1. Nov/2021/Paper_11/No.5

The number of items that each of 22 people buy in a supermarket is shown in the stem-and-leaf diagram.

1	1 3 6 6
2	0 2 2 2 4 8 9
3	1 1 5 8 9 9
4	2 4 6 7 8

Key: 1 | 1 represents 11 items

(a) Find the mode.

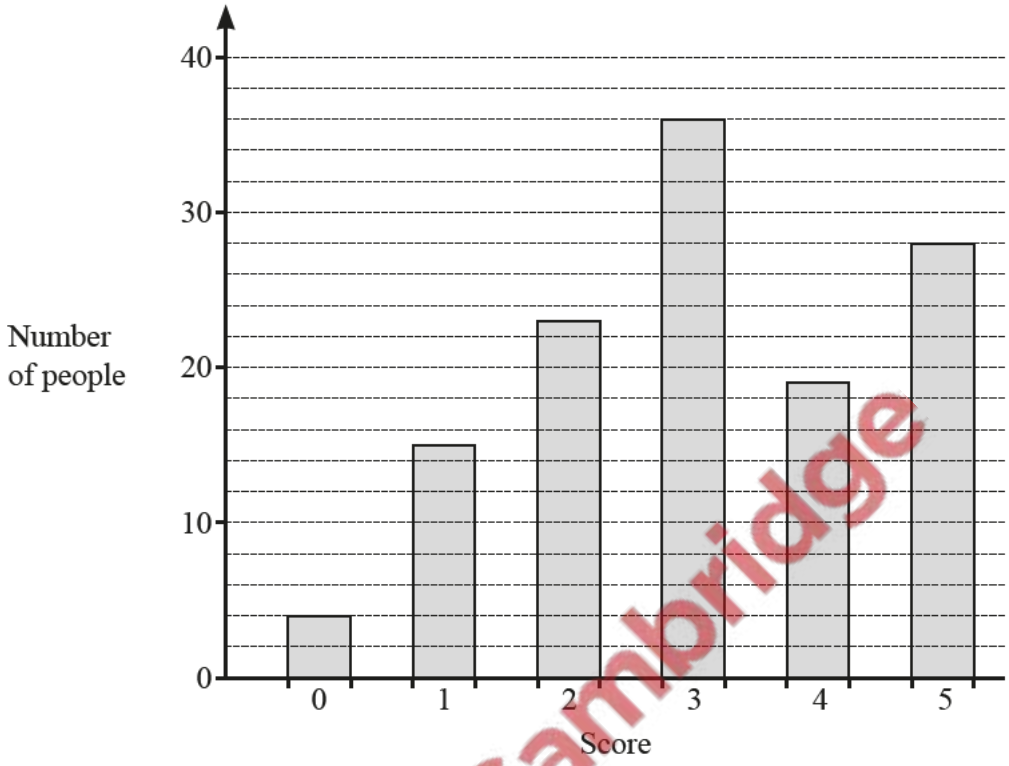
..... [1]

(b) Find the median.

..... [1]

2. Nov/2021/Paper_11/No.11

125 people taste a new drink.
Each person gives a score out of 5.
The bar chart shows the results.



Calculate the mean score.

..... [3]

3. Nov/2021/Paper_12/No.12

The stem-and-leaf diagram shows the age, in years, of each of 15 women.

3	1	5	8	9			
4	1	1	2	3	5	6	9
5	0	2	3	8			

Key: 3 | 1 represents 31 years

Complete these statements.

The modal age is .....

The median age is .....

The percentage of women that are older than 51 years is ..... %. [3]

4. Nov/2021/Paper_13/No.6

62 43 16 21 73 16 33 16 35

For this list of numbers find

(a) the mode,

..... [1]

(b) the median.

..... [2]

5. Nov/2021/Paper_13/No.15

Sara takes 5 tests.
Her mean score is 62.
She takes another test and her mean score is now 68.

Work out her score in the sixth test.

..... [3]

6. Nov/2021/Paper_21/No.4

The number of items that each of 22 people buy in a supermarket is shown in the stem-and-leaf diagram.

1	1 3 6 6
2	0 2 2 2 4 8 9
3	1 1 5 8 9 9
4	2 4 6 7 8

Key: 1 | 1 represents 11 items

(a) Find the mode.

..... [1]

(b) Find the median.

..... [1]

7. Nov/2021/Paper_22/No.2

The stem-and-leaf diagram shows the age, in years, of each of 15 women.

3	1	5	8	9			
4	1	1	2	3	5	6	9
5	0	2	3	8			

Key: 3 | 1 represents 31 years

Complete these statements.

The modal age is .....

The median age is .....

The percentage of women that are older than 51 years is ..... %. [3]

8. Nov/2021/Paper_32/No.3c

(c) Each day she records the number of laps she runs.
Here is her record for one week.

15 42 28 16 24 15 32

(i) Write down the mode.

..... [1]

(ii) Find the median.

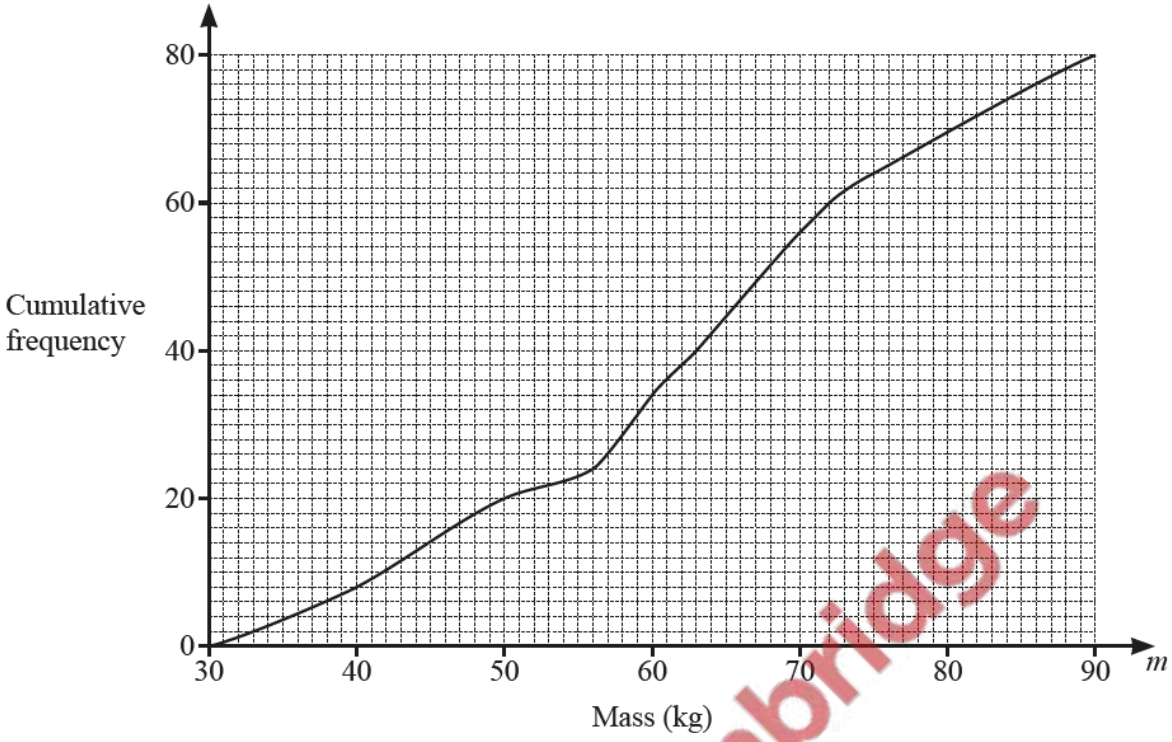
..... [2]

(iii) Find the range.

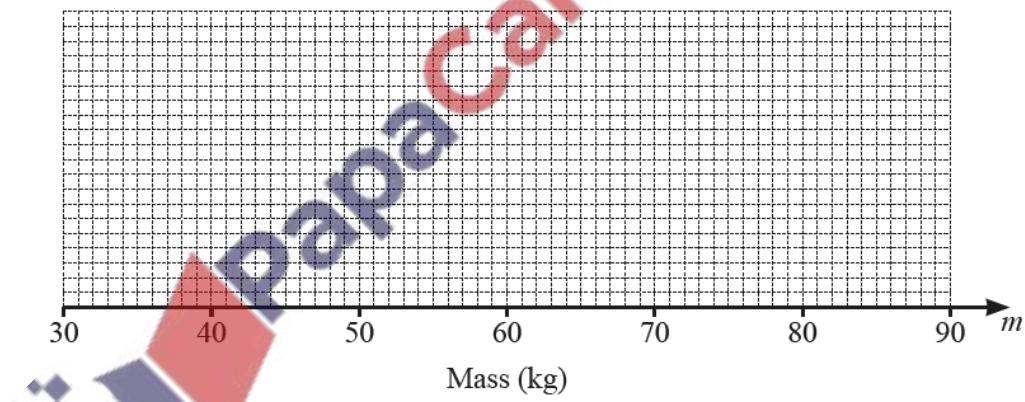
..... [1]

9. Nov/2021/Paper_41/No.3

The cumulative frequency diagram shows information about the mass, m kg, of each of 80 boys.



(a)



On the grid, draw a box-and-whisker plot to show the information in the cumulative frequency diagram. [4]

(b) Use the cumulative frequency diagram to find an estimate of

(i) the 30th percentile,

..... kg [2]

(ii) the number of boys with a mass greater than 75 kg.

..... [2]

(c) **(i)** Use the cumulative frequency diagram to complete this frequency table.

Mass (m kg)	$30 < m \leqslant 40$	$40 < m \leqslant 50$	$50 < m \leqslant 60$	$60 < m \leqslant 70$	$70 < m \leqslant 80$	$80 < m \leqslant 90$
Frequency	8	12			14	10

[1]

(ii) Calculate an estimate of the mean mass of the boys.

..... kg [4]

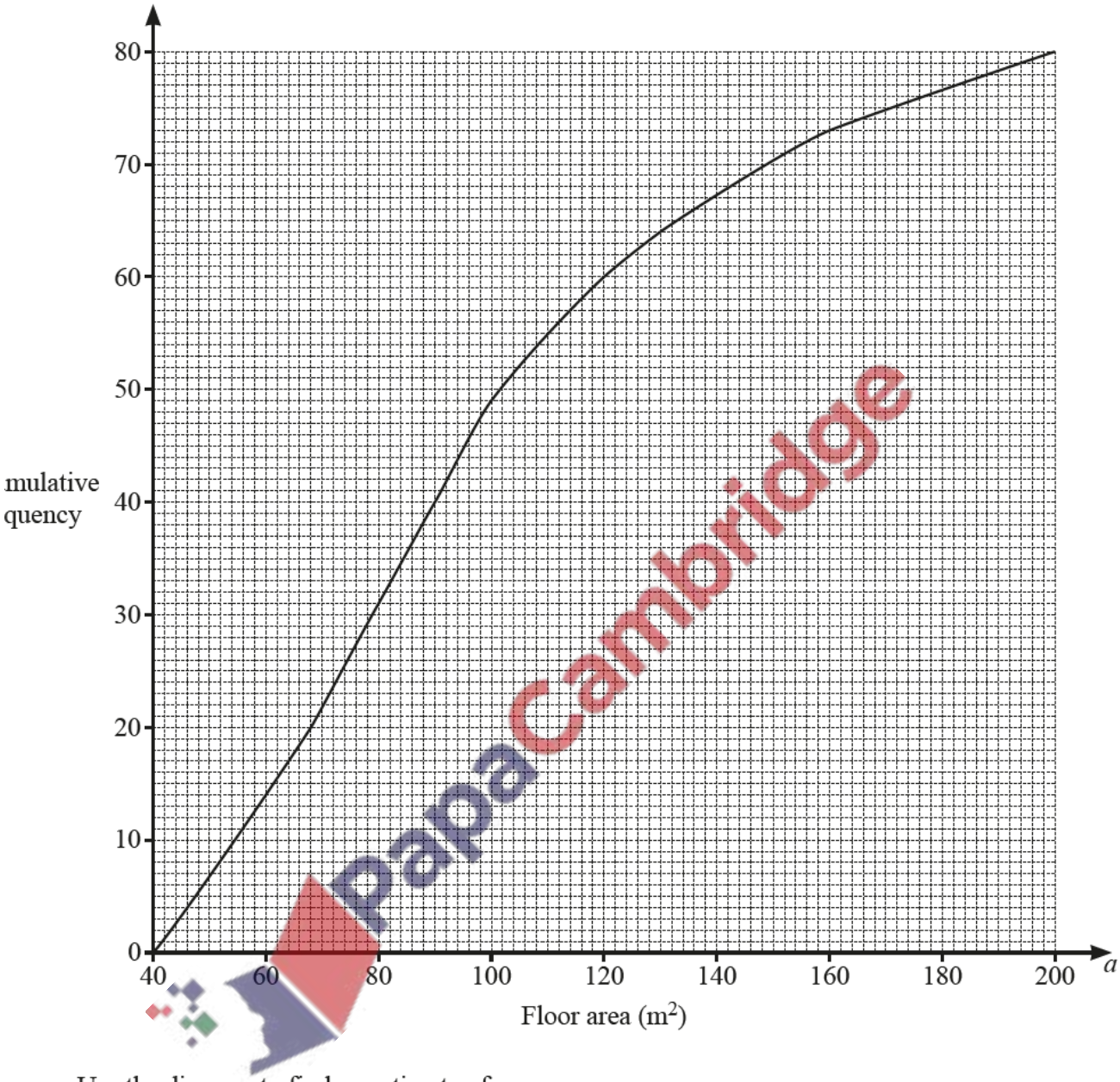
(iii) Two boys are chosen at random from those with a mass greater than 70 kg.

Find the probability that one of them has a mass greater than 80 kg and the other has a mass of 80 kg or less.

..... [3]

10. Nov/2021/Paper_42/No.2

(a) The cumulative frequency diagram shows information about the floor area, $a\,m^2$, of each of 80 houses.



Use the diagram to find an estimate of

(i) the median,

..... m^2 [1]

(ii) the lower quartile,

..... m^2 [1]

(iii) the interquartile range,

..... m^2 [1]

(iv) the number of houses with a floor area greater than $120\,m^2$.

..... [2]

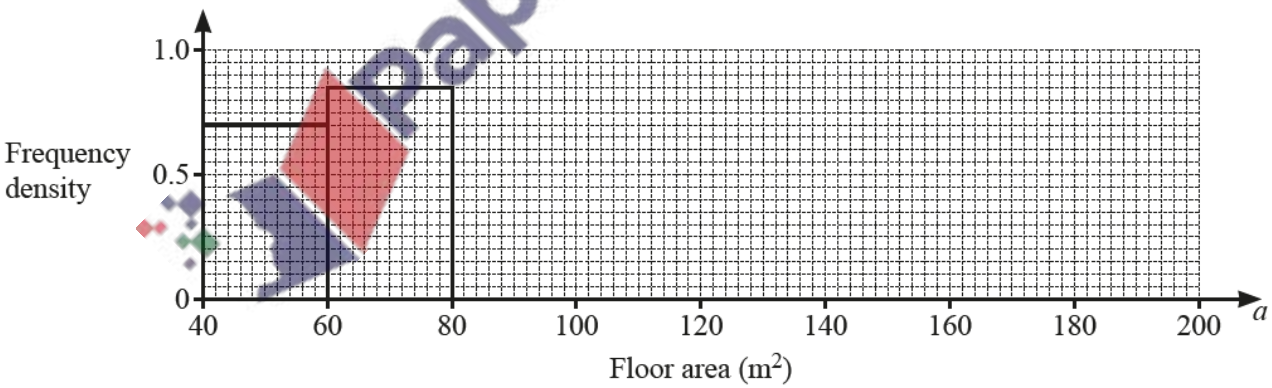
(b) The information about the 80 floor areas is shown in this frequency table.

Floor area ($a\,m^2$)	$40 < a \leqslant 60$	$60 < a \leqslant 80$	$80 < a \leqslant 100$	$100 < a \leqslant 130$	$130 < a \leqslant 160$	$160 < a \leqslant 200$
Frequency	14	17	18	15	9	7

(i) Calculate an estimate of the mean floor area.

..... m^2 [4]

(ii) Complete the histogram to show the information in the frequency table.



[4]

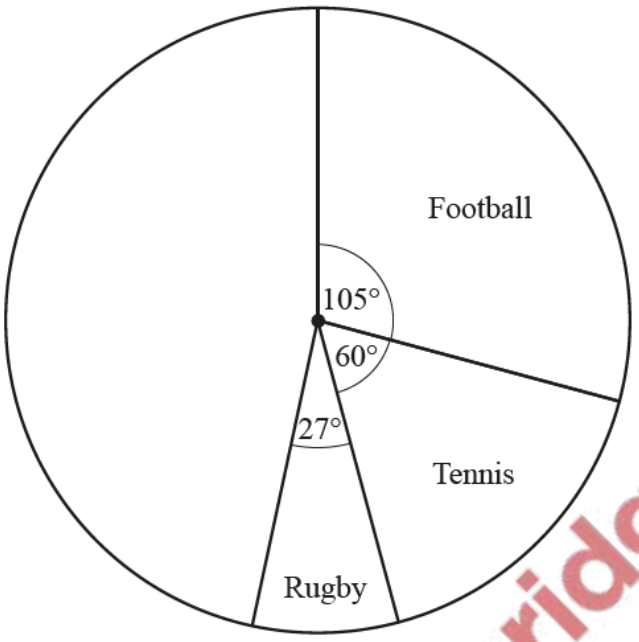
(iii) Two of the houses are picked at random.

Find the probability that one of the houses has a floor area greater than $130\,m^2$ and the other has a floor area $60\,m^2$ or less.

..... [3]

11. Nov/2021/Paper_43/No.8

(a) Jean asks 600 people to choose their favourite sport.
The pie chart shows some of this information.



(i) Show that 100 people choose tennis.

[1]

(ii) Work out how many people choose rugby.

..... [2]

(iii) 125 people choose cricket and the rest choose swimming.

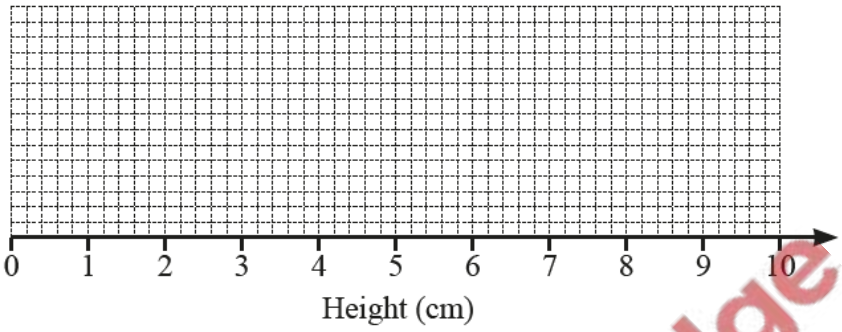
Complete the pie chart to show this information.

[2]

(b) The heights of some plants are measured:

- smallest height = 0.6 cm
- range = 8.1 cm
- median = 5.2 cm
- lower quartile = 3.4 cm
- interquartile range = 4.1 cm.

On the grid, draw a box-and-whisker plot to show this information.



[3]

(c) A dice is rolled 100 times.
The frequency table shows the results.

Score	1	2	3	4	5	6
Frequency	16	25	17	19	8	15

Find

(i) the range,

..... [1]

(ii) the mode,

..... [1]

(iii) the median.

..... [1]

(d) 50 students answer a mathematics question.
The table shows the time, t seconds, taken by each student to answer the question.

Time (t seconds)	$10 < t \leqslant 20$	$20 < t \leqslant 25$	$25 < t \leqslant 30$	$30 < t \leqslant 50$	$50 < t \leqslant 80$
Frequency	2	8	12	16	12

Calculate an estimate of the mean.

..... s [4]

12. March/2021/Paper_12/No.6

These are the heights of four sisters.

1.61 m 1.65 m 1.53 m 1.58 m

(a) Work out the range of these heights.
Give your answer in centimetres.

..... cm [2]

(b) The four sisters have a brother.
The range of the five heights is 18 cm.

Work out the two possible heights of the brother.

..... m or ..... m [2]

13. March/2021/Paper_12/No.10

The number of passengers on a bus is recorded each day for 14 days.

15	18	22	17	35	38	24
19	19	24	25	31	36	29

Complete the stem-and-leaf diagram.

1	
2	
3	

Key: 1 | 5 represents 15 passengers

[2]

14. March/2021/Paper_12/No.11

The mean of nine numbers is 17.
Seven of these numbers add to 132.
The other two numbers have a difference of 5.

Find the two numbers with a difference of 5.

..... , ... [3]

15. March/2021/Paper_22/No.3

The number of passengers on a bus is recorded each day for 14 days.

15	18	22	17	35	38	24
19	19	24	25	31	36	29

(a) Complete the stem-and-leaf diagram.

1	
2	
3	

Key: 1| 5 represents 15 passengers

[2]

(b) Find the median.

..... [1]

16. March/2021/Paper_22/No.17

Some students were asked how many books they each had in their school bags.
The table shows some of this information.

Number of books	5	6	7	8	9	10
Frequency	4	5	x	11	7	5

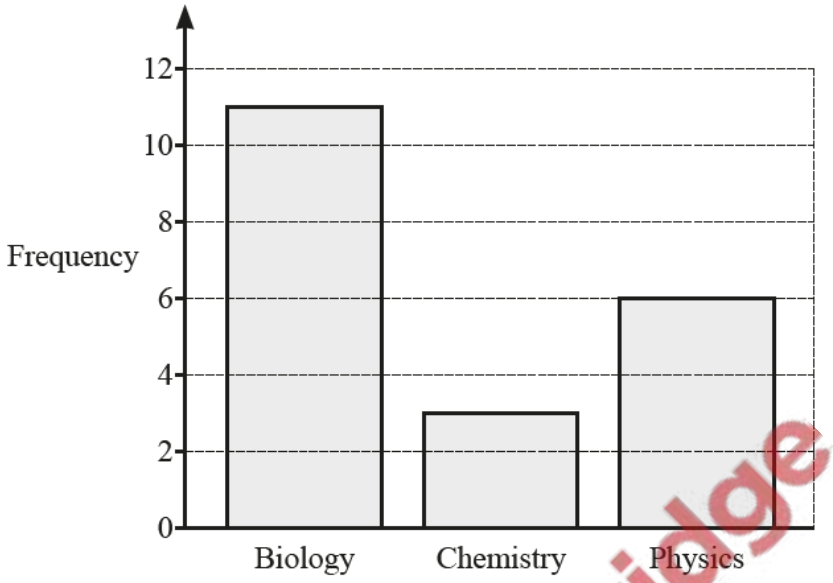
The mean number of books is 7.6 .

Calculate the value of x.

$x =$ ..... [3]

17. March/2021/Paper_32/No.1

20 students choose their favourite science subject.
The results are shown in the bar chart.



(a) Work out how many more students choose biology than physics.

..... [1]

(b) Write down the fraction of students whose favourite science subject is chemistry.

..... [1]

(c) One of the 20 students is picked at random.

Write down the probability that this student did **not** choose biology.

..... [2]

(d) Only **one** of the averages, median, mode and mean can be found for these results.

(i) Write down the average that can be found.

..... [1]

(ii) Find this average for these results.

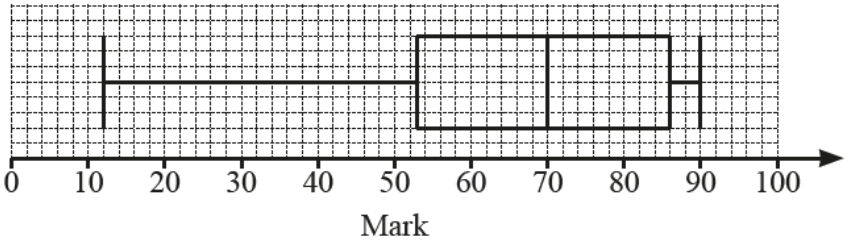
..... [1]

(iii) Explain why the range cannot be found.

..... [1]

18. March/2021/Paper_42/No.7

(a) The box-and-whisker plot shows information about the marks scored by some students in a test.



(i) Write down the median mark. ..... [1]

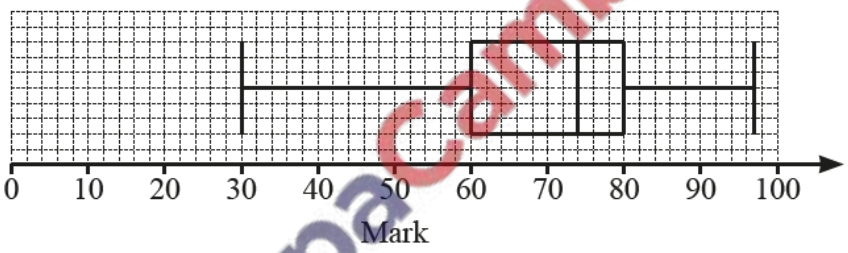
(ii) Work out the range.

..... [1]

(iii) Jais scored a mark in the test that was higher than the marks scored by 75% of the students.

Write down a possible mark for Jais. ..... [1]

(iv) This box-and-whisker plot shows information about the marks scored by the same students in a second test.



Make one comparison between the distributions of marks in the two tests.

.....

..... [1]

(b) The table shows information about the height, h cm, of each of 50 plants.

Height (h cm)	$0 < h \leqslant 20$	$20 < h \leqslant 30$	$30 < h \leqslant 34$	$34 < h \leqslant 40$	$40 < h \leqslant 60$
Frequency	4	9	20	15	2

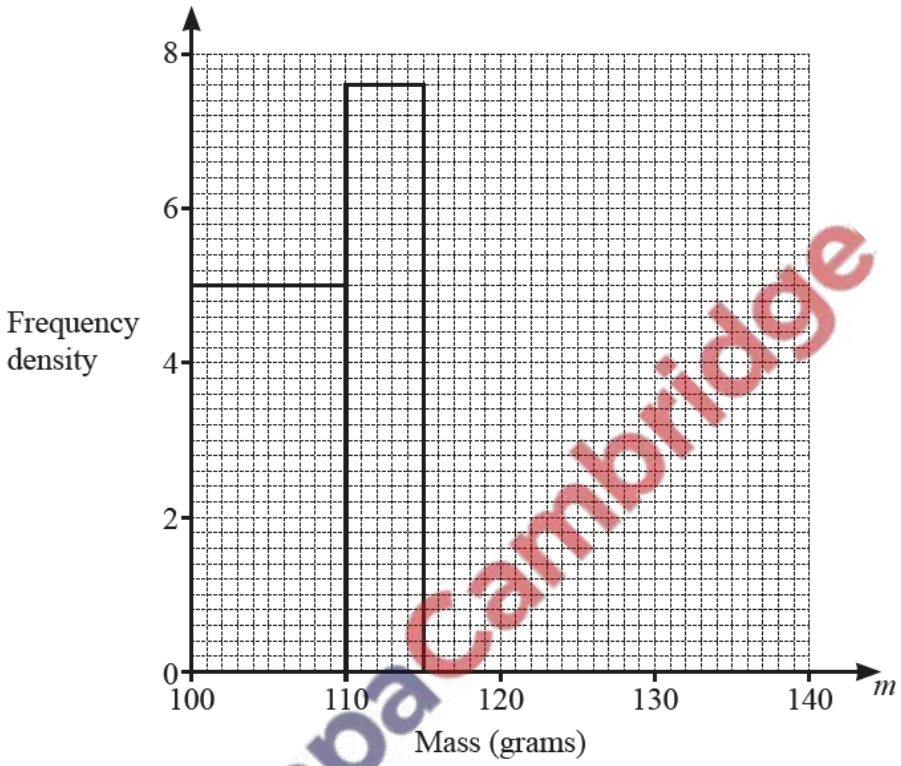
Calculate an estimate of the mean.

..... cm [4]

(c) Some apples are weighed and the mass, m grams, of each apple is recorded.
The table shows the results.

Mass (m grams)	$100 < m \leqslant 110$	$110 < m \leqslant 115$	$115 < m \leqslant 125$	$125 < m \leqslant 140$
Frequency	50	x	44	51

The histogram shows some of the information from the table.



(i) Work out the value of x.

$x =$ ..... [1]

(ii) Complete the histogram.

[2]

19. June/2021/Paper_11/No.4

The stem-and-leaf diagram shows the number of hours that each of 16 students studied last week.

1	2	5	6	8	
2	0	1	1	7	9
3	2	3	4	5	
4	4	5	7		

Key: 1|2 represents 12 hours

Find

(a) the median,

..... h [1]

(b) the mode,

..... h [1]

(c) the range.

..... h [1]

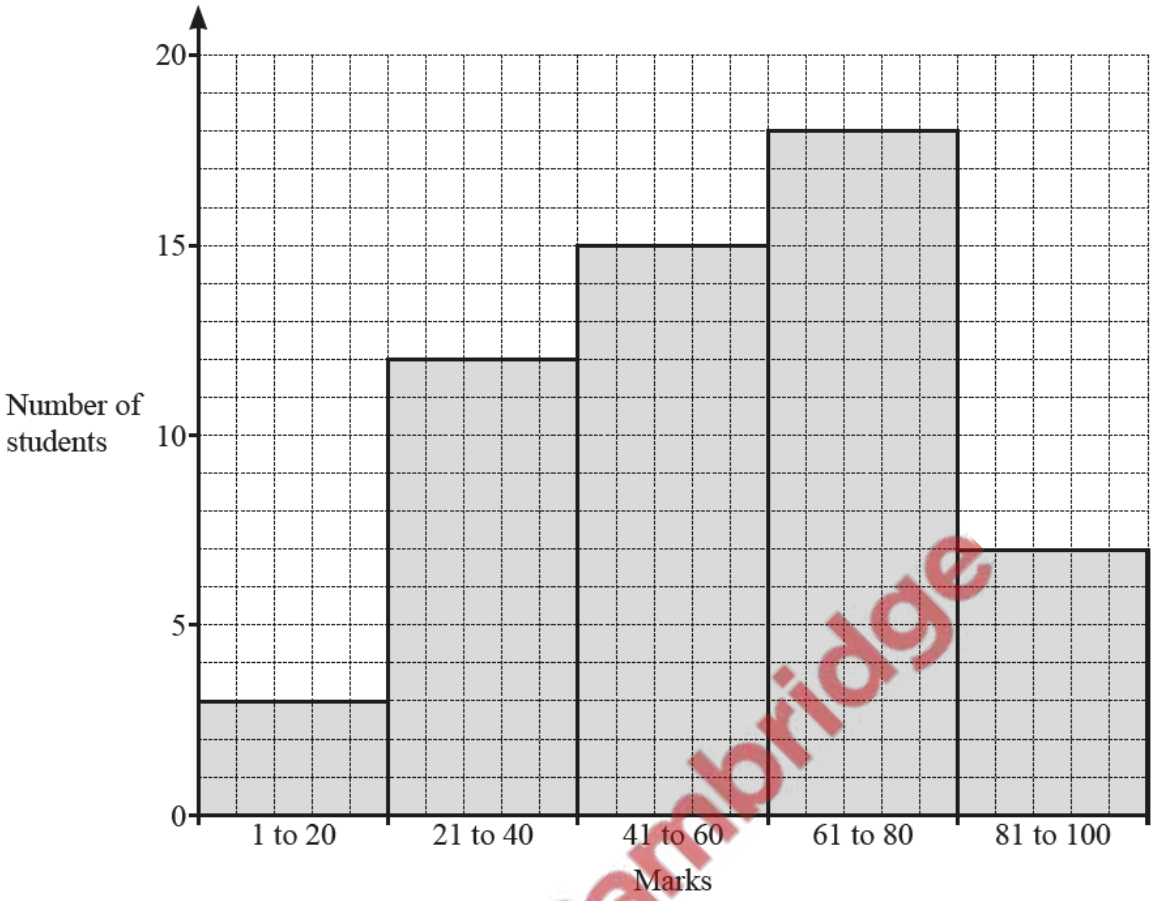
20. June/2021/Paper_12/No.4

253 306 185 270 386

Calculate the mean of these numbers.

..... [2]

21. June/2021/Paper_12/No.9



The bar chart shows the marks scored by a group of 55 students in an examination.

Work out the percentage of this group of students who scored marks from 21 to 80.

..... % [3]

22. June/2021/Paper_12/No.12

Emma has 15 mathematics questions to complete.
The stem-and-leaf diagram shows the time, in minutes, it takes her to complete each question.

0	3	5	6	7	7	8	8
1	1	2	2	3	6	6	6
2	0						

Key: 2 | 0 = 20 minutes

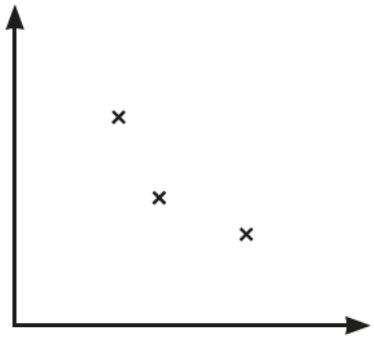
Complete the table.

Mode	..... min
Median	..... min
Range	..... min

[3]

23. June/2021/Paper_12/No.15

(a) Henrik draws this scatter diagram.

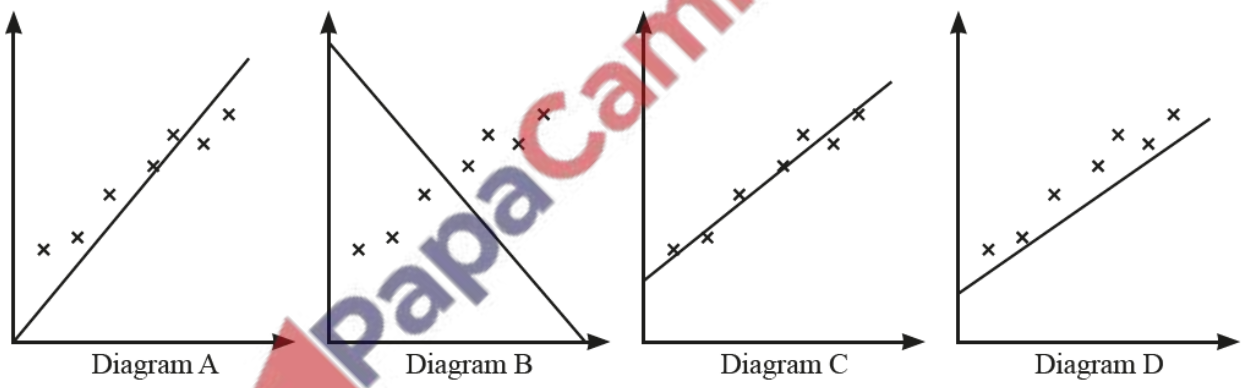


Put a ring around the **one** correct statement about this scatter diagram.

It shows no correlation.	It is not possible to tell if there is correlation as there are not enough points.	It shows negative correlation.	It shows positive correlation.

[1]

(b) Each of the four scatter diagrams shows the same set of data.
A line has been drawn on each diagram.



Complete the statement.

The line in Diagram ..... is the most appropriate line of best fit. [1]

24. June/2021/Paper_13/No.6

18 28 7 15 41 19 31 53

Calculate the mean of these numbers.

..... [2]

25. June/2021/Paper_21/No.3

The stem-and-leaf diagram shows the number of hours that each of 16 students studied last week.

1	2	5	6	8	
2	0	1	1	7	9
3	2	3	4	5	
4	4	5	7		

Key: 1|2 represents 12 hours

Find

(a) the median,

..... h [1]

(b) the mode,

..... h [1]

(c) the range.

..... h [1]

26. June/2021/Paper_22/No.3

Emma has 15 mathematics questions to complete.
The stem-and-leaf diagram shows the time, in minutes, it takes her to complete each question.

0	3	5	6	7	7	8	8
1	1	2	2	3	6	6	6
2	0						

Key: 2 | 0 = 20 minutes

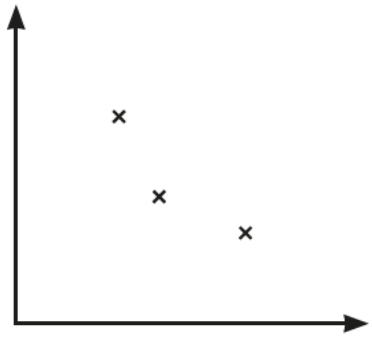
Complete the table.

Mode	..... min
Median	..... min
Range	..... min

[3]

27. June/2021/Paper_22/No.5

(a) Henrik draws this scatter diagram.



Put a ring around the **one** correct statement about this scatter diagram.

It shows no correlation.	It is not possible to tell if there is correlation as there are not enough points.	It shows negative correlation.	It shows positive correlation.

[1]

(b) Each of the four scatter diagrams shows the same set of data.
A line has been drawn on each diagram.

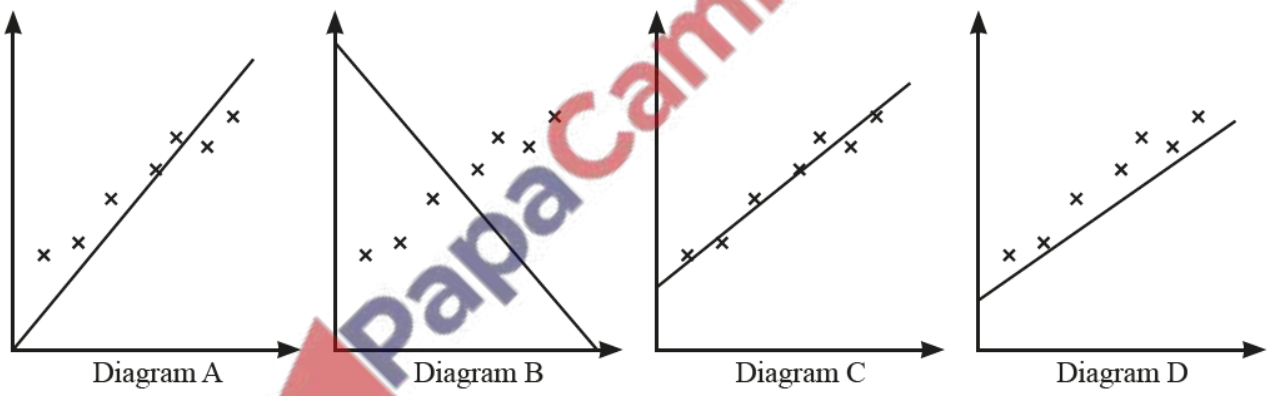


Diagram A Diagram B Diagram C Diagram D

Complete the statement.

The line in Diagram ..... is the most appropriate line of best fit. [1]

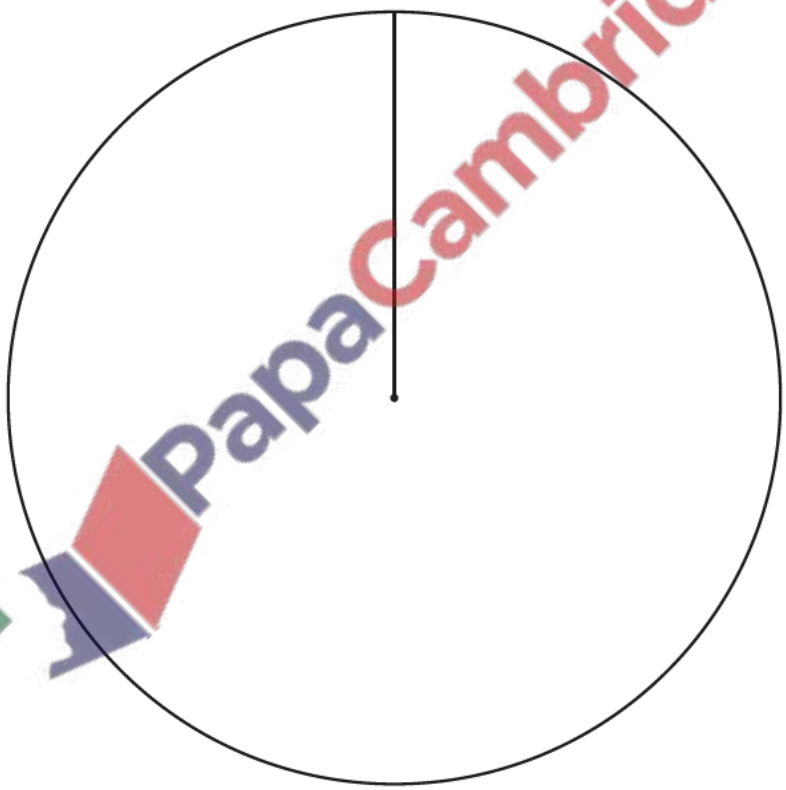
28. June/2021/Paper_31/No.2

(a) Anika asks 15 friends how many marbles they have.
The results are shown in the table.

Number of marbles	Frequency	Pie chart sector angle
0	2	
1 to 10	8	
11 to 50	4	
More than 50	1	

(i) Complete the table. [2]

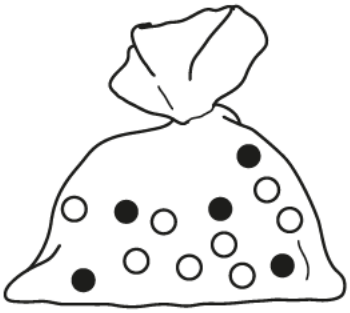
(ii) Complete the pie chart.



[2]

(b)

Bag *A*



Bag *B*

Bag *A* contains 2 black marbles and 3 white marbles.
Bag *B* contains 5 black marbles and 8 white marbles.

(i) Write down the probability that a marble picked at random from bag *A* is black.

..... [1]

(ii) Toby says,

'You are more likely to pick a black marble at random from bag *B* than from bag *A* because bag *B* has more black marbles.'

Is Toby correct?
Give a reason for your answer.

..... because ..... [2]

(iii) Toby adds some marbles to bag *B*.
The probability of picking a black marble at random from either bag is now the same.

Work out the smallest number of black marbles and white marbles he adds to bag *B*.

Black .....

White ..... [2]

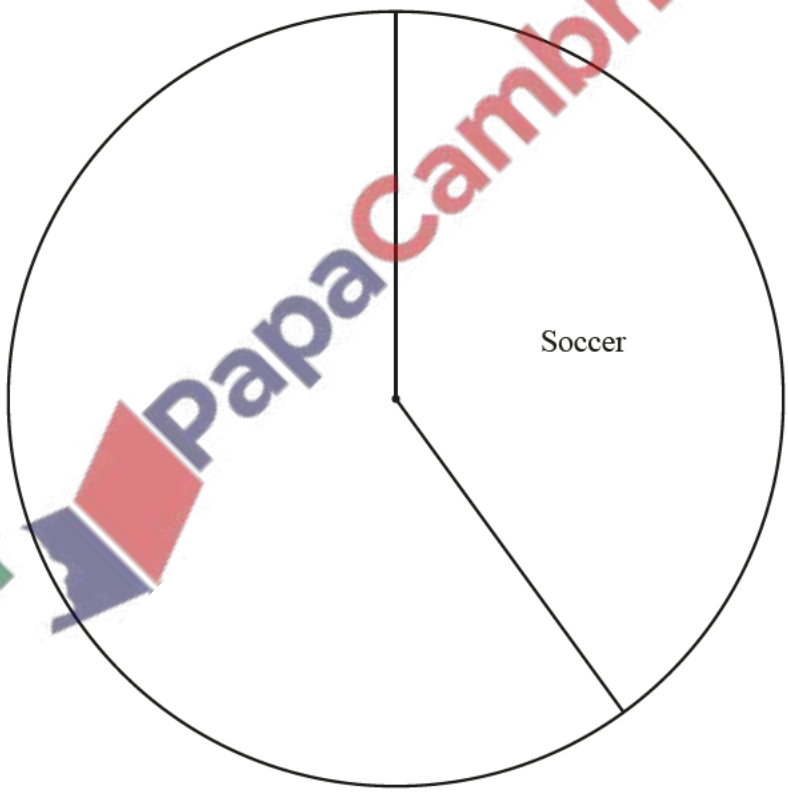
29. June/2021/Paper_32/No.7a

(a) The favourite sport of each of 135 boys is recorded in the table.

Favourite sport	Frequency	Pie chart sector angle
Soccer	54	144°
Hockey	45	
Rugby	27	
Other	9	

(i) Complete the table. [2]

(ii) Complete the pie chart to show these results.
The sector for soccer has been drawn for you.



[2]

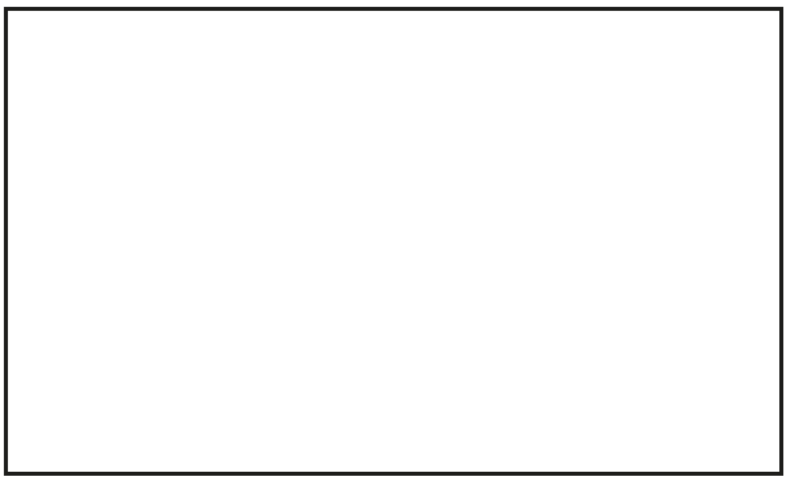
(iii) One of these boys is picked at random.

Find the probability that soccer is his favourite sport.

..... [1]

30. June/2021/Paper_33/No.2

(a) The diagram shows a scale drawing of Joel's rectangular garden.
The scale is 1 centimetre represents 8 metres.

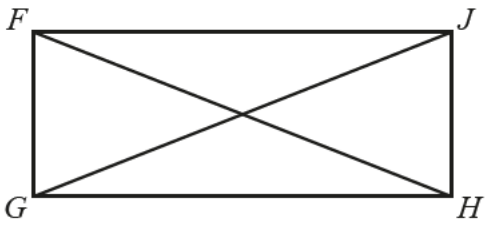


Scale: 1 cm to 8 m

Find the actual area of his garden.

..... m^2 [3]

(b) The diagram shows a rectangular gate, $FGHJ$, in Joel's garden.



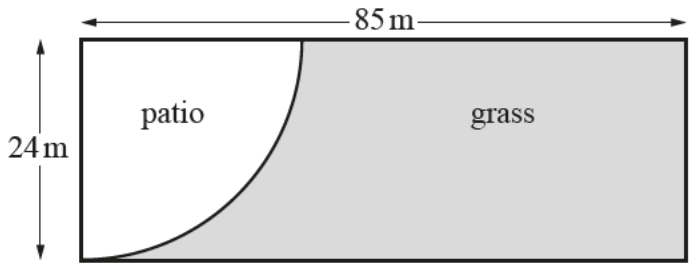
NOT TO SCALE

$GJ = 2.1$ m and $FG = 0.85$ m.

Find FJ.

$FJ =$ ..... m [3]

(c)



NOT TO SCALE

The diagram shows Brenda's rectangular garden.
There is a patio in the shape of a quarter-circle.

She wants to grow grass in the shaded part of the garden.
She needs 40 g of grass seed per square metre.
Grass seed is sold in 1 kg bags which cost $6.80 per bag.

Calculate the cost of the grass seed she needs to buy.

$ ..... [6]

31. June/2021/Paper_33/No.8

(a) 15 people take a test.
These are the test scores.

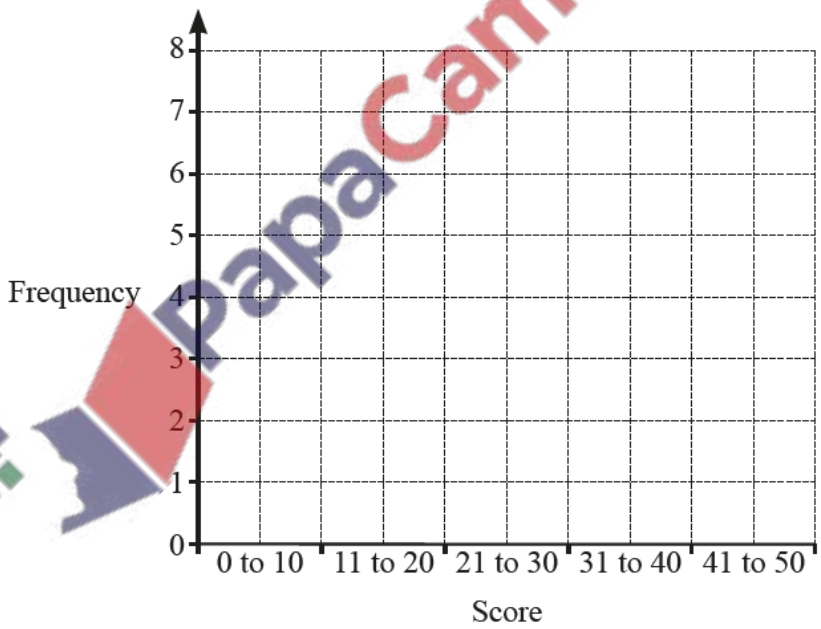
29	27	12	32	42
26	7	23	22	31
40	9	18	35	8

(i) Complete the frequency table.
You may use the tally column to help you.

Score	Tally	Frequency
0 to 10		
11 to 20		
21 to 30		
31 to 40		
41 to 50		

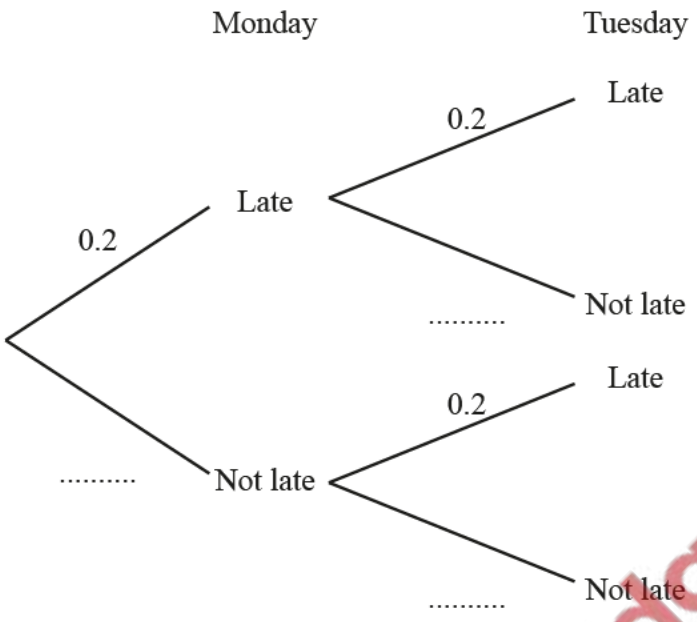
[2]

(ii) Use your table to complete the bar chart.



[2]

(b) On Monday and Tuesday, the probability that a train is late is 0.2 .



(i) Complete the tree diagram. [1]

(ii) Use the tree diagram to find the probability that a train is

(a) late on both days,

..... [2]

(b) not late on Monday and late on Tuesday.

..... [2]

32. June/2021/Paper_41/No.8

(a) The table shows information about the mass, in kilograms, of each of 50 children.

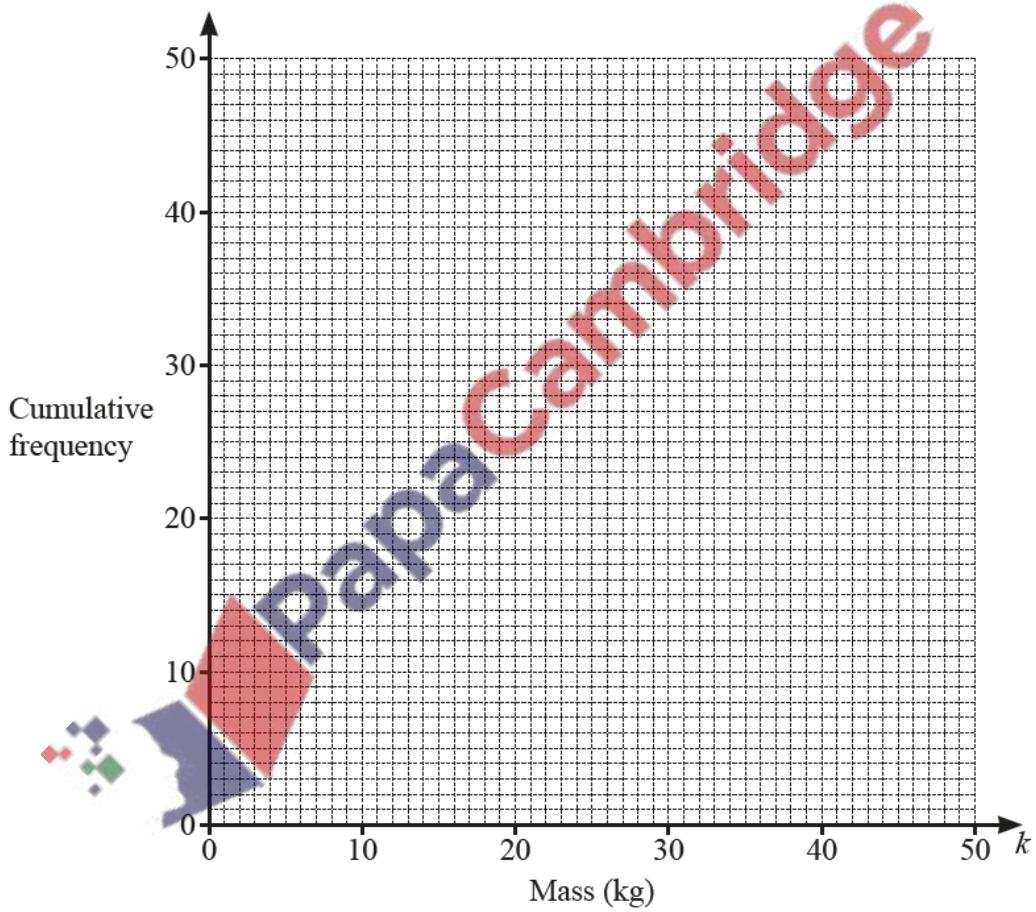
Mass ($k$kg)	$0 < k \leqslant 10$	$10 < k \leqslant 25$	$25 < k \leqslant 35$	$35 < k \leqslant 40$	$40 < k \leqslant 50$
Frequency	3	19	21	5	2

(i) Complete the cumulative frequency table.

Mass ($k$kg)	$k \leqslant 10$	$k \leqslant 25$	$k \leqslant 35$	$k \leqslant 40$	$k \leqslant 50$
Cumulative frequency					

[2]

(ii) On the grid, draw a cumulative frequency diagram to show this information.

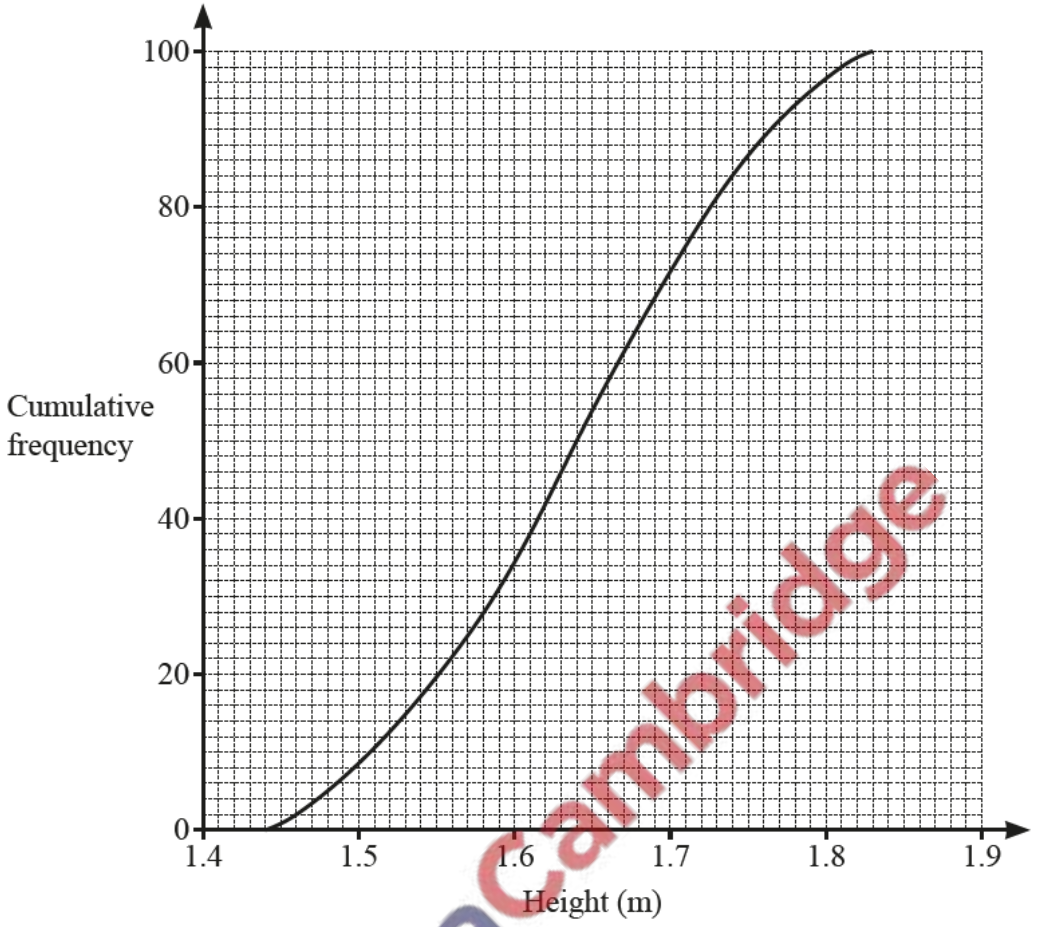


[3]

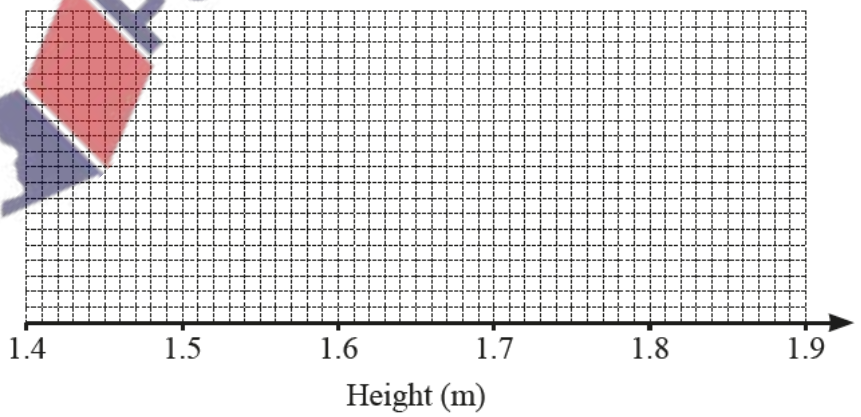
(iii) Use your diagram to find an estimate of the number of children with a mass of 32 kg or less.

..... [1]

(b) This cumulative frequency diagram shows information about the height, in metres, of each of 100 students.



The height of the tallest student is 1.83 metres.
The height of the shortest student is 1.45 metres.



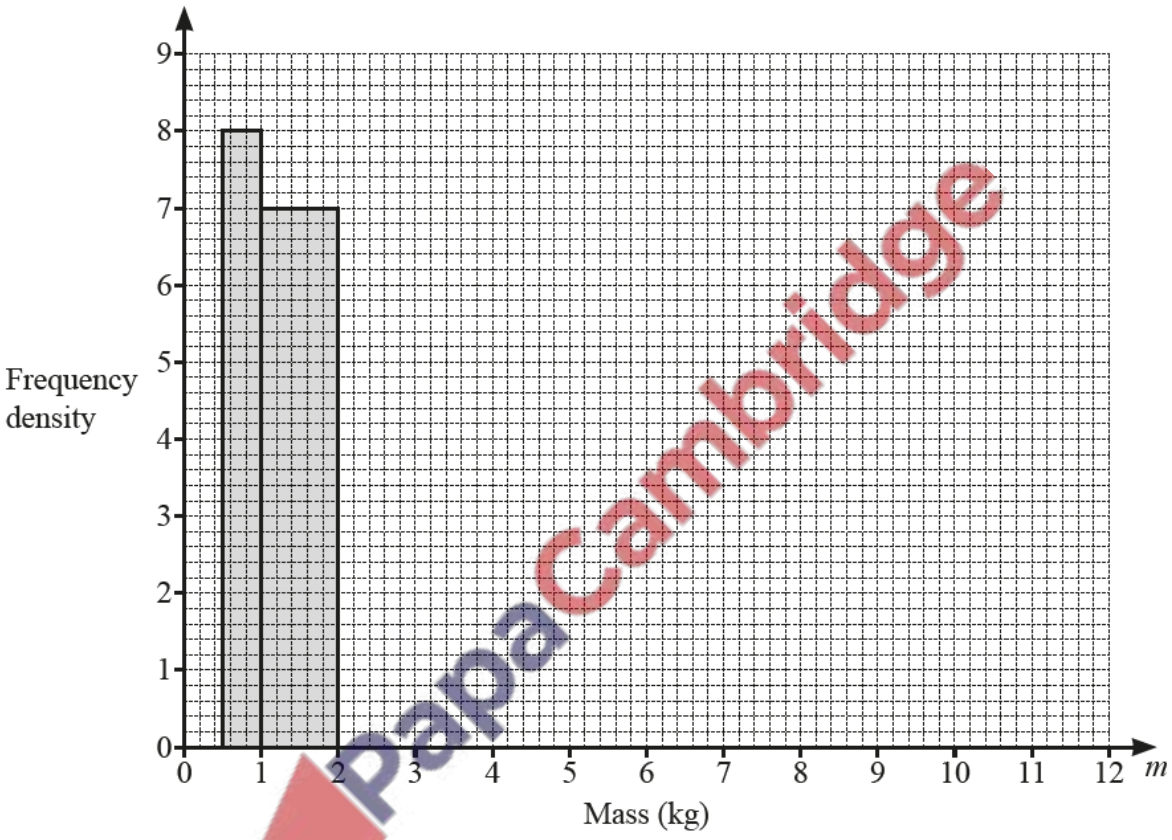
On this grid, draw a box-and-whisker plot for the heights of the 100 students. [4]

33. June/2021/Paper_42/No.4

(a) The mass, m kg, of each of 40 parcels in a warehouse is recorded.
The table shows information about the masses of these parcels.

Mass (m kg)	$0.5 < m \leqslant 1$	$1 < m \leqslant 2$	$2 < m \leqslant 4$	$4 < m \leqslant 7$	$7 < m \leqslant 12$
Frequency	4	7	15	10	4

(i) Complete the histogram to show this information.



[3]

(ii) Calculate an estimate of the mean mass of the parcels.

..... kg [4]

(iii) A parcel is picked at random from the 40 parcels.

Find the probability that this parcel has a mass of 2 kg or less.

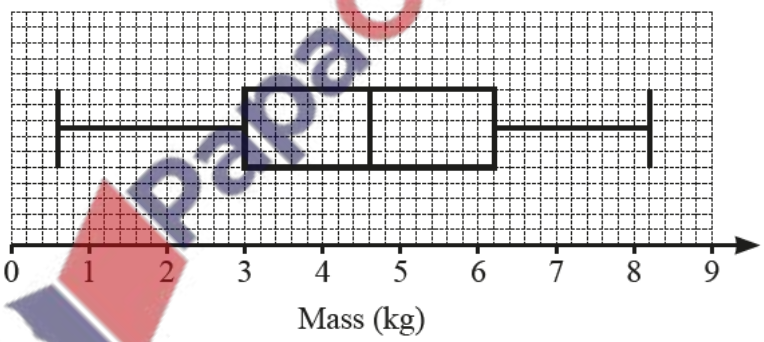
..... [1]

(iv) Two parcels are picked at random without replacement from those with a mass **greater than** 2 kg.

Work out the probability that one of them has a mass greater than 7 kg and the other has a mass of 4 kg or less.

..... [3]

(b) A van delivers parcels from a different warehouse.
The box-and-whisker plot shows information about the masses of the parcels in the van.



(i) Find the median.

..... kg [1]

(ii) Find the interquartile range.

..... kg [1]

(iii) Two parcels are removed from the van at the first delivery.
The masses of these parcels are 2.4 kg and 5.8 kg.

Describe the effect that removing these parcels has on the median mass of the remaining parcels.
Give a reason for your answer.

.....

..... [2]

34. June/2021/Paper_43/No.3

(a) Zoe's test scores last term were 6 7 7 7 8 9 9 10 10.

Find

(i) the range,

..... [1]

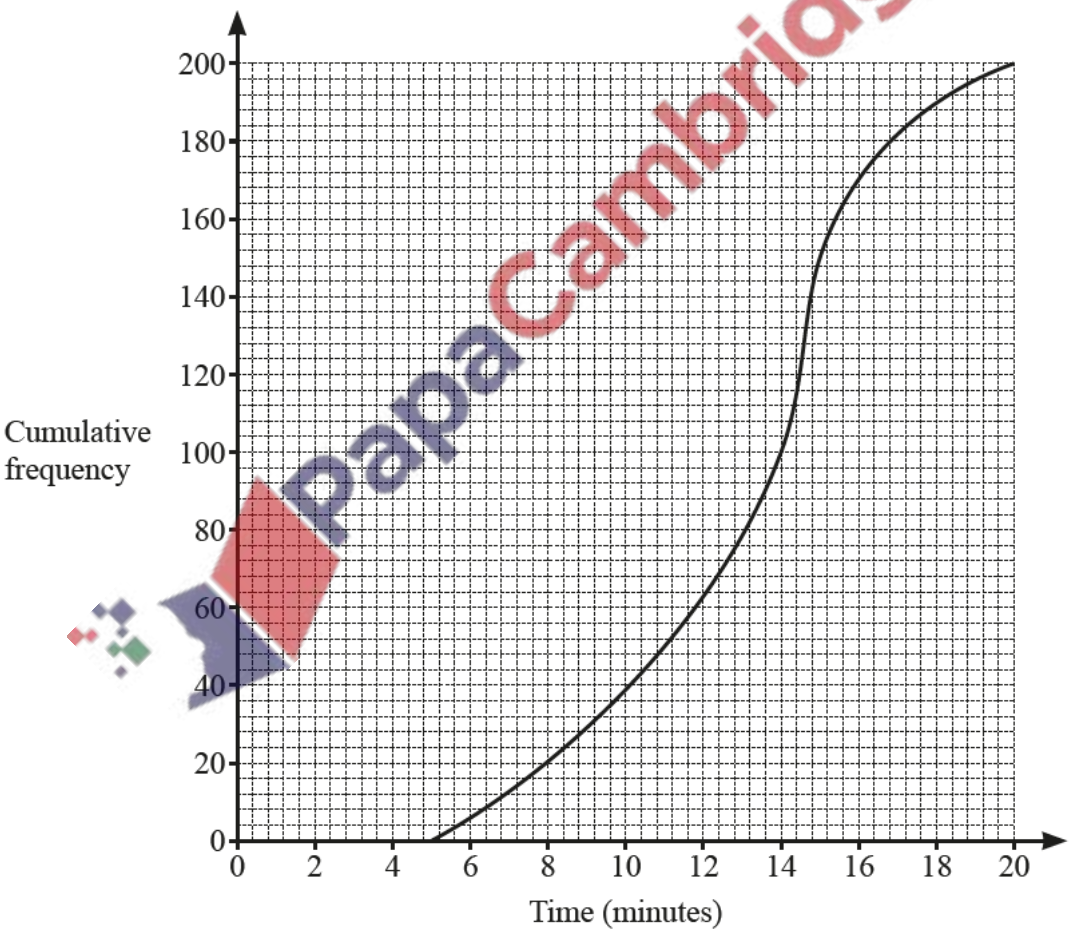
(ii) the mode,

..... [1]

(iii) the median.

..... [1]

(b) The cumulative frequency diagram shows information about the time taken by each of 200 students to solve a problem.



Use the diagram to find an estimate of

(i) the median,

..... min [1]

(ii) the interquartile range.

..... min [2]

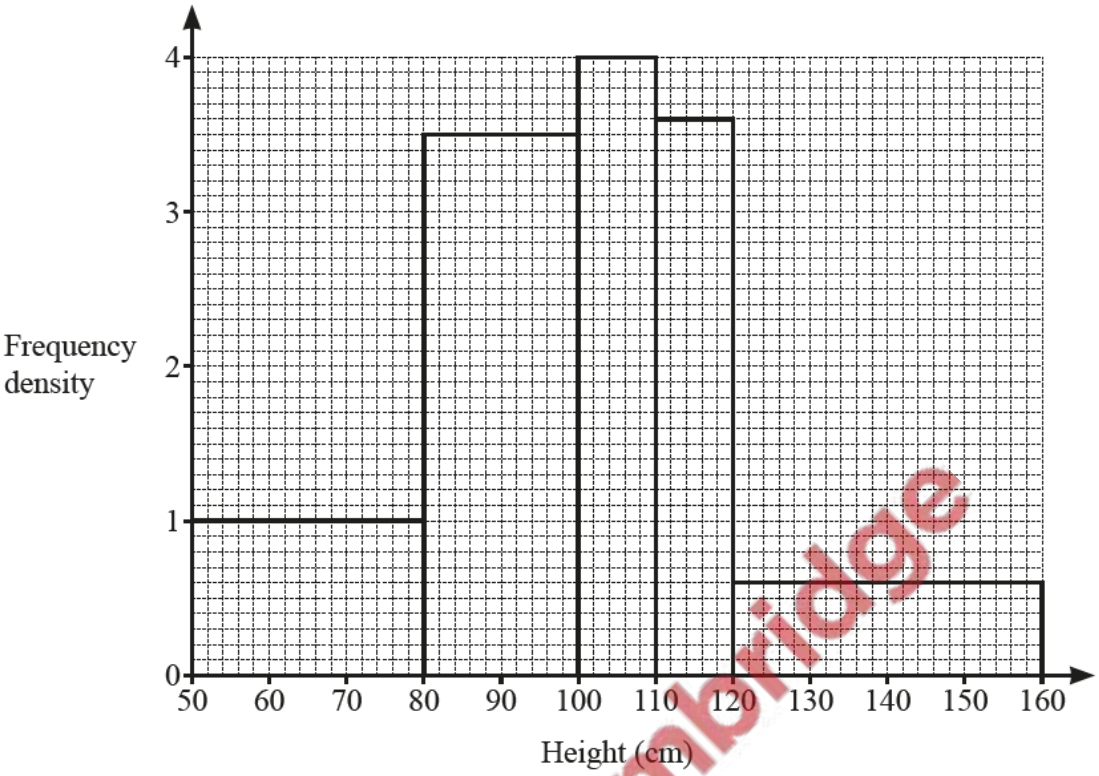
(c) The test scores of 200 students are shown in the table.

Score	5	6	7	8	9	10
Frequency	3	10	43	75	48	21

Calculate the mean.

..... [3]

(d) The height, in cm, of each of 200 plants is measured.
The histogram shows the results.



Calculate an estimate of the mean height.
You must show all your working.

..... cm [6]