1]**

(c) Work out the average speed of the train, in m/s, during the 60 seconds.

(c) ..... m/s **[5]**

8 Solve this equation algebraically.
Give your solutions correct to 2 decimal places.

$$3x^2 + 8x - 5 = 0$$

$x =$ ..... or $x =$ ..... **[4]**

Total Marks for Question Set : 49