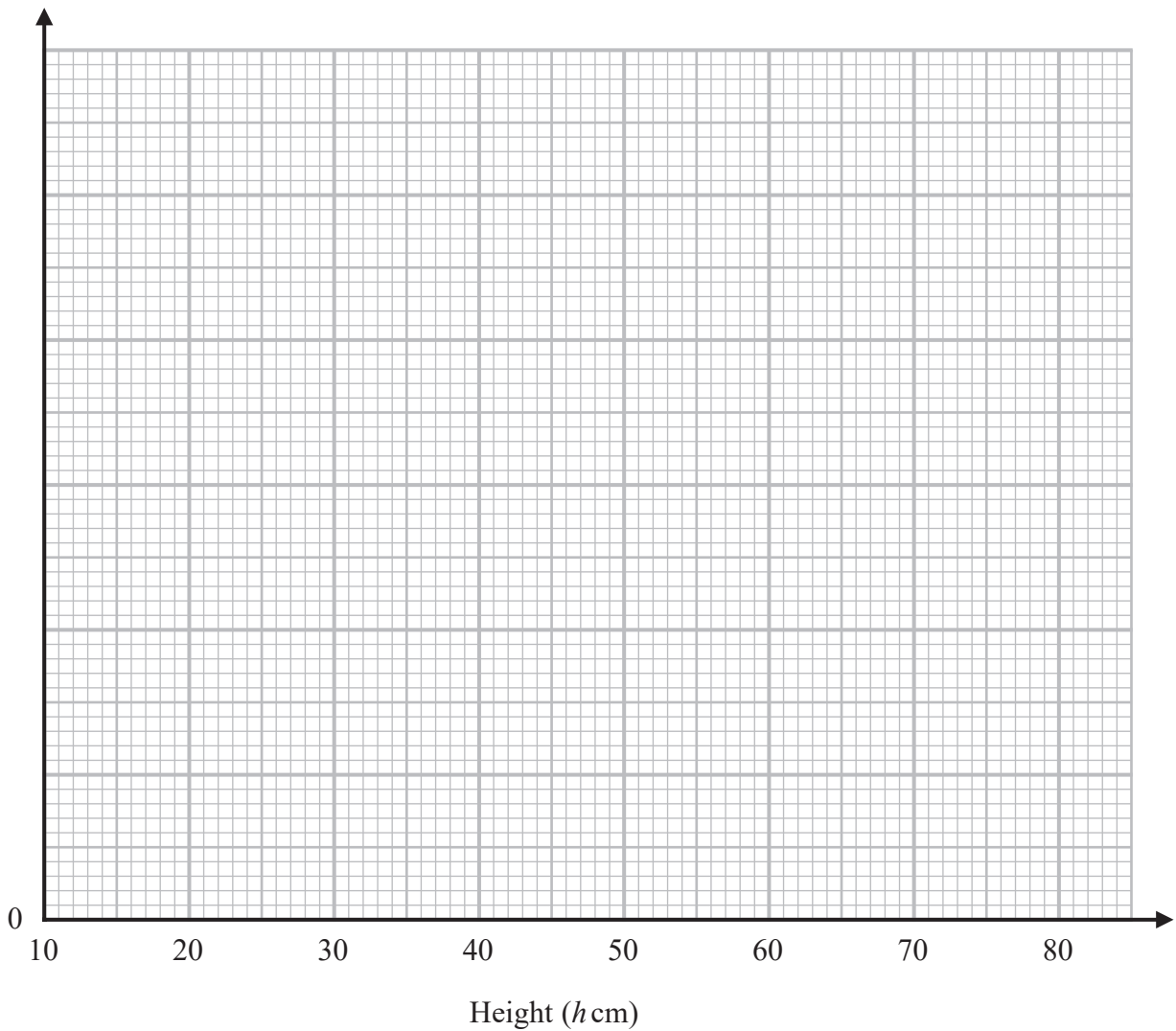


18 The table gives information about the heights, in centimetres, of some plants.

Height (h cm)	Frequency
$10 < h \leq 20$	35
$20 < h \leq 35$	45
$35 < h \leq 50$	75
$50 < h \leq 70$	40
$70 < h \leq 80$	8

(a) On the grid, draw a histogram for this information.



(3)

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(b) Work out an estimate for the number of these plants with a height greater than 40 cm.

.....
(2)

(Total for Question 18 is 5 marks)

19 Without using a calculator, rationalise the denominator of $\frac{6}{3 - \sqrt{7}}$

Simplify your answer.

You must show each stage of your working.

.....
(Total for Question 19 is 3 marks)



20 **R** and **S** are two similar solid shapes.

Shape **R** has surface area 108 cm^2 and volume 135 cm^3

Shape **S** has surface area 300 cm^2

Work out the volume of shape **S**.

..... cm^3

(Total for Question 20 is 3 marks)

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21 Express

$$\frac{1}{3x-2} \times \frac{9x^2-4}{3x^2-13x-10} - \frac{7}{x-1}$$

as a single fraction in its simplest form.

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(Total for Question 21 is 5 marks)



P 6 2 6 5 2 A 0 2 3 2 8

22 $ABCD$ is a rhombus.

The diagonals, AC and BD , intersect at the point M .

The coordinates of M are $(6, -11)$

The points A and C both lie on the line with equation $2y + 7x = 20$

Find the exact coordinates of the point where the line through B and D intersects the y -axis.

(.....,))

(Total for Question 22 is 4 marks)



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23 Curve C has equation $y = px^3 - mx$ where p and m are positive integers.

Find the range of values of x , in terms of p and m , for which the gradient of C is negative.

.....
(Total for Question 23 is 4 marks)



24 Here are the first five terms of an arithmetic sequence.

8 15 22 29 36

Work out the sum of all the terms from the 50th term to the 100th term inclusive.

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.....
(Total for Question 24 is 4 marks)



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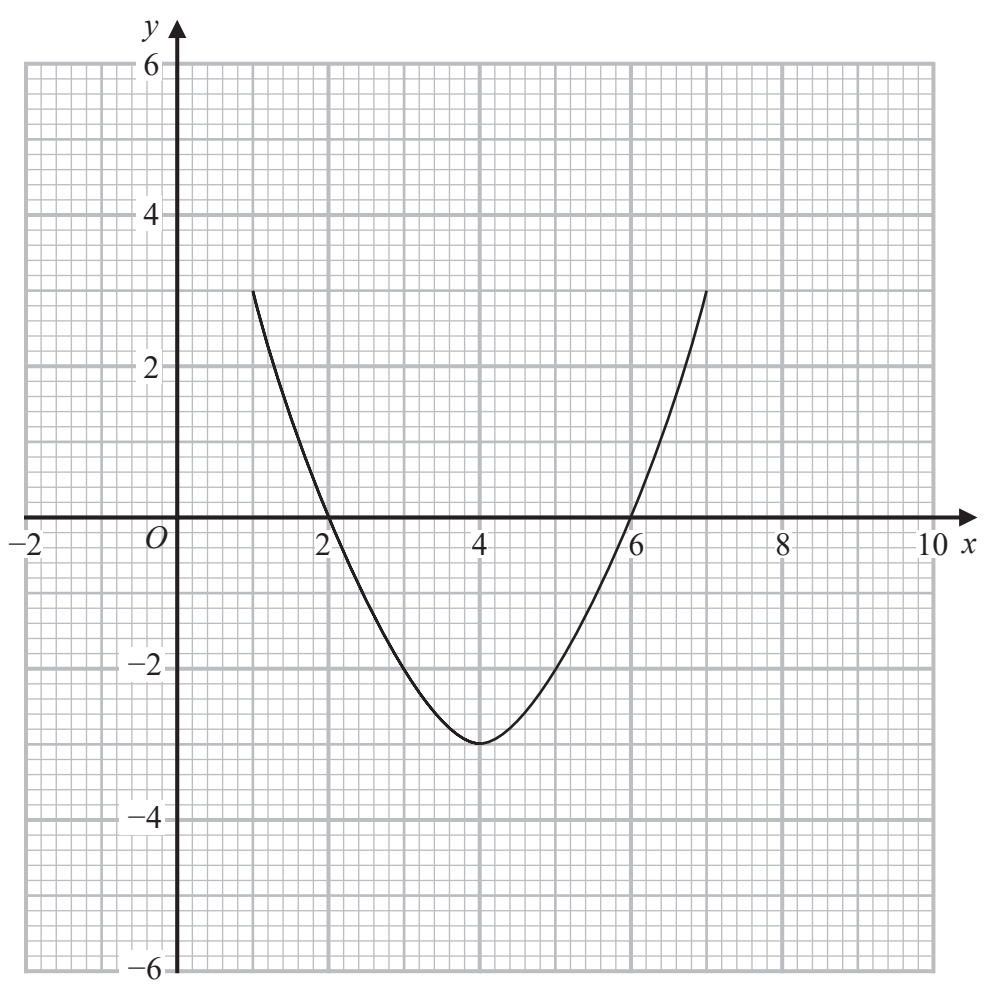
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25 The curve with equation $y = g(x)$ is transformed to the curve with equation $y = -g(x)$ by the single transformation **T**.

(a) Describe fully the transformation **T**.

(1)

The diagram shows the graph of $y = f(x)$



(b) On the grid, draw the graph of $y = 2f(x - 1)$

(2)

(Total for Question 25 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

