

GCSE (9 – 1) Mathematics
J560/04 Paper 4 (Higher Tier)

Question Set 2

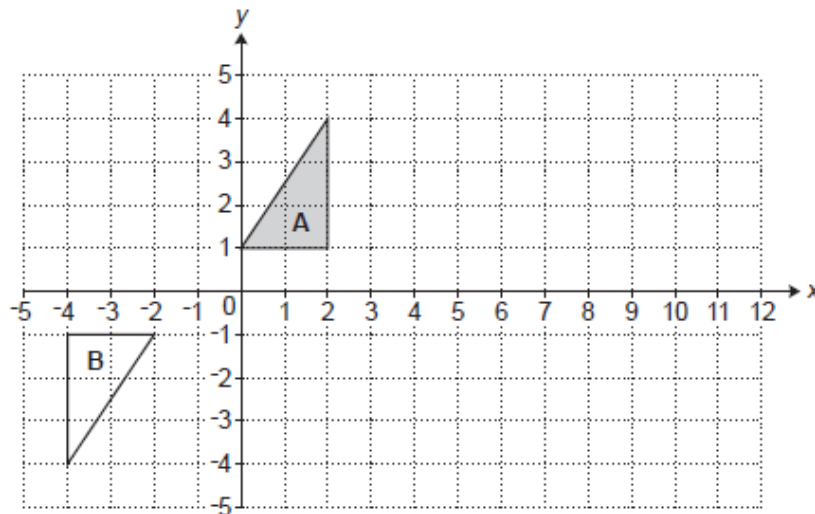
1. (a) Anne, Barry and Colin share a prize in the ratio 3 : 4 : 5.
Colin gives $\frac{1}{3}$ of his share to a charity.
What fraction of the whole prize does Colin give to the charity?

(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:

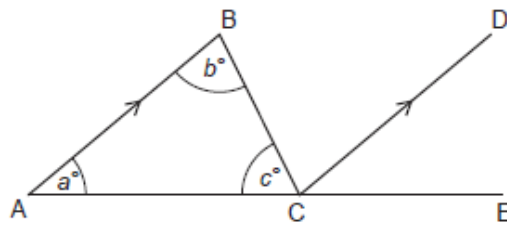
- a reflection in the line $x = 3$, followed by
- a translation by $\begin{pmatrix} 4 \\ 0 \end{pmatrix}$.

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 4 9 14

Write an expression for the n th term of this sequence.

(a) [2]

(b) The n th term of another sequence is given by

$$an^2 + bn$$

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

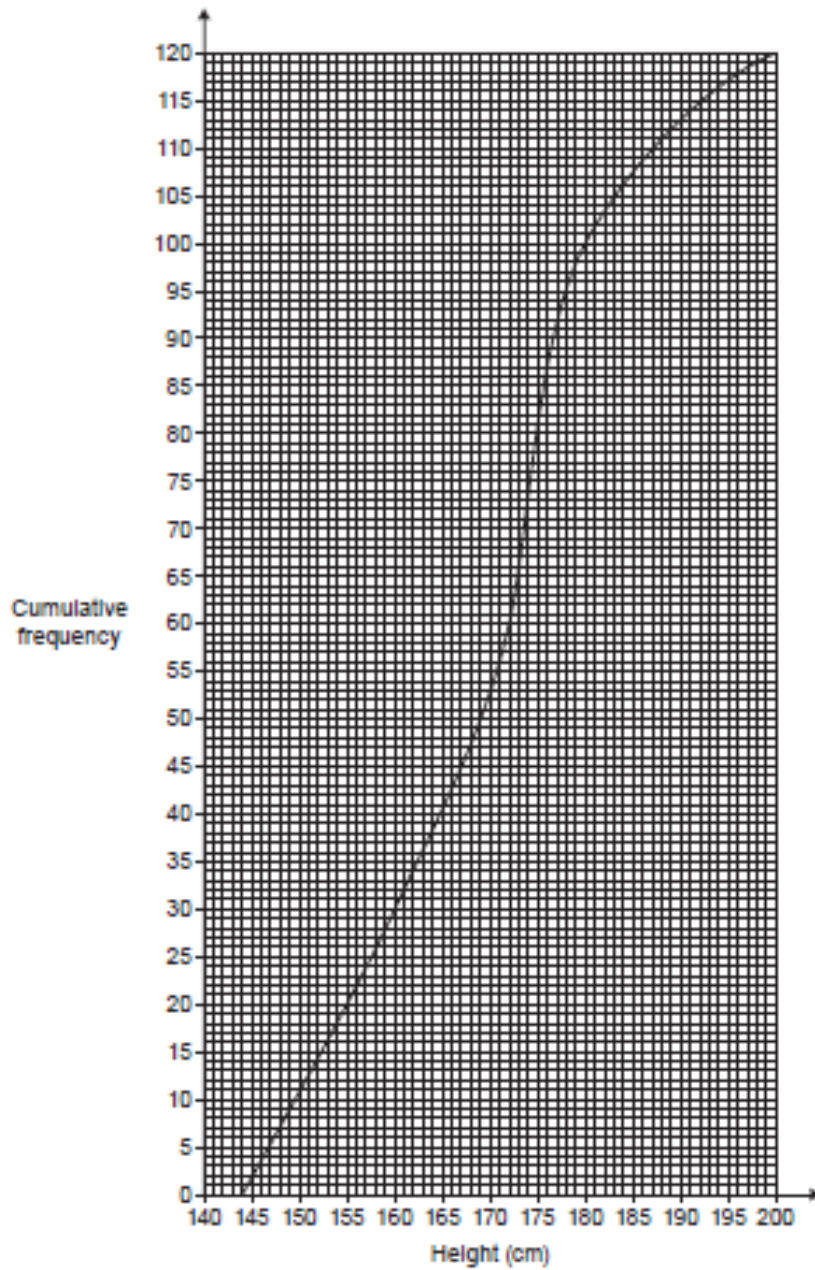
Find the value of a and the value of b .

(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.

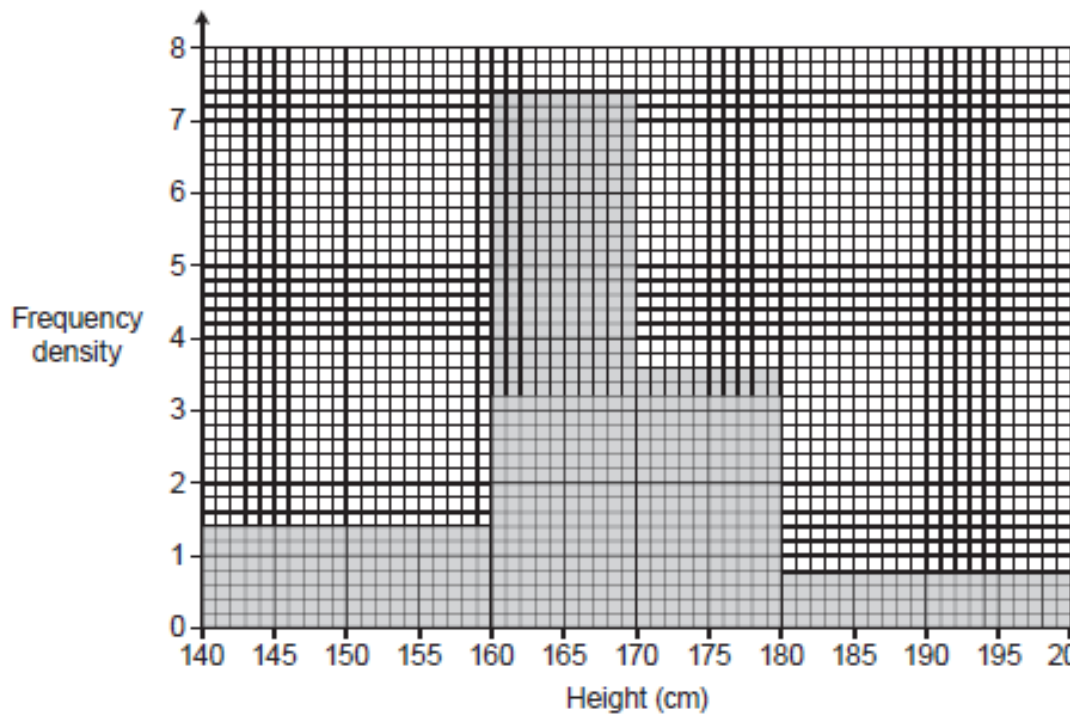
(ii) cm [2]

(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.

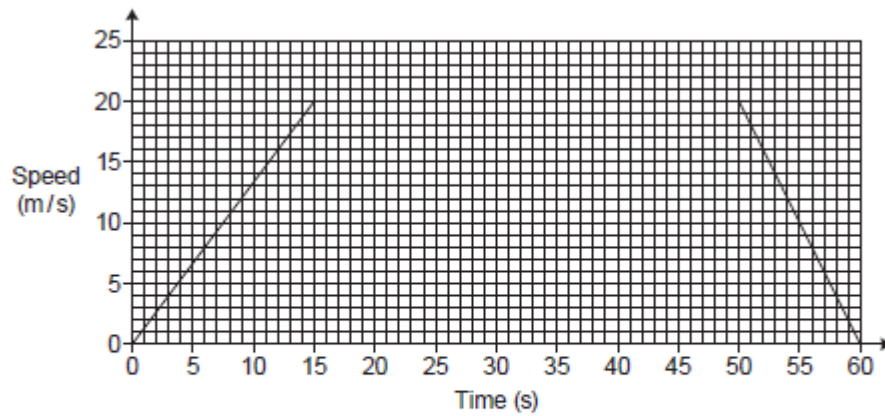


Which club has the greater median height?
You must show all your working.

.....

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.

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

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \quad a=3 \quad b=8 \quad c=-5$$

$$= \frac{-8 \pm \sqrt{8^2 - 4 \times 3 \times -5}}{2 \times 3}$$

$$= \frac{-8 \pm \sqrt{124}}{6}$$

$$= \frac{-4 \pm 2\sqrt{31}}{6}$$

$$= \frac{-4 \pm \sqrt{31}}{3}$$

$$= 0.5225 \text{ or } -3.189$$

$$x = \dots 0.523 \dots \text{ or } x = \dots -3.19 \dots [4]$$

Total Marks for Question Set : 49

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