This is a Class 1 exam

Lebanon Evangelical School
for Boys and Girls — Loueizeh - Baabda

Stage Exam 05
27APR2026

Do NOT write in this box. Your MARK will be placed here.

Subject :	Maths	
Class :	10A	
Teacher :	Mrs.Claudine Eid	
Duration :	1 hour	
Calculators are allowed		
Your name :		*Time taken to complete exam*
Your Class :		
Exam Room :		
How many sheets, including cover sheet :		

- Do not open this paper until the teacher in charge instructs you to do so.
- The most important thing to remember in taking an exam is NEVER PANIC.
- If you are caught cheating in this exam, you will be awarded zero for ALL exams that are taken on this day.

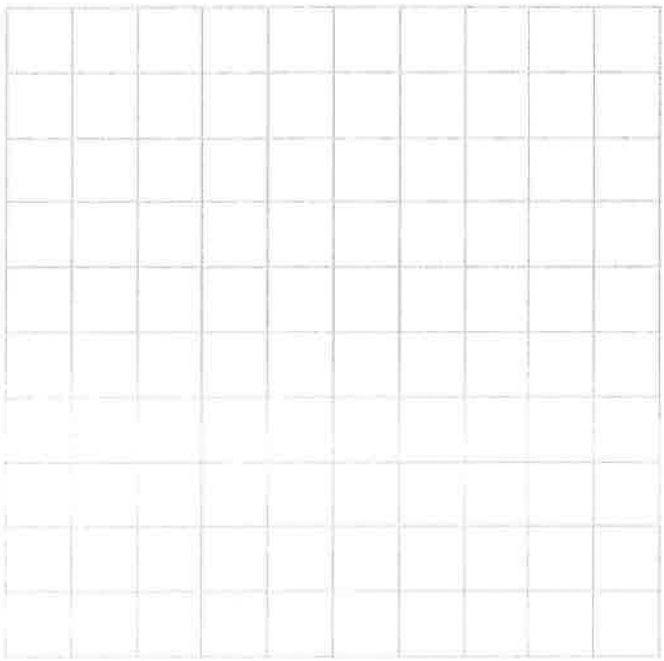
Answer ALL questions.

Write your answers in the space provided

You must write down all the stages in your working.

(1) $\mathbf{a} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$

On the grid below, draw and label the vector $2\mathbf{a} + \mathbf{b}$



(Total for Question 1 is 3 marks)

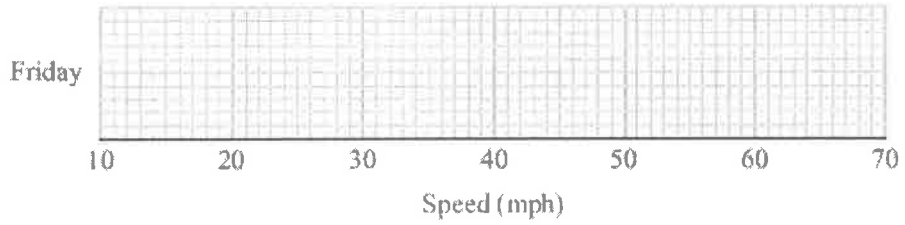
(2)

Mina records the speeds, in mph, of some cars on a road on Friday.

She uses her results to work out the information in this table.

	Speed (mph)
Lowest speed	25
Lower quartile	35
Median	40
Interquartile range	12
Range	37

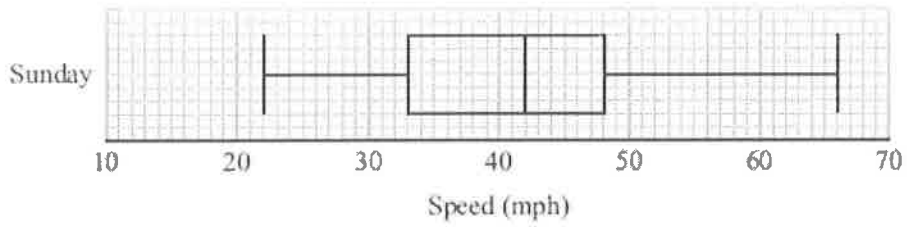
(*a*) On the grid, draw a box plot to show the information in the table.



(3)

Mina also records the speeds of some cars on the same road on Sunday.

She uses her results to draw this box plot.



(*b*) Compare the distribution of the speeds on Friday with the distribution of the speeds on Sunday.

.....

.....

.....

.....

(2)

(Total for Question 2 is 5 marks)

(3) y is proportional to x^2

$y = 3$ when $x = 0.5$

x is inversely proportional to w

$x = 2$ when $w = 0.2$

Find the value of y when $w = 2$

$y =$ .....

(Total for Question 3 is 5 marks)

(4) Solid **A** and solid **B** are similar.

The ratio of the height of solid **A** to the height of solid **B** is 2 : 5

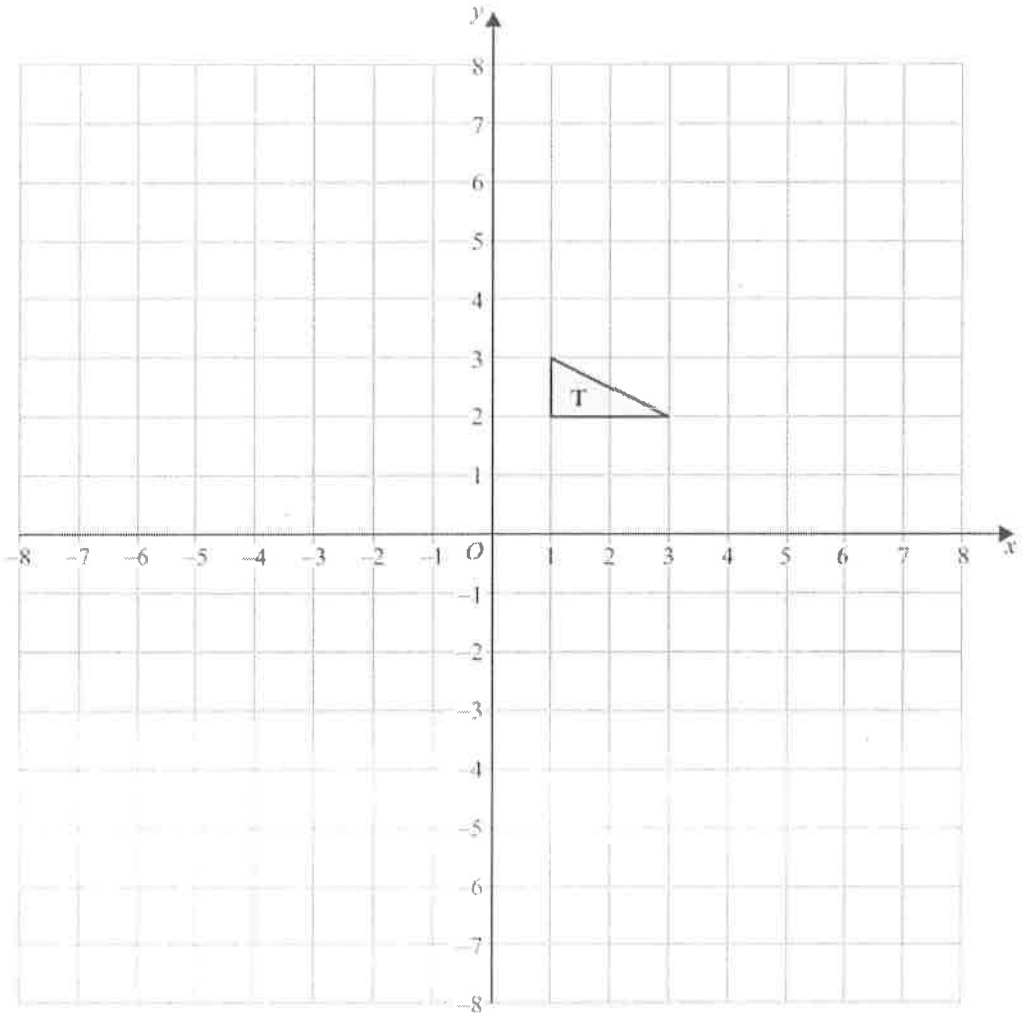
The volume of solid **A** is 12 cm^3

Work out the volume of solid **B**.

..... cm^3

(Total for Question 4 is 3 marks)

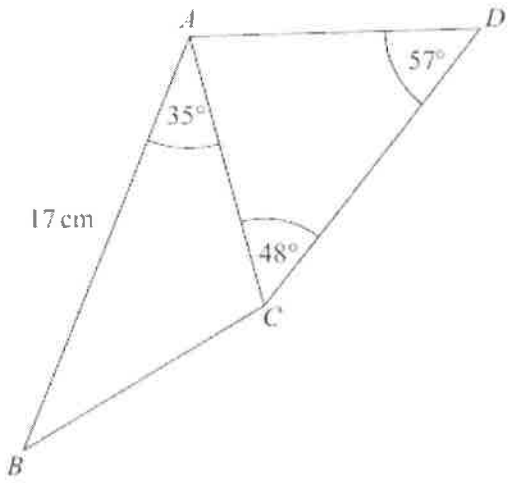
(5) The diagram shows triangle **T** drawn on a grid.



Enlarge triangle **T** by scale factor –2 with centre of enlargement (0, 0)

(Total for Question 5 is 2 marks)

(6) $ABCD$ is a quadrilateral.



The area of triangle ABC is 54 cm^2

Calculate the area of triangle ACD.

Give your answer correct to 3 significant figures.

..... cm^2

(Total for Question 6 is 5 marks)

(7) The frequency table gives information about the weights of 60 parcels.

Weight (w kg)	Frequency
$0 < w \leq 2$	7
$2 < w \leq 4$	21
$4 < w \leq 6$	15
$6 < w \leq 8$	11
$8 < w \leq 10$	6

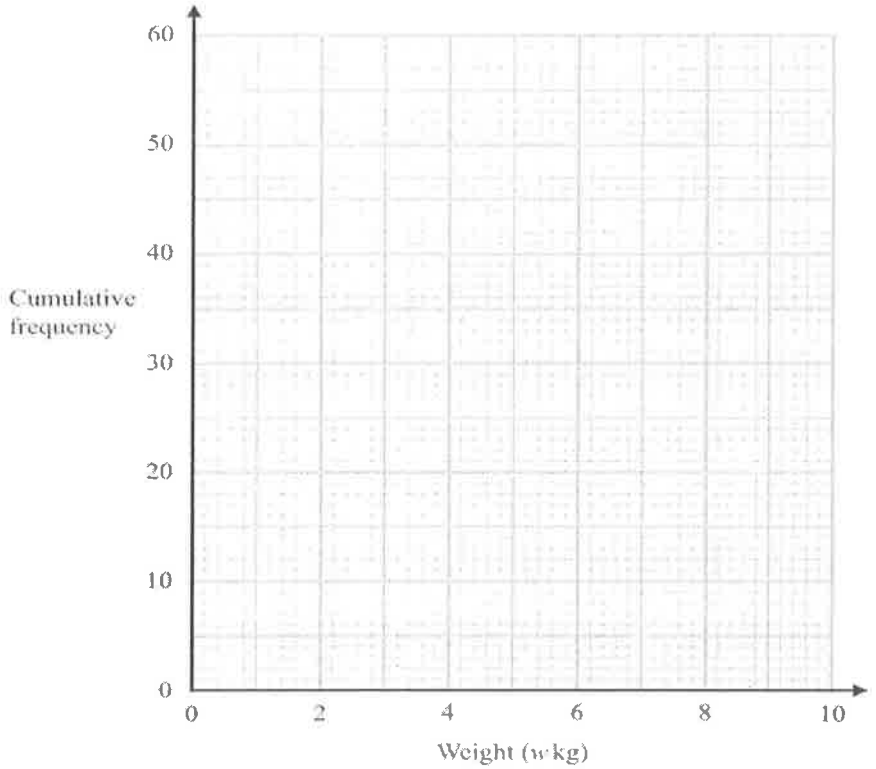
(a) Complete the cumulative frequency table.

Weight (w kg)	Cumulative frequency
$0 < w \leq 2$	
$0 < w \leq 4$	
$0 < w \leq 6$	
$0 < w \leq 8$	
$0 < w \leq 10$	

(1)

(b) On the grid on the next page, draw a cumulative frequency graph for your table.

(2)



(*c*) Use your graph to find an estimate for the interquartile range.

..... kg

(2)

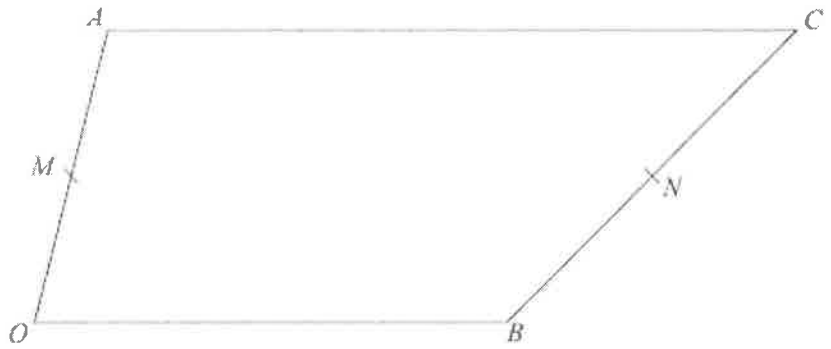
(*d*) Use your graph to find an estimate for the number of these parcels with a weight greater than 7.4 kg.

.....

(2)

(Total for Question 7 is 7 marks)

(8) The diagram shows quadrilateral $OACB$.



M is the midpoint of OA.

N is the point on BC such that $BN : NC = 4 : 5$

$\overrightarrow{OA} = \mathbf{a}$ $\overrightarrow{OB} = \mathbf{b}$ $\overrightarrow{AC} = k\mathbf{b}$ where k is a positive integer.

(*a*) Express $\overrightarrow{MN}$ in terms of k, **a** and **b**.

Give your answer in its simplest form.

.....

(4)

(*b*) Is MN parallel to OB?

Give a reason for your answer.

.....

.....

.....

(Total for Question 8 is 5 marks)

(9) The turning point on the graph of $y = g(x)$ has coordinates (–3, 6)

(*a*) Write down the coordinates of the turning point on the graph of $y = g(x - 7)$

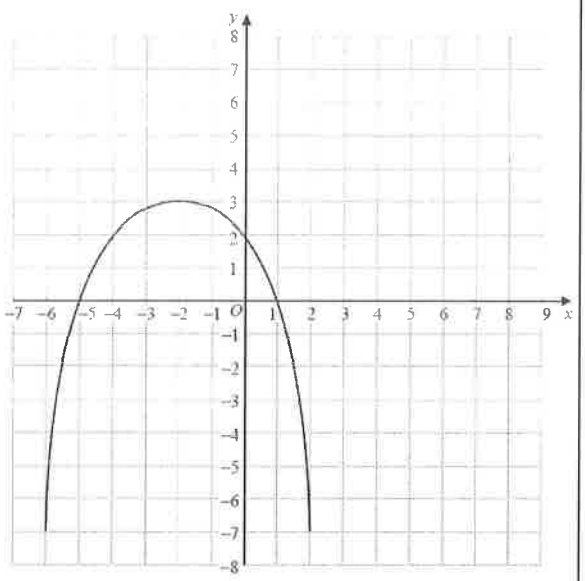
(..... , ...)

(1)

The graph of $y = f(x)$ is shown on the grid.

(*b*) On the grid, sketch the graph of

$y = f(-x) + 3$



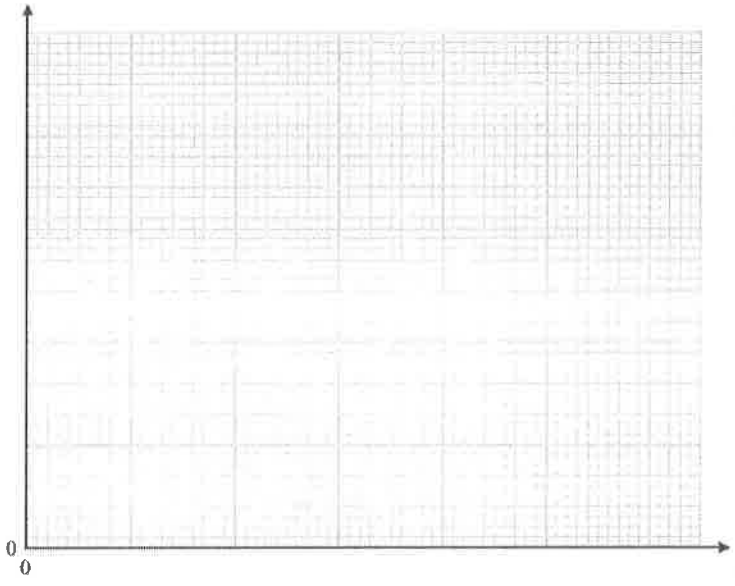
(2)

(Total for Question 9 is 3 marks)

(10) The table gives information about the amount of time that each of 150 people were in a shop.

Time (t minutes)	Frequency
$0 < t \leq 10$	20
$10 < t \leq 30$	70
$30 < t \leq 35$	22
$35 < t \leq 50$	30
$50 < t \leq 60$	8

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



(3)

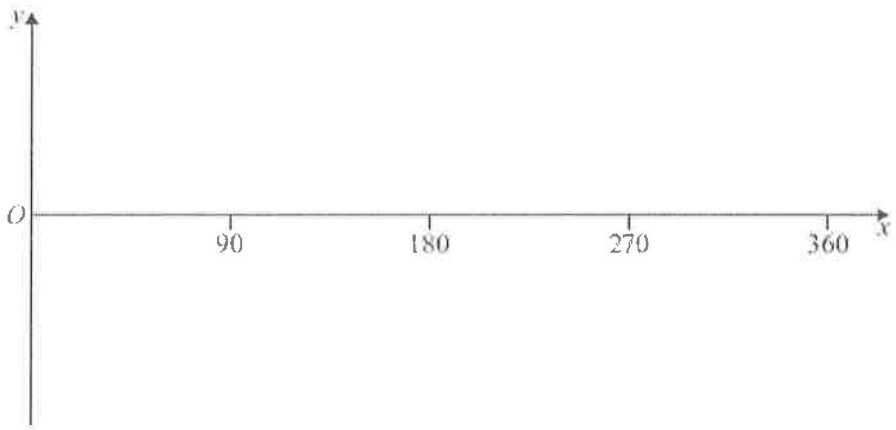
(*b*) Work out an estimate for the fraction of these 150 people who were in the shop for between 20 minutes and 40 minutes.

.....

(2)

(Total for Question 10 is 5 marks)

(11) (*a*) Sketch the graph of $y = \sin x°$ for $0 \leq x \leq 360$



(2)

(*b*) Solve the equation $2 \sin x° = -1$ for $0 \leq x \leq 360$

.....

(2)

(Total for Question 11 is 4 marks)

(Total for paper is 47 marks)

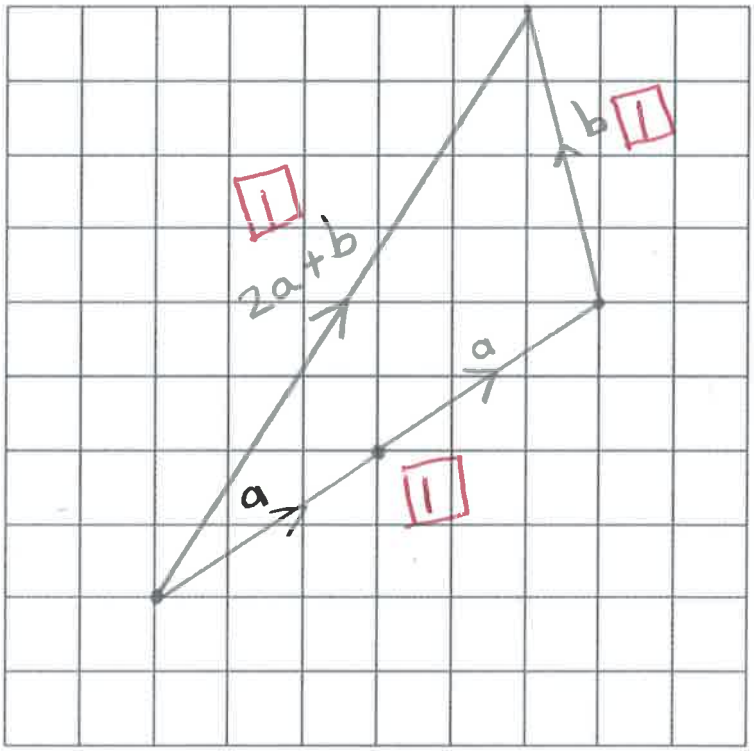
Answer ALL questions.

Write your answers in the space provided

You must write down all the stages in your working.

(1) $\mathbf{a} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$

On the grid below, draw and label the vector $2\mathbf{a} + \mathbf{b}$



$2a+b = \begin{pmatrix} 5 \\ 8 \end{pmatrix}$ or 2 marks Algebraically

(Total for Question 1 is 3 marks)

(2)

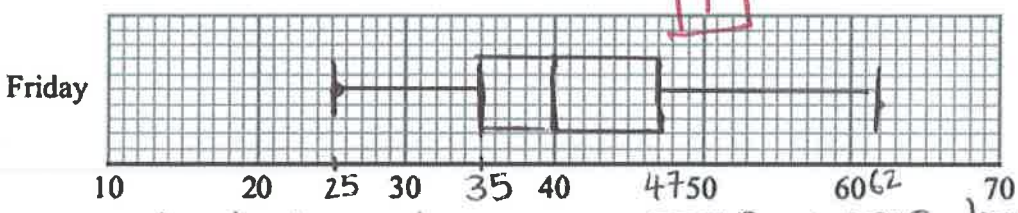
Mina records the speeds, in mph, of some cars on a road on Friday.

She uses her results to work out the information in this table.

	Speed (mph)
Lowest speed	25
Lower quartile	35
Median	40
Interquartile range	12
Range	37

IQR

(*a*) On the grid, draw a box plot to show the information in the table.



[1]

Range = highest speed − lowest speed

37 = highest speed − 25

⇒ highest speed = 37 + 25 = 62 [1]

IQR = upper Q − lower Q

12 = upper Q − 35

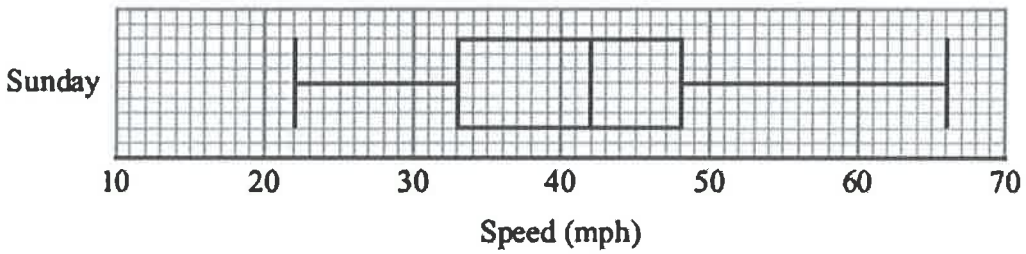
upper Q = 12 + 35

= 47 [1]

(3)

Mina also records the speeds of some cars on the same road on Sunday.

She uses her results to draw this box plot.



(*b*) Compare the distribution of the speeds on Friday with the distribution of the speeds on Sunday.

[1]

As for median Sunday 42 is higher than Friday 40

As for Inter Quartile Range Friday is 12

and Sunday 48 − 33 = 15, Friday is smaller than Sunday [1]

OR work with Range

(2)

(Total for Question 2 is 5 marks)

(3) y is proportional to x^2

$y = 3$ when $x = 0.5$

x is inversely proportional to w

$x = 2$ when $w = 0.2$

Find the value of y when $w = 2$

[1] $y = k_1 x^2 \Rightarrow 3 = k_1 (0.5)^2 \Rightarrow k_1 = 12$ [1]

$x w = k_2 \Rightarrow 2(0.2) = k_2 \Rightarrow k_2 = 0.4$ [1]

$x w = 0.4$

$\frac{x(2)}{2} = \frac{0.4}{2} \Rightarrow x = 0.2$ [1]

$y = 12 x^2$ [1]

$y = 12(0.2)^2 = 0.48$

$y =$ 0.48

(Total for Question 3 is 5 marks)

(4) Solid **A** and solid **B** are similar.

The ratio of the height of solid **A** to the height of solid **B** is 2 : 5

The volume of solid **A** is 12 cm^3

Work out the volume of solid **B**.

$\frac{\text{height A}}{\text{height B}} = \frac{2}{5}$

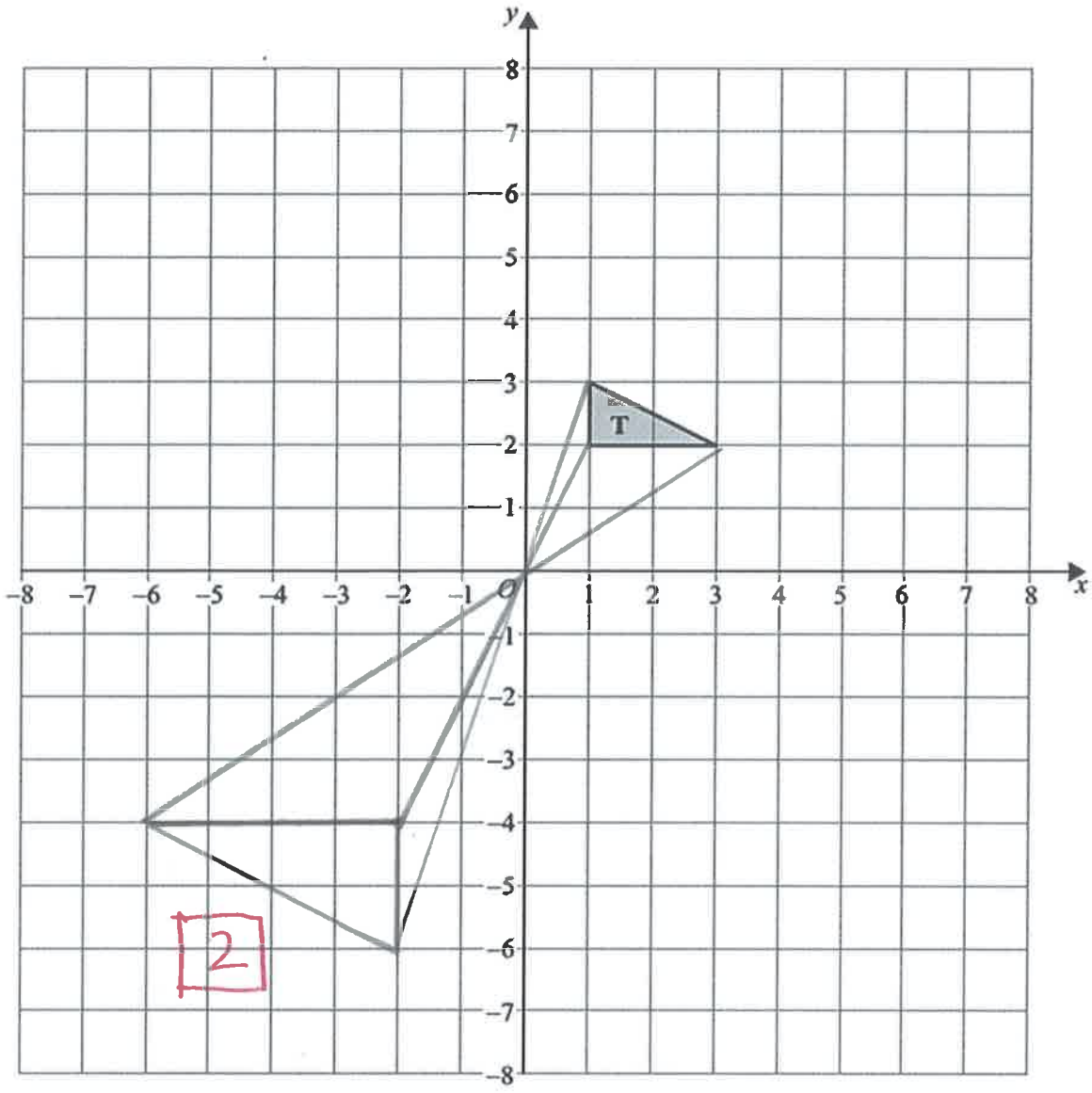
$\left(\frac{2}{5}\right)^3 = \frac{12}{\text{Volume B}}$ [1] $\Rightarrow$ $\frac{8}{125} = \frac{12}{\text{Volume B}}$ [1]

$\text{Volume}_B = 187.5\ cm^3$ [1]

187.5 ..... cm^3

(Total for Question 4 is 3 marks)

(5) The diagram shows triangle **T** drawn on a grid.

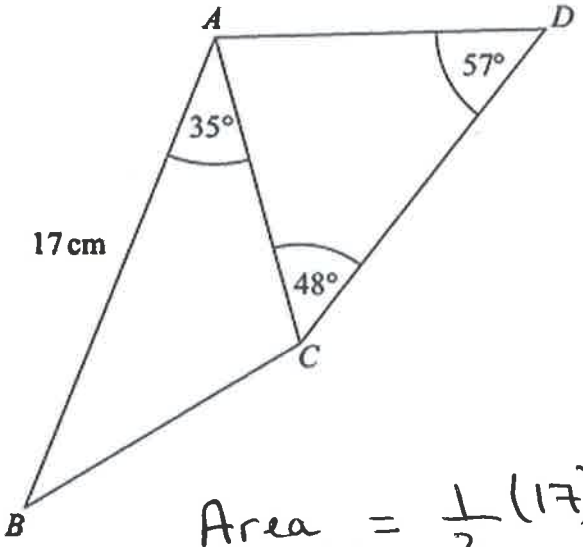


[2]

Enlarge triangle **T** by scale factor –2 with centre of enlargement (0, 0)

(Total for Question 5 is 2 marks)

(6) *ABCD* is a quadrilateral.



The area of triangle *ABC* is 54 cm^2

Calculate the area of triangle *ACD*.

Give your answer correct to 3 significant figures.

$\text{Area}_{\triangle ABC} = \frac{1}{2}(17)(AC)\sin 35$ [1]

$54 = \frac{1}{2}(17)\,AC\sin 35$ [1]

$\Rightarrow AC = 11.07 \approx 11.1$ cm

$\angle DAC = 180 - 48 - 57$

$\angle DAC = 75°$ [1]

$\frac{AC}{\sin 57} = \frac{CD}{\sin(D\hat{A}C)}$

$\frac{11.1}{\sin 57} = \frac{CD}{\sin 75}$ [1]

$\Rightarrow CD = 12.78 \approx 12.8$ cm

$\text{Area}_{\triangle ACD} = \frac{1}{2}(11.1)\times(12.8)\sin 48 = 52.8\,cm^2$ [1]

52.8 ..... cm^2

(Total for Question 6 is 5 marks)

(7) The frequency table gives information about the weights of 60 parcels.

Weight (w kg)	Frequency
$0 < w \leq 2$	7
$2 < w \leq 4$	21
$4 < w \leq 6$	15
$6 < w \leq 8$	11
$8 < w \leq 10$	6

(*a*) Complete the cumulative frequency table.

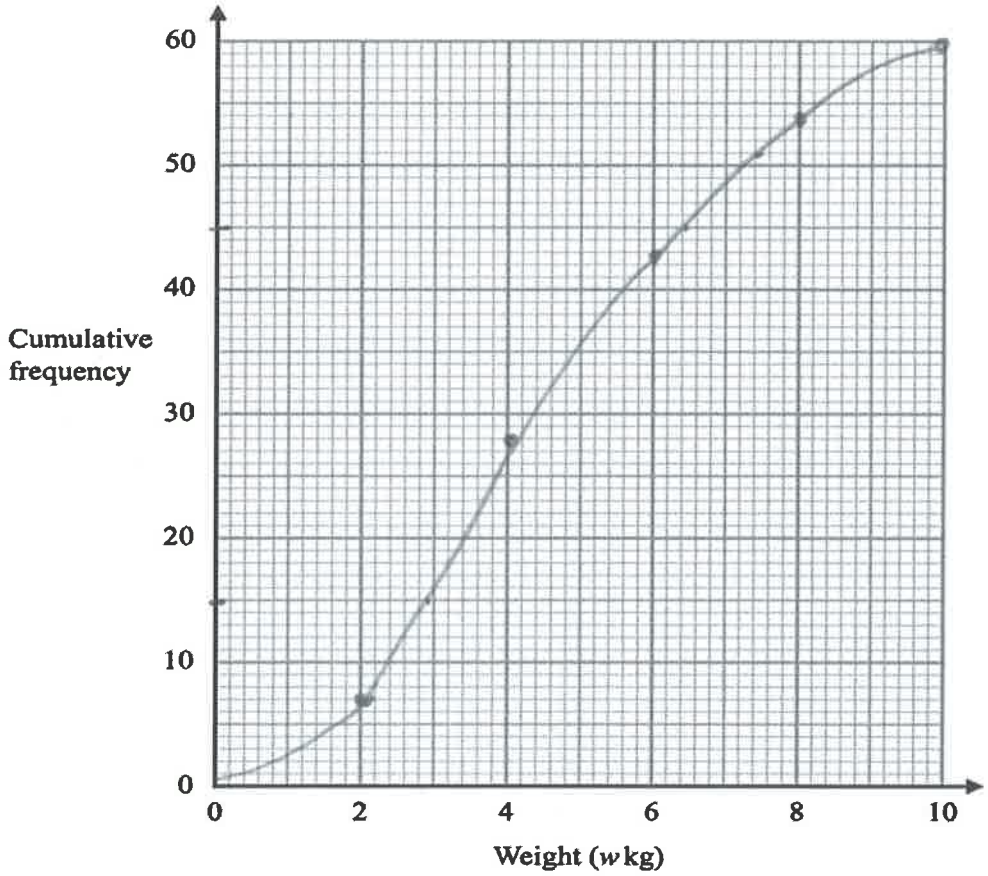
Weight (w kg)	Cumulative frequency
$0 < w \leq 2$	7
$0 < w \leq 4$	28
$0 < w \leq 6$	43
$0 < w \leq 8$	54
$0 < w \leq 10$	60

1

(1)

(*b*) On the grid on the next page, draw a cumulative frequency graph for your table.

(2)



(c) Use your graph to find an estimate for the interquartile range.

Lower Quartile $\frac{60}{4} = 15 \longrightarrow$ 2.8 (w kg) [1]

Upper Quartile $\frac{3(60)}{4} = 45 \longrightarrow$ 6.4 [1]

answers correct

3.4 — 4 kg

Inter Quartile Range = 6.4 − 2.8 = 3.6 [1]

(2)

(d) Use your graph to find an estimate for the number of these parcels with a weight greater than 7.4 kg.

60 − 51 = 9 [1] [1]

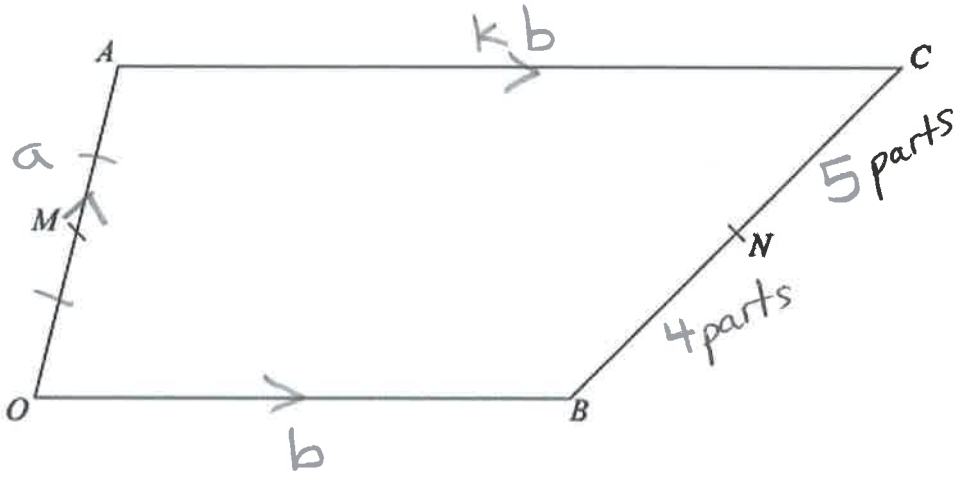
correct answers

7 − 10

(2)

(Total for Question 7 is 7 marks)

(8) The diagram shows quadrilateral $OACB$.



M is the midpoint of OA.

N is the point on BC such that $BN : NC = 4 : 5$

$\overrightarrow{OA} = \mathbf{a}$ $\overrightarrow{OB} = \mathbf{b}$ $\overrightarrow{AC} = k\mathbf{b}$ where k is a positive integer.

(*a*) Express $\overrightarrow{MN}$ in terms of k, **a** and **b**.

Give your answer in its simplest form.

$\overrightarrow{MN} = \overrightarrow{MA} + \overrightarrow{AC} + \overrightarrow{CN}$ [1]

$= \frac{1}{2}\mathbf{a} + k\mathbf{b} + \frac{5}{9}\overrightarrow{CB}$ [1]

$= \frac{1}{2}\mathbf{a} + k\mathbf{b} + \frac{5}{9}(\overrightarrow{CA} + \overrightarrow{AO} + \overrightarrow{OB})$

$= \frac{1}{2}\mathbf{a} + k\mathbf{b} + \frac{5}{9}(-k\mathbf{b} - \mathbf{a} + \mathbf{b})$ [1]

$= \frac{1}{2}\mathbf{a} + k\mathbf{b} - \frac{5}{9}k\mathbf{b} - \frac{5}{9}\mathbf{a} + \frac{5}{9}\mathbf{b}$

$= -\frac{1}{18}\mathbf{a} + \frac{4}{9}k\mathbf{b} + \frac{5}{9}\mathbf{b}$ [1]

$= \frac{1}{18}(-\mathbf{a} + 10\mathbf{b} + 8k\mathbf{b})$ $= \frac{1}{18}(-\mathbf{a} + 10\mathbf{b} + 8k\mathbf{b})$

(4)

(*b*) Is MN parallel to OB?

Give a reason for your answer.

No, not multiple of b

1

(Total for Question 8 is 5 marks)

(9) The turning point on the graph of $y = g(x)$ has coordinates $(-3, 6)$

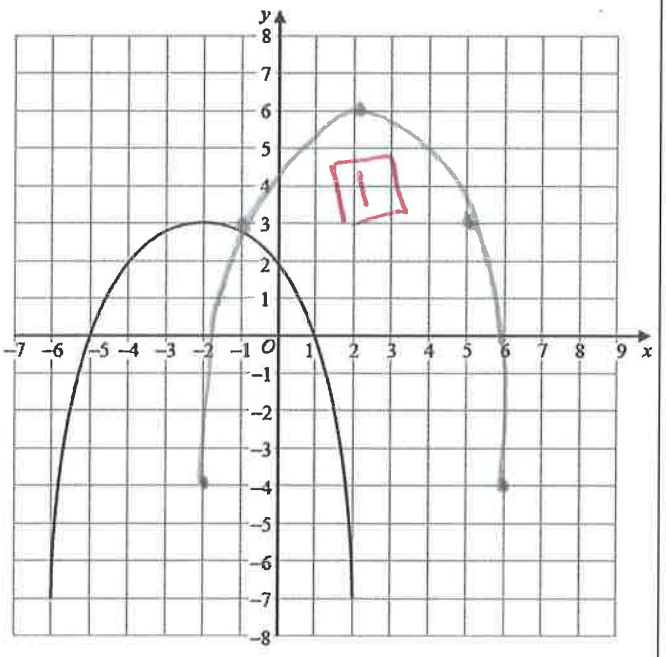
(*a*) Write down the coordinates of the turning point on the graph of $y = g(x - 7)$

(4 , 6)

1

(1)

The graph of $y = f(x)$ is shown on the grid.



(*b*) On the grid, sketch the graph of

$y = f(-x) + 3$

$(-5, 0) \longrightarrow (5, 3)$

$(-2, 3) \longrightarrow (2, 6)$

$(1, 0) \longrightarrow (-1, 3)$

$(-6, -7) \longrightarrow (6, -4)$

$(2, -7) \longrightarrow (-2, -4)$

1

(2)

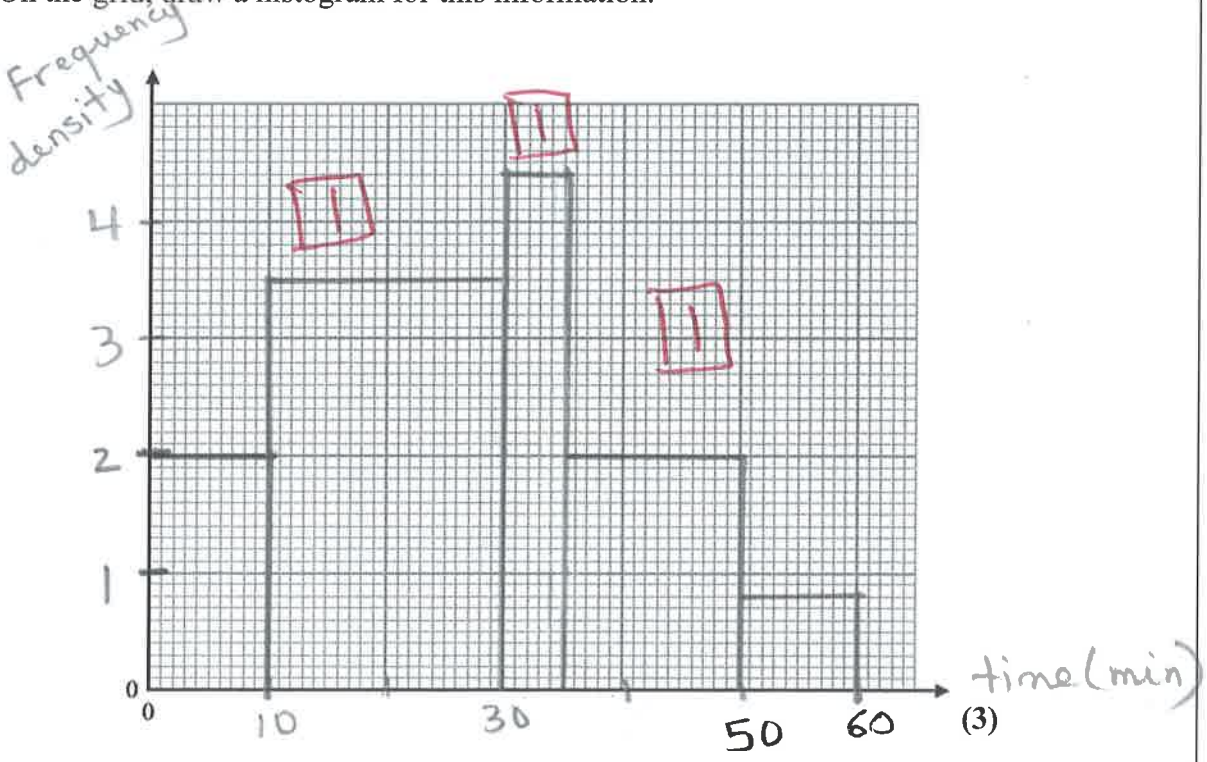
(Total for Question 9 is 3 marks)

(10) The table gives information about the amount of time that each of 150 people were in a shop.

Time (t minutes)	Frequency
$0 < t \leq 10$	20
$10 < t \leq 30$	70
$30 < t \leq 35$	22
$35 < t \leq 50$	30
$50 < t \leq 60$	8

Frequency density
$20 \div 10 = 2$
$70 \div 20 = 3.5$
$22 \div 5 = 4.4$
$30 \div 15 = 2$
$8 \div 10 = 0.8$

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



(3)

(*b*) Work out an estimate for the fraction of these 150 people who were in the shop for between 20 minutes and 40 minutes.

$10 \times 3.5 + 22 + 5 \times 2 = 67$

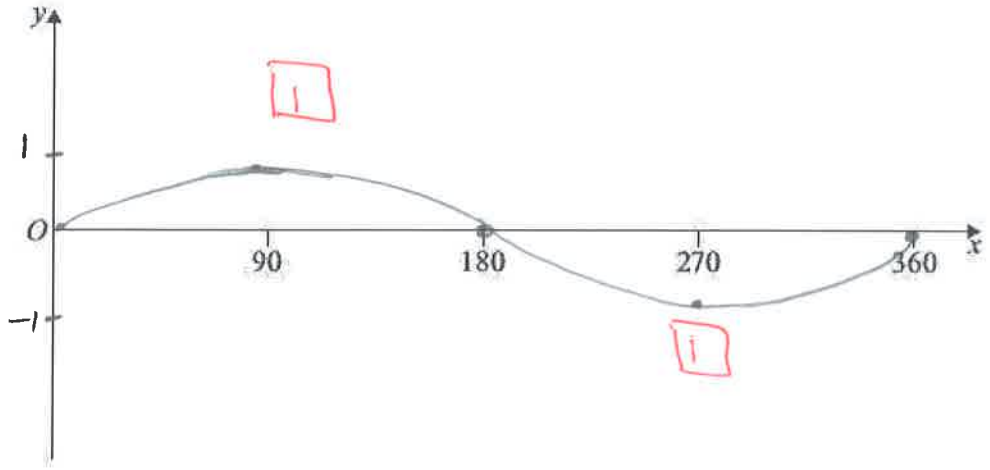
$\frac{67}{150}$

$\frac{67}{150}$

(2)

(Total for Question 10 is 5 marks)

(11) (*a*) Sketch the graph of $y = \sin x°$ for $0 \leq x \leq 360$



1 1

(2)

(*b*) Solve the equation $2 \sin x° = -1$ for $0 \leq x \leq 360$

$180 + 30 = 210°$

$360 - 30 = 330°$

1 1

210 , 330°

(2)

(Total for Question 11 is 4 marks)

(Total for paper is 47 marks)