Chhetri Academy

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GCSE MATHS

Statistics

Edexcel 1MA1 | Subtopic collection Topic 58

Cumulative frequency and box plots

Higher tier

Past paper question booklet

95	2003-2025	Higher
question groups	available papers	tier

Before you begin

1. Show working and use units where appropriate.
2. Use extra paper if you need more space.
3. Print at actual size (100%) for measurement questions.

Name _____ **Date** _____

Whole questions are retained for context; some parts cover other points. Legacy sources are labelled.

14. Mary recorded the heights, in centimetres, of the girls in her class.

She put the heights in order.

132	144	150	152	160	162	162	167
167	170	172	177	181	182	182	

(a) Find

(i) the lower quartile,

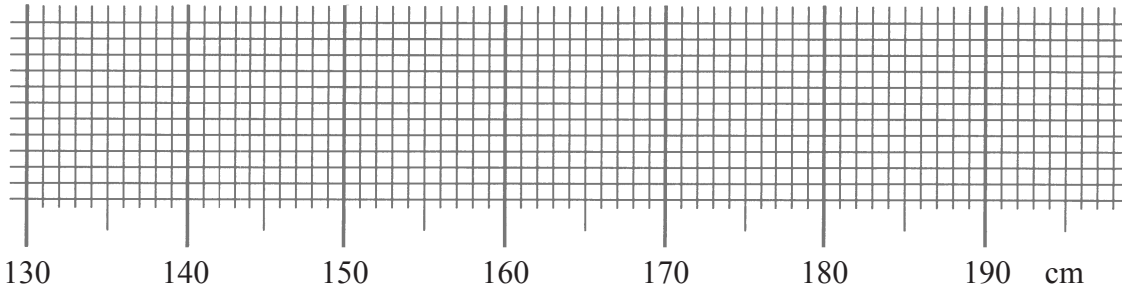
.....cm

(ii) the upper quartile.

.....cm

(2)

(b) On the grid, draw a box plot for this data.



(3)

Page Total

8. The table shows information about the heights of 40 bushes.

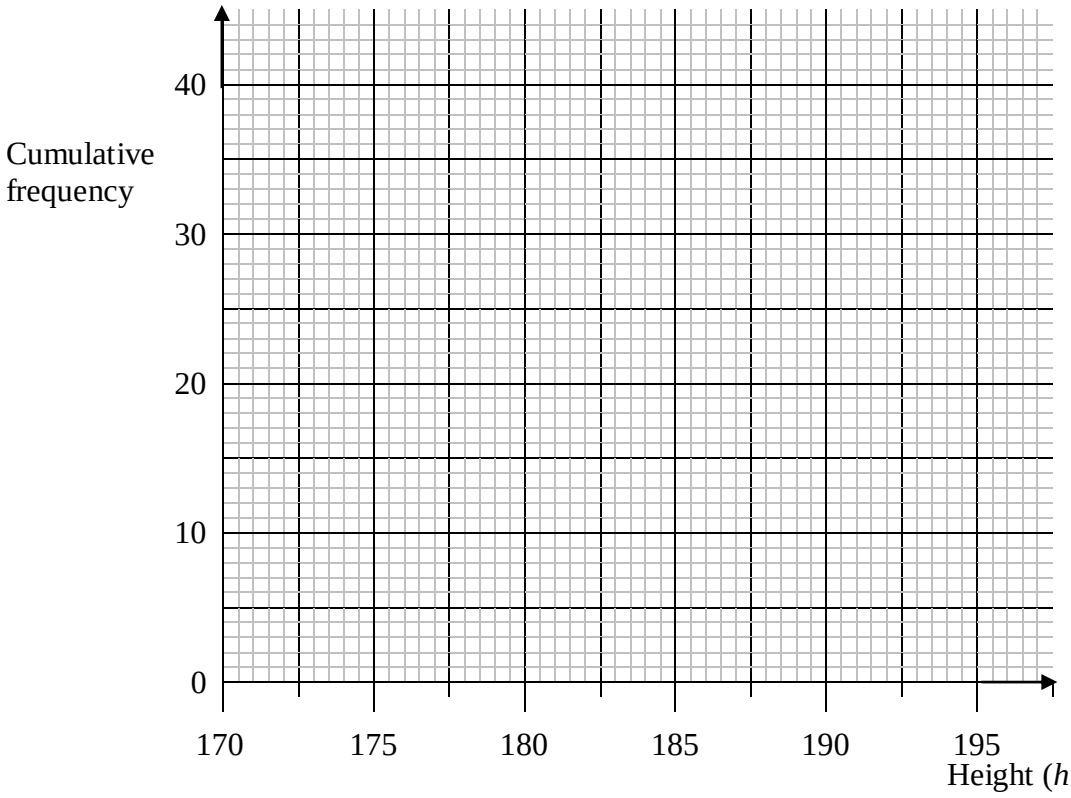
Height (h cm)	Frequency
$170 \leq h < 175$	5
$175 \leq h < 180$	18
$180 \leq h < 185$	12
$185 \leq h < 190$	4
$190 \leq h < 195$	1

(a) Complete the cumulative frequency table.

Height (h cm)	Cumulative Frequency
$170 \leq h < 175$	
$170 \leq h < 180$	
$170 \leq h < 185$	
$170 \leq h < 190$	
$170 \leq h < 195$	

(1)

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



(2)

(c) Use the graph to find an estimate for the median height of the bushes.

..... cm

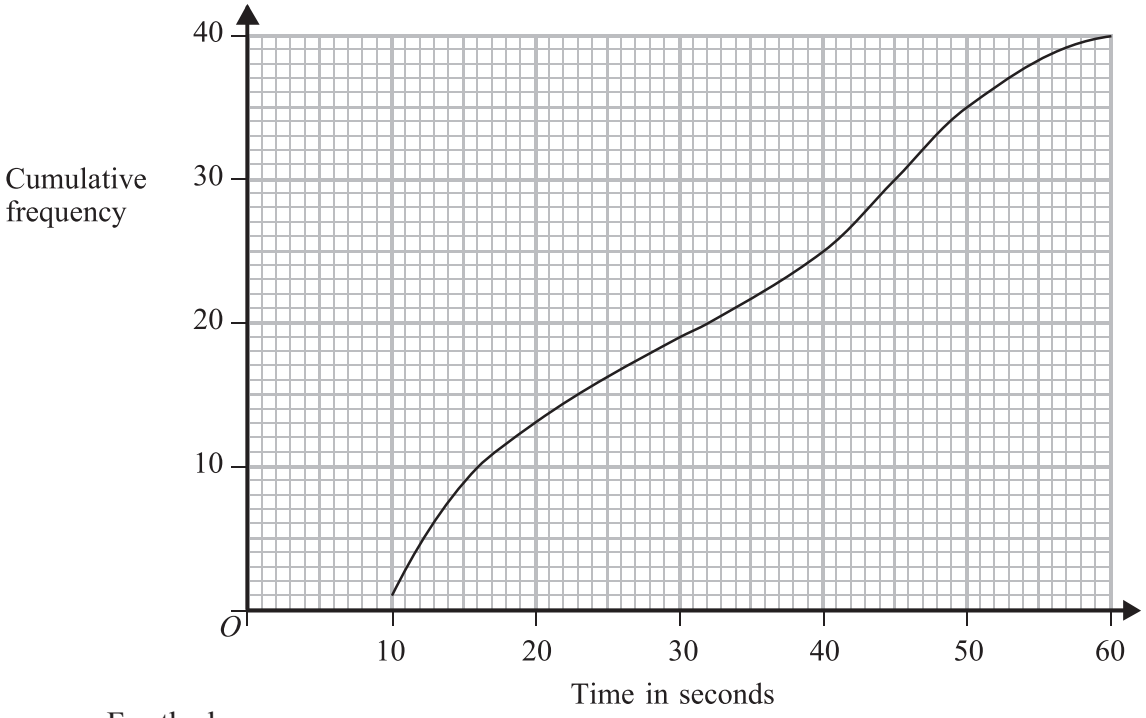
(1)

13. 40 boys each completed a puzzle.
The cumulative frequency graph opposite gives information about the times it took them to complete the puzzle.

(a) Use the graph to find an estimate for the median time.

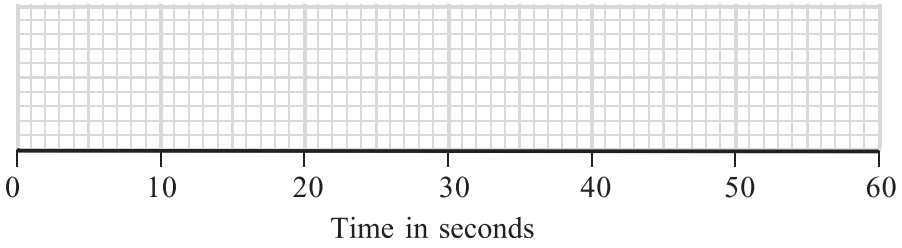
..... seconds
(1)

Blank



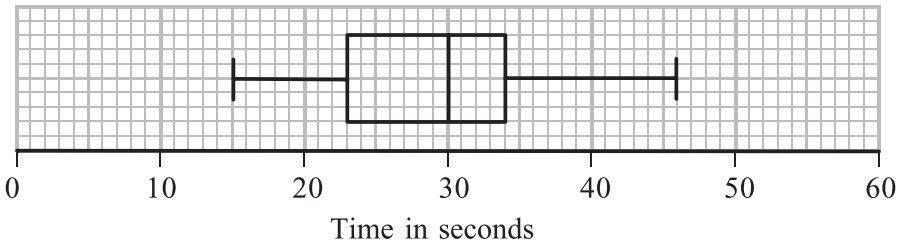
For the boys
the minimum time to complete the puzzle was 9 seconds
and the maximum time to complete the puzzle was 57 seconds.

(b) Use this information and the cumulative frequency graph to draw a box plot showing information about the boys' times.



(3)

The box plot below shows information about the times taken by 40 girls to complete the same puzzle.



(c) Make **two** comparisons between the boys' times and the girls' times.

.....

.....

(2)

Page Total

5. The table shows information about the number of hours that 120 children used a computer last week.

Number of hours (h)	Frequency
$0 < h \leqslant 2$	10
$2 < h \leqslant 4$	15
$4 < h \leqslant 6$	30
$6 < h \leqslant 8$	35
$8 < h \leqslant 10$	25
$10 < h \leqslant 12$	5

(a) Work out an estimate for the mean number of hours that the children used a computer. Give your answer correct to two decimal places.

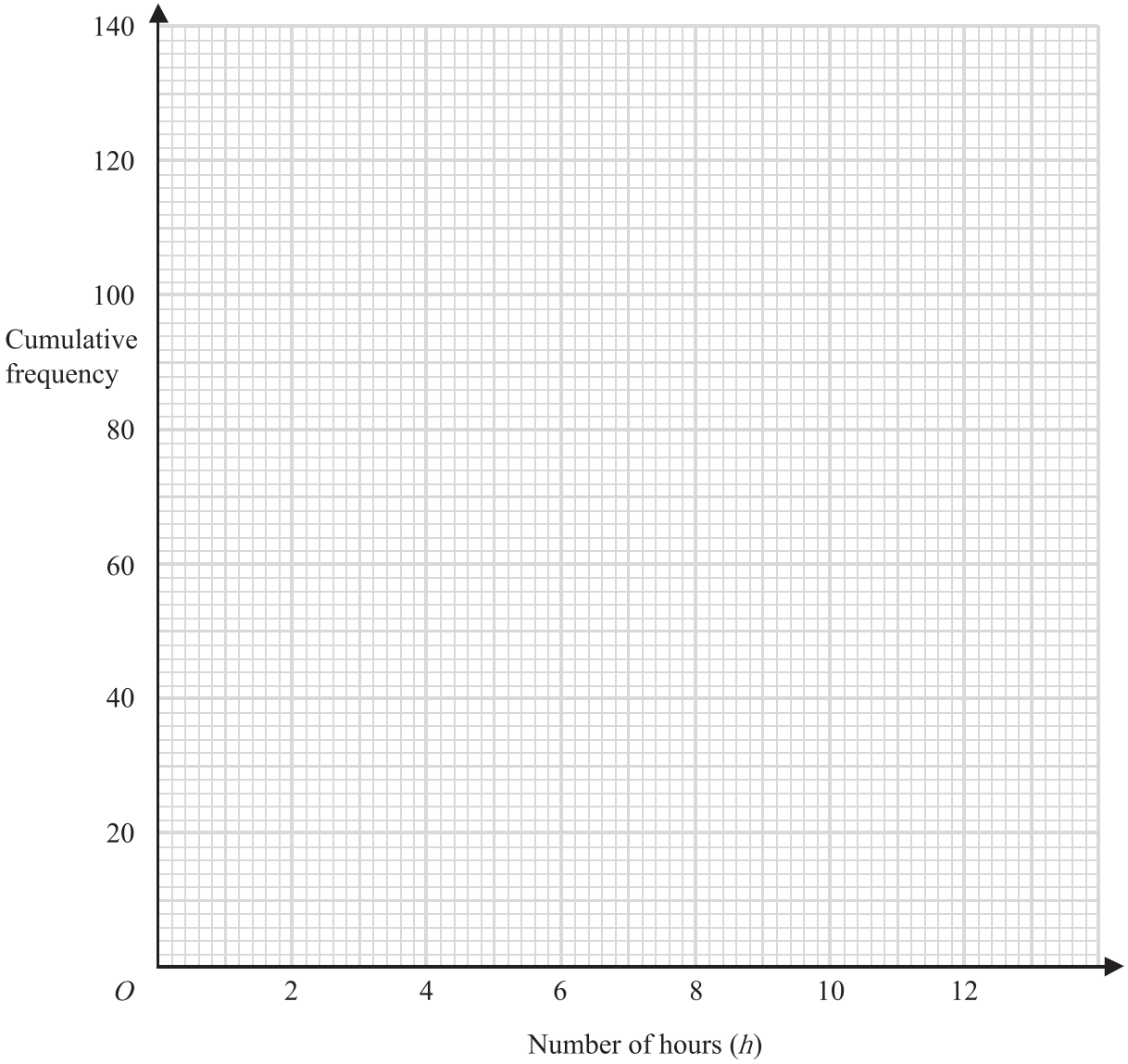
..... hours
(4)

(b) Complete the cumulative frequency table.

Number of hours (h)	Cumulative frequency
$0 < h \leqslant 2$	10
$0 < h \leqslant 4$	
$0 < h \leqslant 6$	
$0 < h \leqslant 8$	
$0 < h \leqslant 10$	
$0 < h \leqslant 12$	

(1)

blank



(c) On the grid, draw a cumulative frequency graph for your table.

(2)

(d) Use your graph to find an estimate for the number of children who used a computer for **less** than 7 hours last week.

.....

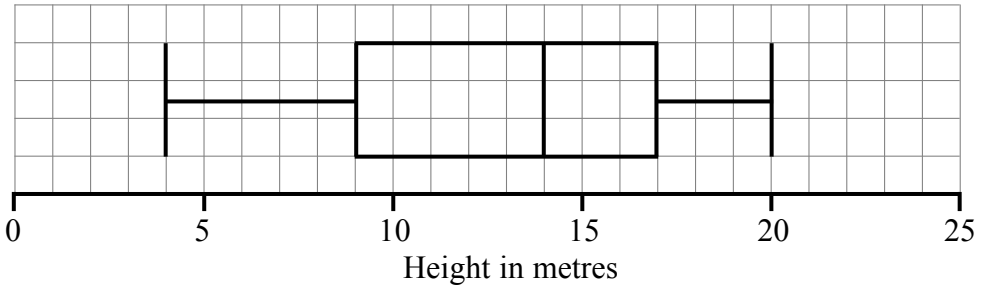
(2)

(Total 9 marks)

Q5

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12. The box plot gives information about the distribution of the heights of all the trees in a wood.



(a) Write down the median height of the trees.

..... m
(1)

(b) Work out the interquartile range of the heights of the trees.

..... m
(1)

There are 300 trees in the wood.

(c) Work out the number of trees in the wood with a height of 17 m or more.

.....
(2)

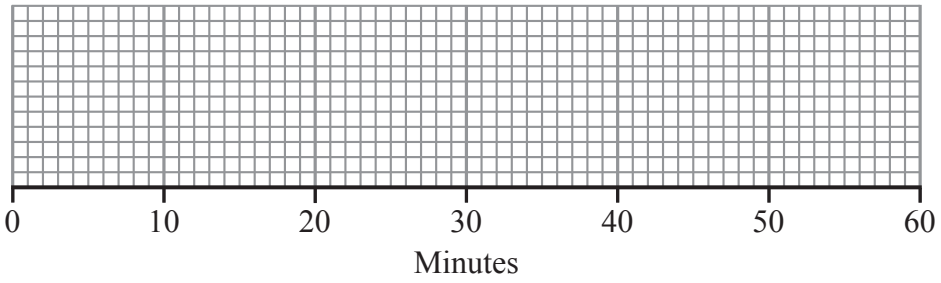
(Total 4 marks)

Q12

6. Mrs Raja set work for the students in her class.
She recorded the time taken, in minutes, for each student to do the work.
She used her results to work out the information in the table.

	Minutes
Shortest time	4
Lower quartile	14
Median	26
Upper quartile	30
Longest time	57

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



Q6

(Total 2 marks)

16. An operator took 100 calls at a call centre.
The table gives information about the time (t seconds) it took the operator to answer each call.

Time (t seconds)	Frequency
$0 < t \leqslant 10$	16
$10 < t \leqslant 20$	34
$20 < t \leqslant 30$	32
$30 < t \leqslant 40$	14
$40 < t \leqslant 50$	4

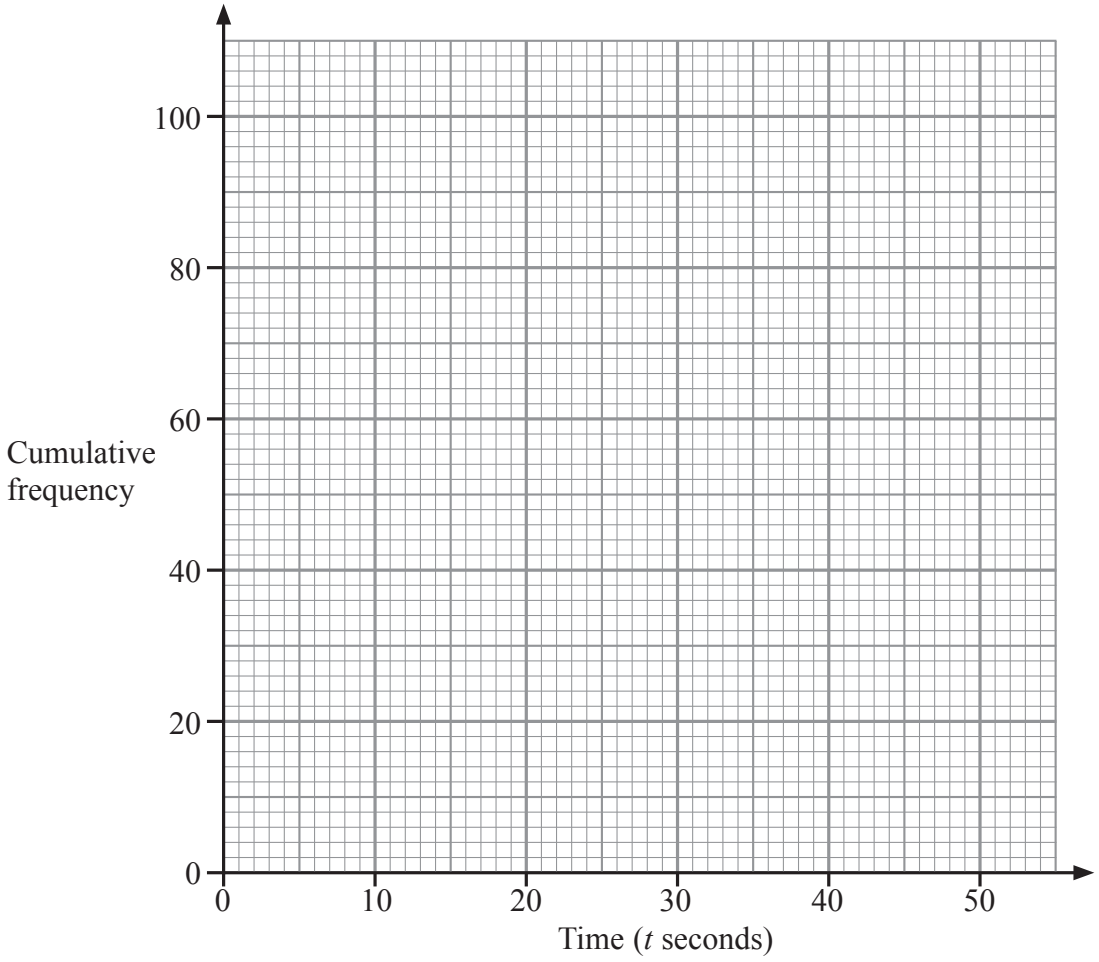
(a) Complete the cumulative frequency table.

Time (t seconds)	Cumulative frequency
$0 < t \leqslant 10$	16
$0 < t \leqslant 20$	
$0 < t \leqslant 30$	
$0 < t \leqslant 40$	
$0 < t \leqslant 50$	

(1)

Blank

blank



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

(2)

(c) Use your graph to find an estimate for the number of calls the operator took **more** than 18 seconds to answer.

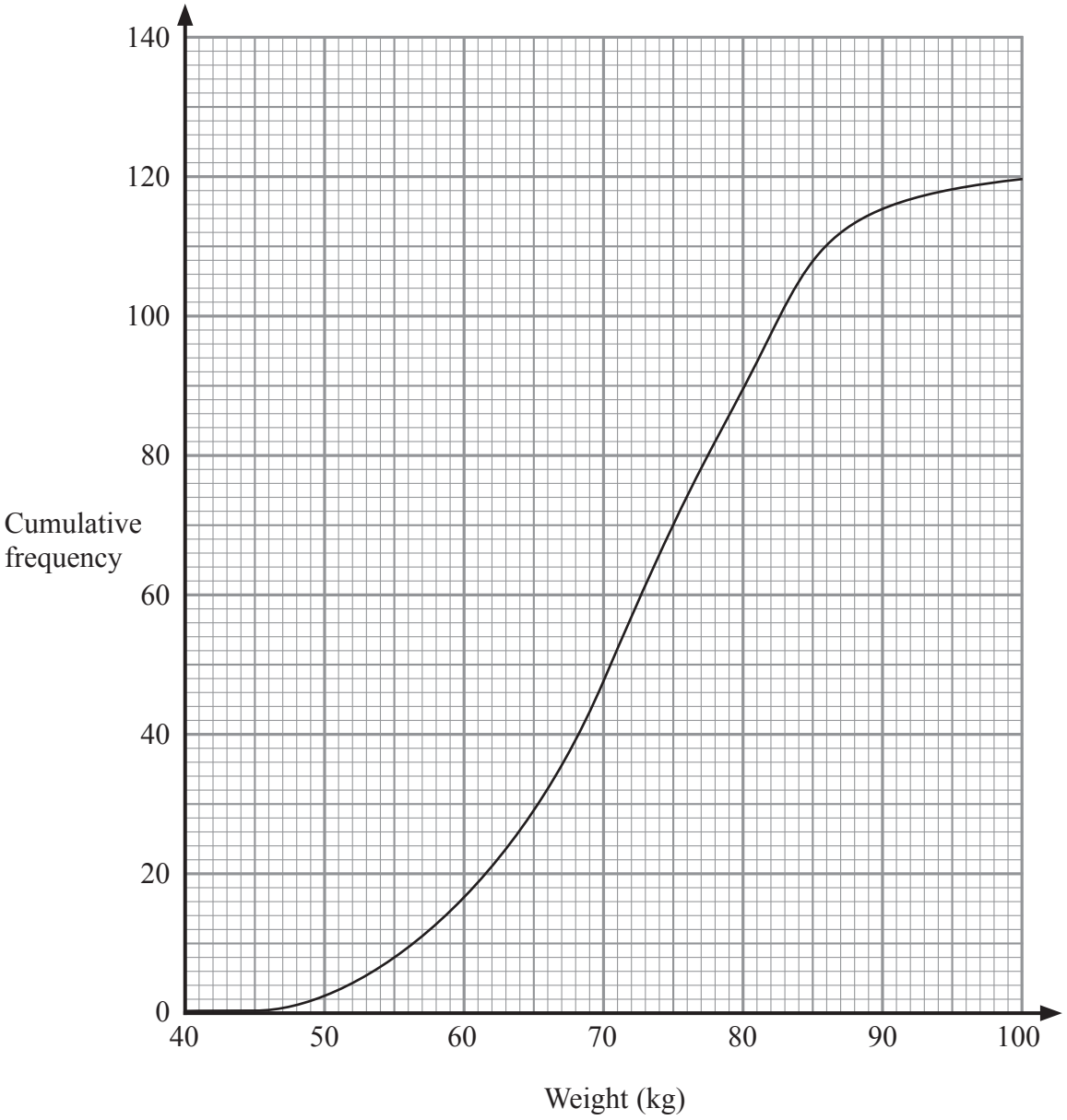
.....

(2)

Q16

(Total 5 marks)

11. Here is the cumulative frequency curve of the weights of 120 girls at Mayfield Secondary School.



Use the cumulative frequency curve to find an estimate for the

(i) median weight,

..... kg

(ii) interquartile range of the weights.

..... kg

(Total 3 marks)

Q11

17. Lucy did a survey about the amounts of money spent by 120 men during their summer holidays.

The cumulative frequency table gives some information about the amounts of money spent by the 120 men.

Amount (£A) spent	Cumulative frequency
$0 \leqslant A < 100$	13
$0 \leqslant A < 150$	25
$0 \leqslant A < 200$	42
$0 \leqslant A < 250$	64
$0 \leqslant A < 300$	93
$0 \leqslant A < 350$	110
$0 \leqslant A < 400$	120

(a) On the grid, draw a cumulative frequency diagram.

(2)

(b) Use your cumulative frequency diagram to estimate the median.

£ .....

(2)

A survey of the amounts of money spent by 200 women during their summer holidays gave a median of £205

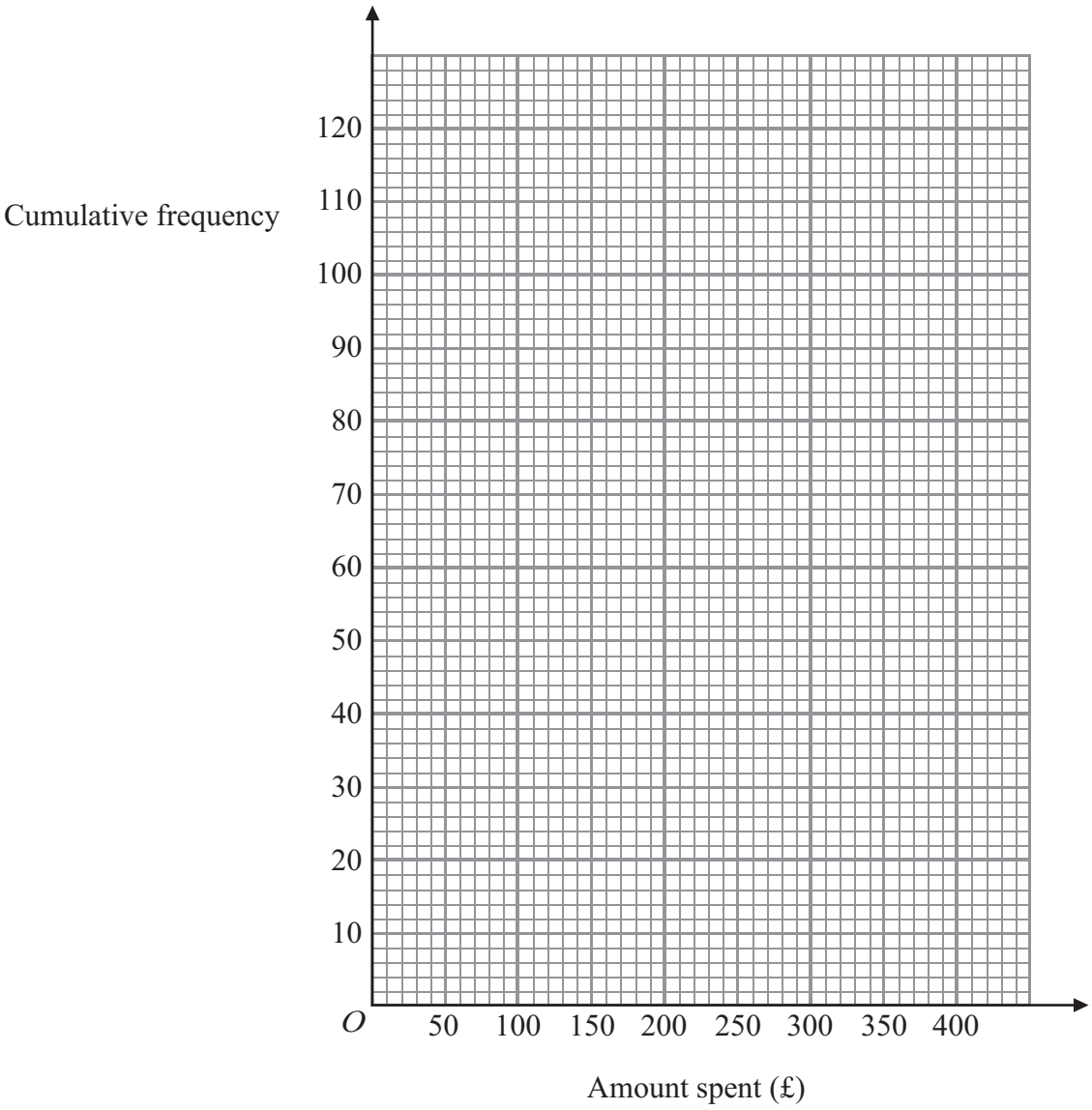
(c) Compare the amounts of money spent by the women with the amounts of money spent by the men.

.....

.....

(1)

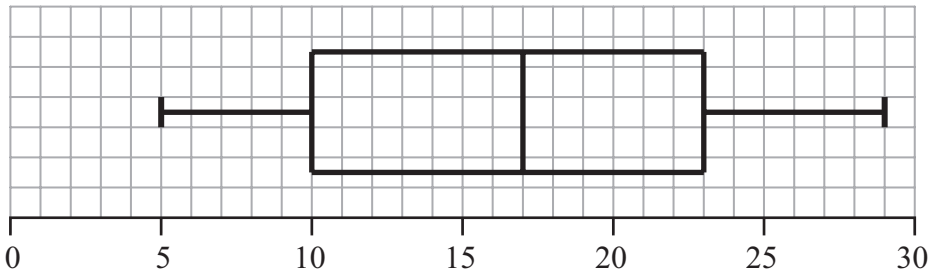
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Q17

(Total 5 marks)

18. The box plot gives information about the distribution of the weights of bags on a plane.



(a) Jean says the heaviest bag weighs 23 kg.

She is **wrong**.
Explain why.

.....

.....

(1)

(b) Write down the median weight.

..... kg

(1)

(c) Work out the interquartile range of the weights.

..... kg

(1)

There are 240 bags on the plane.

(d) Work out the number of bags with a weight of 10 kg or less.

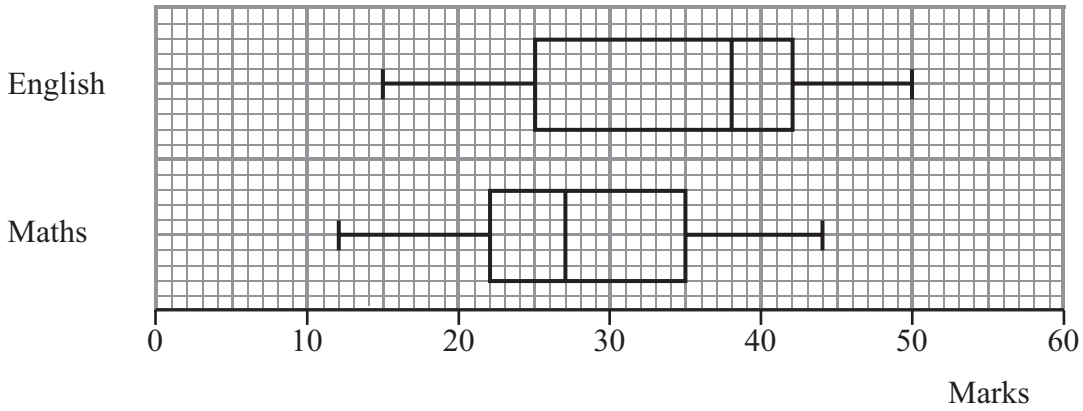
.....

(2)

Q18

(Total 5 marks)

17. The box plots show the distribution of marks in an English test and in a Maths test for a group of students.



(a) What is the highest mark in the English test?

.....

(1)

(b) Compare the distributions of the marks in the English test and marks in the Maths test.

1 .....

.....

2 .....

.....

(2)

(Total 3 marks)

Q17

22. The table gives some information about the delays, in minutes, of 80 flights.

Delay (n minutes)	Frequency
$0 < n \leqslant 20$	16
$20 < n \leqslant 30$	26
$30 < n \leqslant 40$	23
$40 < n \leqslant 50$	10
$50 < n \leqslant 60$	5

(a) Write down the modal class interval.

.....

(1)

(b) Complete the cumulative frequency table.

Delay (n minutes)	Cumulative Frequency
$0 < n \leqslant 20$	
$0 < n \leqslant 30$	
$0 < n \leqslant 40$	
$0 < n \leqslant 50$	
$0 < n \leqslant 60$	

(1)

(c) On the grid opposite, draw a cumulative frequency graph for your table.

(2)

(d) Use your graph to find an estimate for

(i) the median delay,

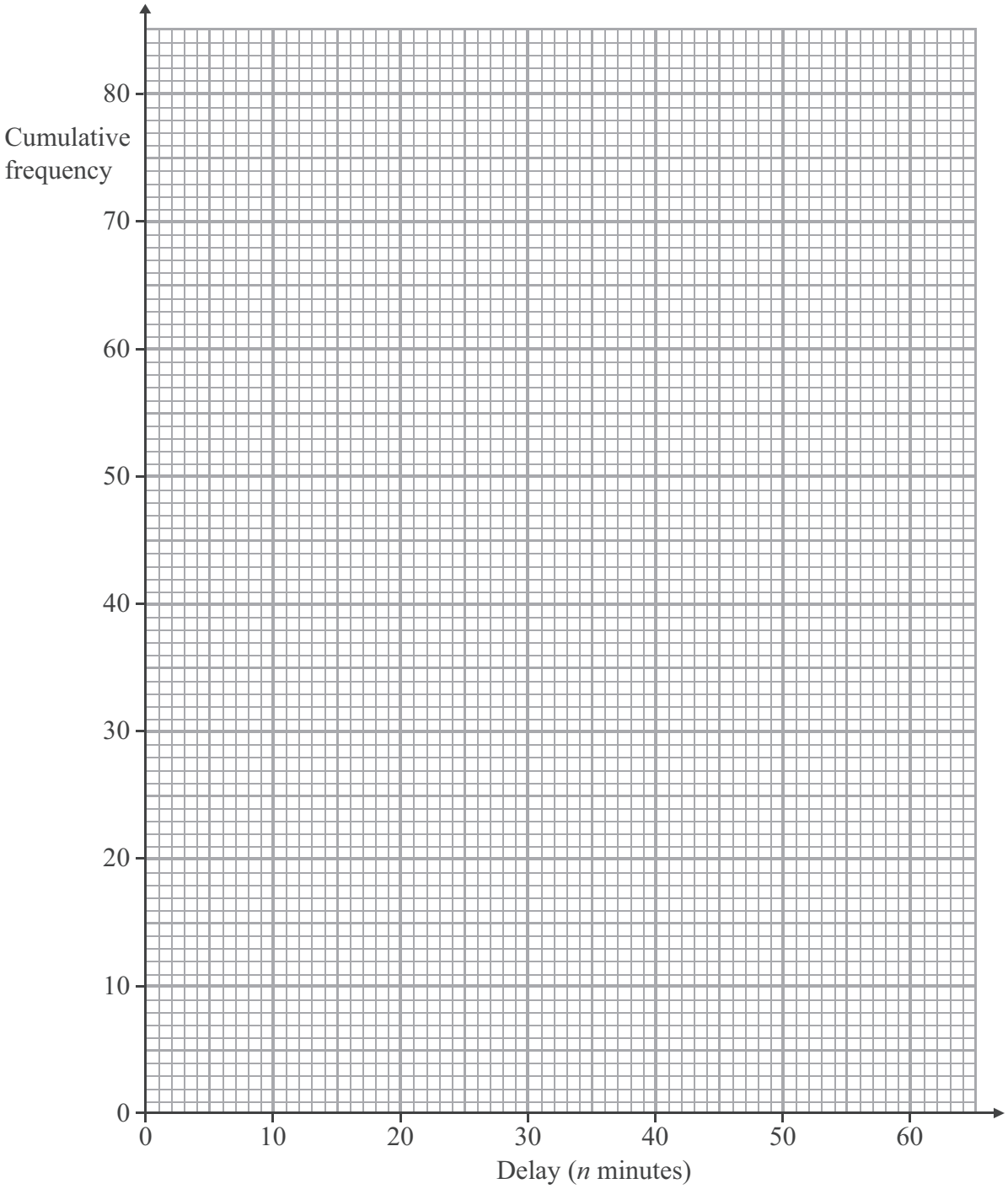
..... minutes

(ii) the interquartile range of the delays.

..... minutes

(3)

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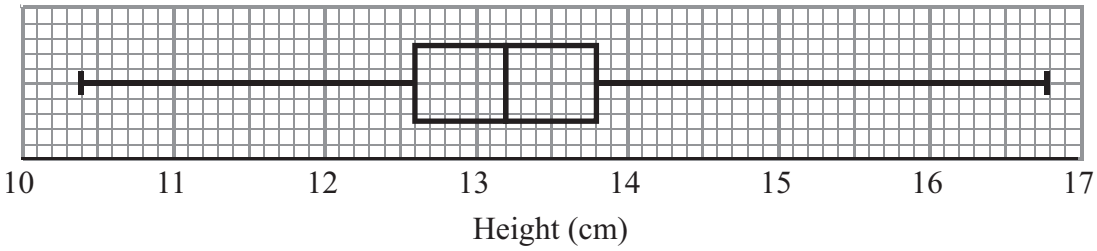


Q22

(Total 7 marks)

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20. Mr Green measured the height, in cm, of each tomato plant in his greenhouse.
He used the results to draw the box plot shown below.



(a) Write down the median height.

.....cm
(1)

(b) Work out the interquartile range.

.....cm
(2)

(c) Explain why the interquartile range may be a better measure of spread than the range.

.....

.....

(1)

(Total 4 marks)

Q20

19. There are 100 teachers at Maria's school.
Maria found out the age of each teacher.

The table gives information about her results.

Age (A years)	Frequency
$20 < A \leqslant 30$	26
$30 < A \leqslant 40$	35
$40 < A \leqslant 50$	21
$50 < A \leqslant 60$	12
$60 < A \leqslant 70$	6

(a) Complete the cumulative frequency table.

Age (A years)	Cumulative Frequency
$20 < A \leqslant 30$	26
$20 < A \leqslant 40$	
$20 < A \leqslant 50$	
$20 < A \leqslant 60$	
$20 < A \leqslant 70$	

(1)

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

(2)

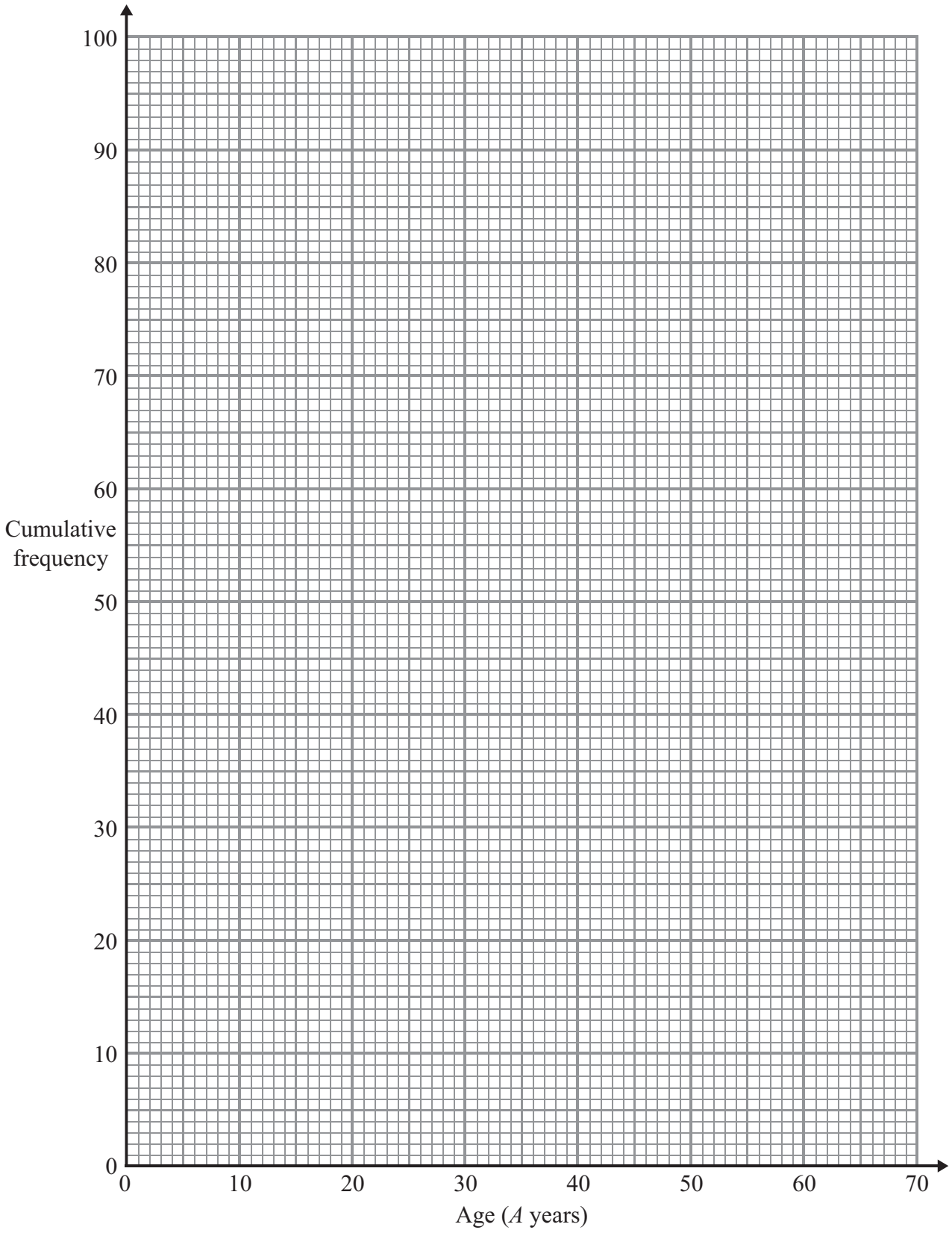
(c) Use your graph to find an estimate for the median age.

..... years
(1)

(d) Use your graph to find an estimate for the number of these teachers who are **older** than 56 years old.

.....
(2)

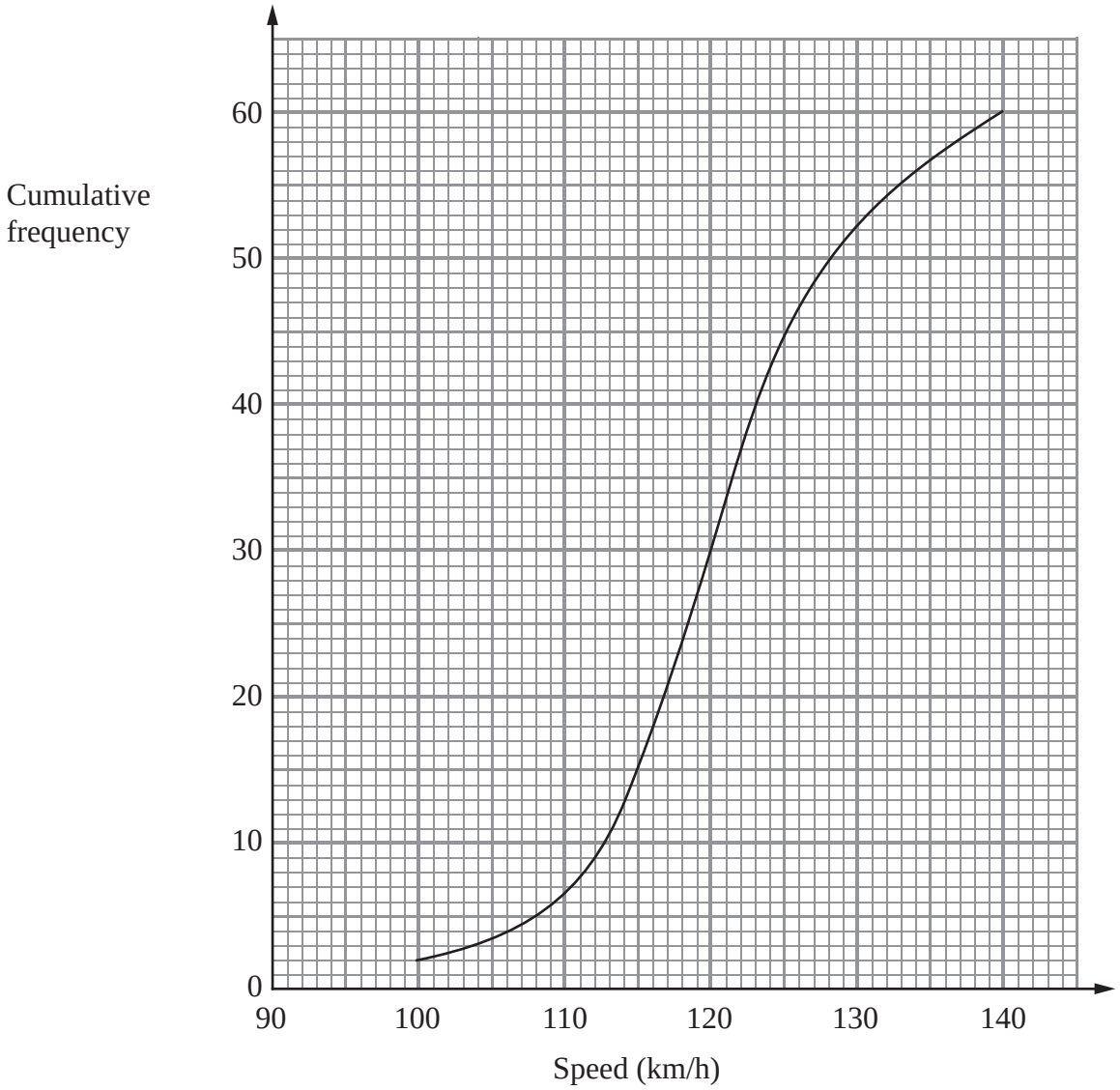
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Q19

(Total 6 marks)

9 The cumulative frequency graph shows information about the speeds of 60 cars on a motorway one Sunday morning.



(a) Use the graph to find an estimate for the median speed.

..... km/h

(1)

The speed limit on this motorway is 130 km/h.
The traffic police say that more than 20% of cars travelling on the motorway break the speed limit.

(b) Comment on what the traffic police say.

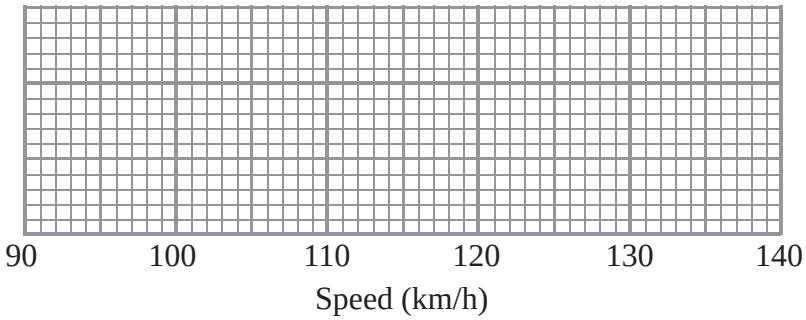
(3)

For these 60 cars

the minimum speed was 97 km/h
and the maximum speed was 138 km/h.

(c) Use the cumulative frequency graph and the information above to draw a box plot showing information about the speeds of the cars.

(3)



(Total for Question 9 is 7 marks)

7 Kelly recorded the length of time 48 teachers took to travel to school on Monday.

The table shows information about these travel times in minutes.

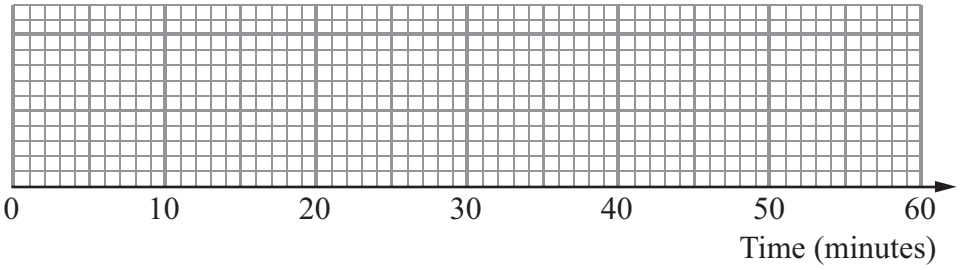
Least time	5
Greatest time	47
Median	28
Lower quartile	18
Upper quartile	35

(a) Work out the number of teachers with a travel time of 35 minutes or more.

.....

(2)

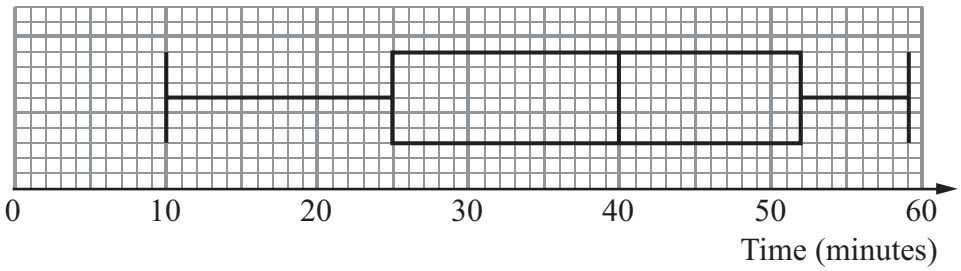
(b) On the grid, draw a box plot to show the information in the table.



(2)

Kelly then recorded the times the same 48 teachers took to travel to school on Tuesday.

The box plot shows some information about these times.



(c) Compare the travel times on Monday and on Tuesday.

.....

.....

.....

.....

(2)

(Total for Question 7 is 6 marks)

10 The table shows some information about the weights, in grams, of 60 eggs.

Weight (w grams)	Frequency		
$0 < w \leqslant 30$	0		
$30 < w \leqslant 50$	14		
$50 < w \leqslant 60$	16		
$60 < w \leqslant 70$	21		
$70 < w \leqslant 100$	9		

(a) Calculate an estimate for the mean weight of an egg.

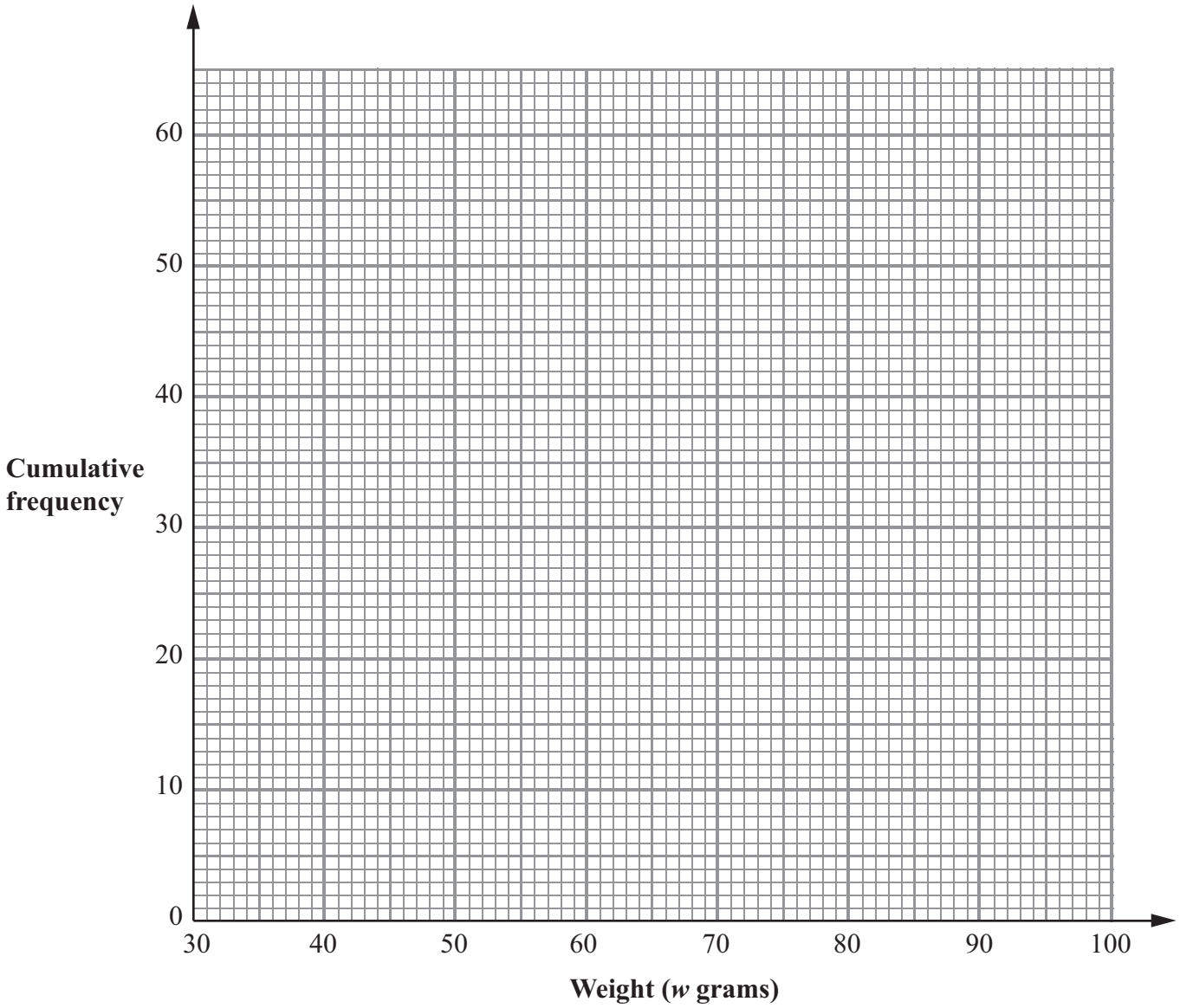
..... g

(4)

(b) Complete the cumulative frequency table.

Weight (w grams)	Cumulative frequency
$0 < w \leqslant 30$	0
$0 < w \leqslant 50$	
$0 < w \leqslant 60$	
$0 < w \leqslant 70$	
$0 < w \leqslant 100$	

(1)



(c) On the grid, draw a cumulative frequency graph for your table.

(2)

(d) Use your graph to find an estimate for the number of eggs with a weight greater than 63 grams.

.....

(2)

(Total for Question 10 is 9 marks)

18. The table shows information about the time, m minutes, it takes to show each of 120 films.

Time (m minutes)	Frequency
$70 < m \leqslant 80$	4
$80 < m \leqslant 90$	12
$90 < m \leqslant 100$	34
$100 < m \leqslant 110$	32
$110 < m \leqslant 120$	26
$120 < m \leqslant 130$	12

(a) Write down the modal class interval.

.....

(1)

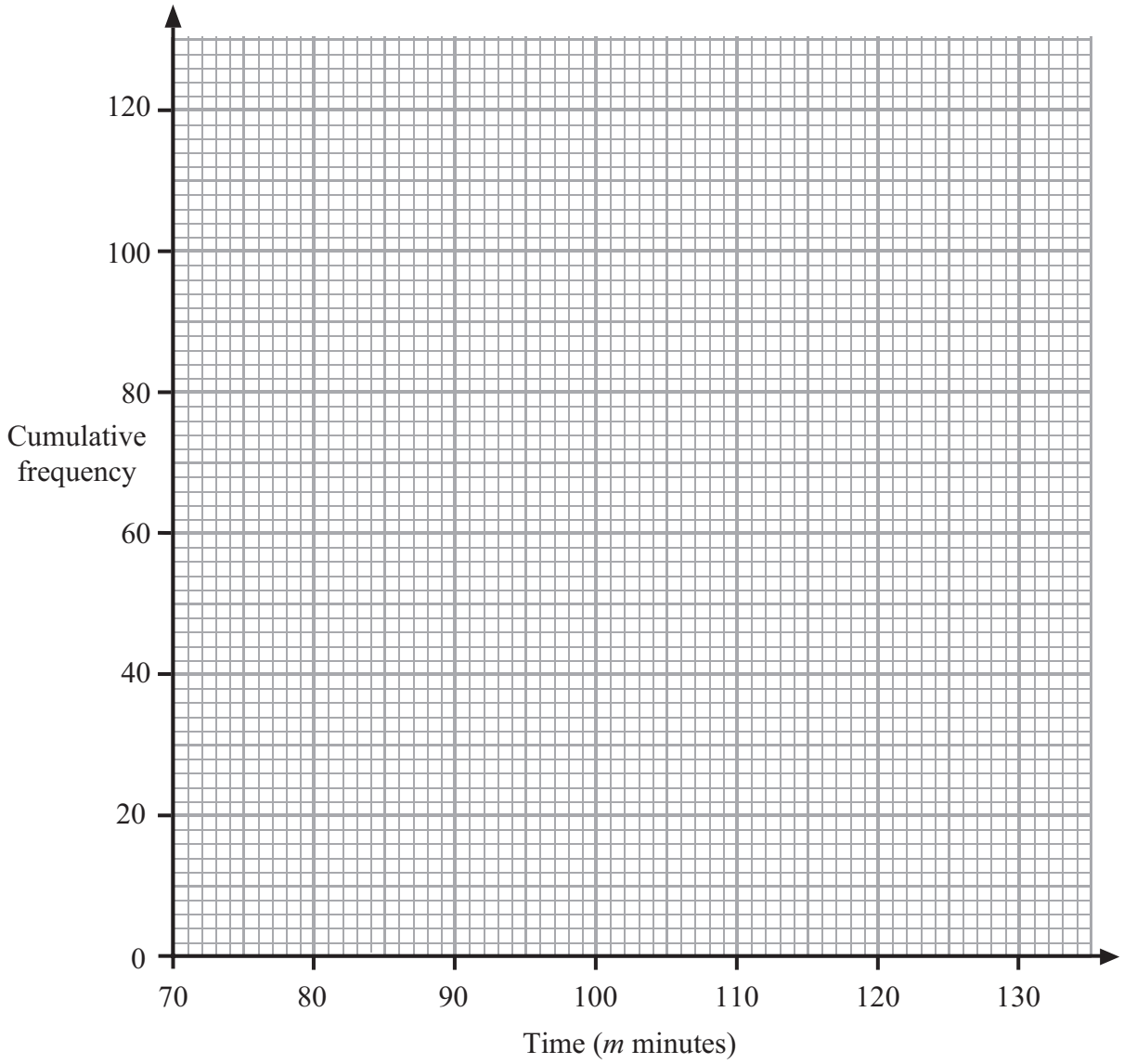
(b) Complete the cumulative frequency table.

Time (m minutes)	Cumulative frequency
$70 < m \leqslant 80$	4
$70 < m \leqslant 90$	
$70 < m \leqslant 100$	
$70 < m \leqslant 110$	
$70 < m \leqslant 120$	
$70 < m \leqslant 130$	

(1)

blank

(c) On the grid, draw a cumulative frequency graph for your cumulative frequency table.



(2)

(d) Use your graph to find an estimate for the median.

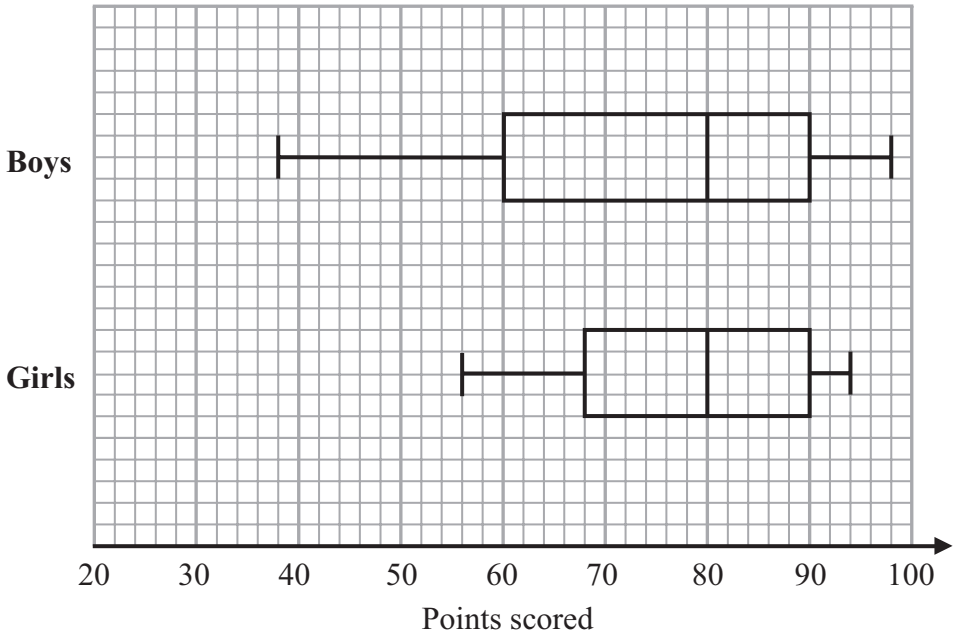
..... minutes

(1)

Q18

(Total 5 marks)

20. The box plots show information about the points scored by some students in a spelling competition.



Compare the distributions of the boys' scores and the girls' scores.

.....

.....

.....

(Total 2 marks)

Q20

8 The table shows information about midday temperatures.

Temperature (t °C)	Number of days
$10 \leqslant t < 15$	6
$15 \leqslant t < 20$	4
$20 \leqslant t < 25$	24
$25 \leqslant t < 30$	44
$30 \leqslant t < 35$	10
$35 \leqslant t < 40$	4

(a) Write down the modal class interval.

.....

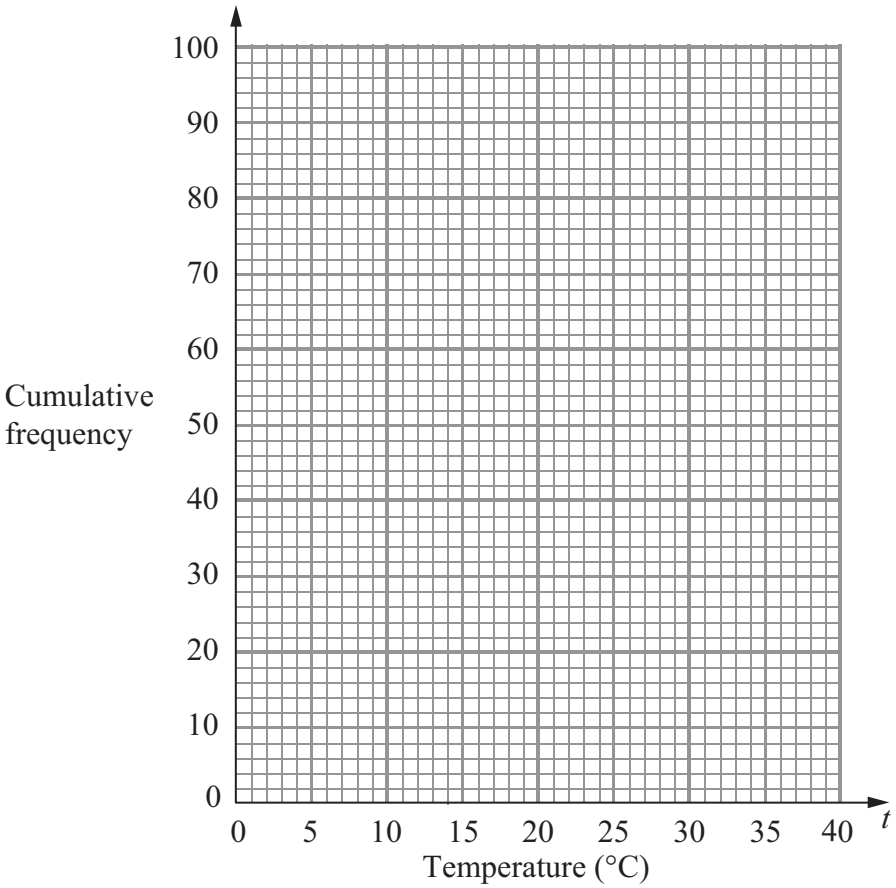
(1)

(b) Work out an estimate for the mean midday temperature.
Give your answer correct to 3 significant figures.

..... °C

(4)

(c) On the grid opposite, draw a cumulative frequency graph for the information from the table about the midday temperatures.



(3)

(d) Find estimates for the median **and** the interquartile range of these midday temperatures.

Median ..... °C

Interquartile range ..... °C

(3)

(Total for Question 8 is 11 marks)

15. A garage keeps records of the costs of repairs to customers' cars.

The table gives information about these costs for one month.

Cost (£C)	Frequency
$0 < C \leqslant 200$	7
$200 < C \leqslant 400$	11
$400 < C \leqslant 600$	9
$600 < C \leqslant 800$	10
$800 < C \leqslant 1000$	8
$1000 < C \leqslant 1200$	5

(a) Write down the modal class interval.

.....

(1)

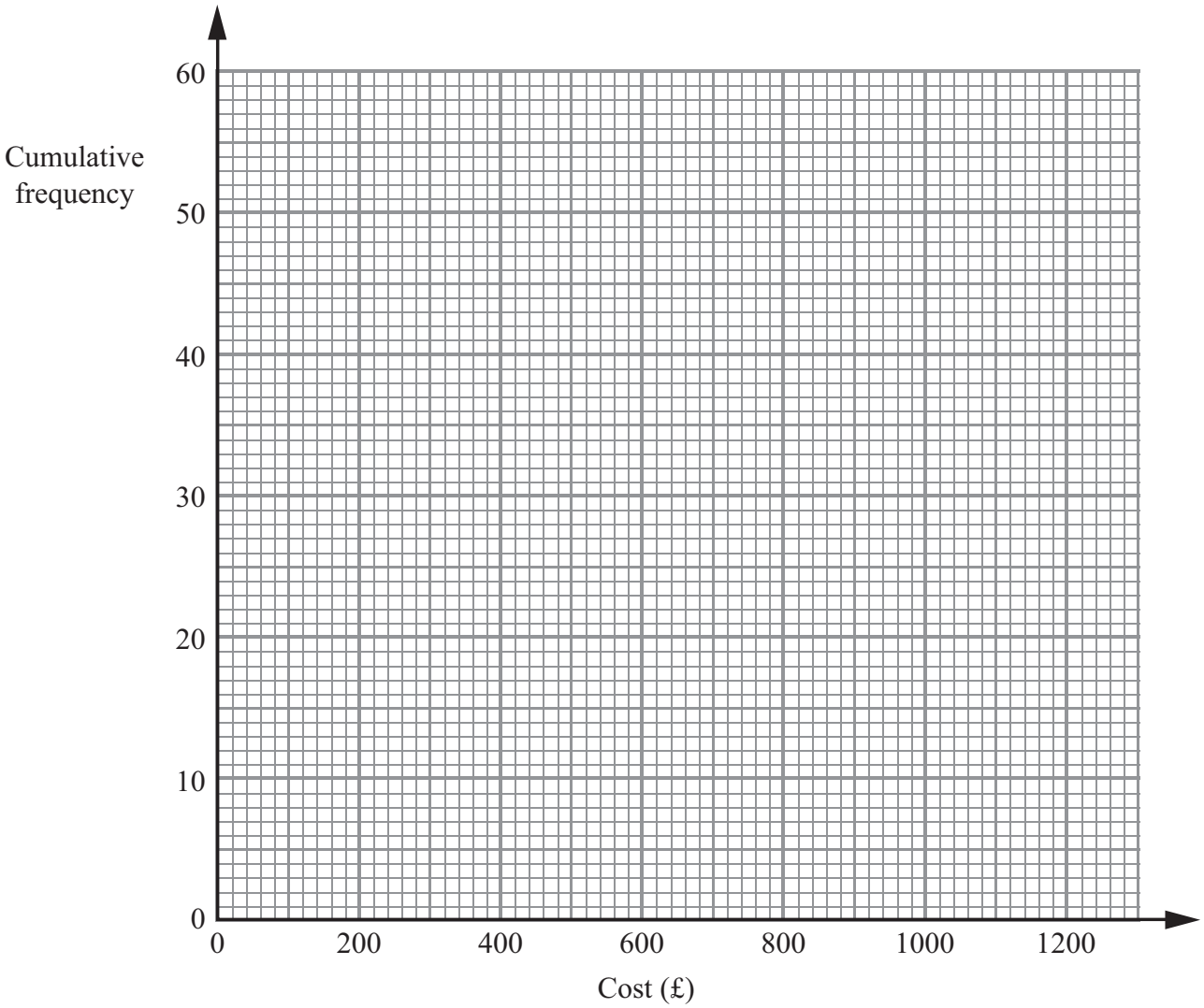
(b) Complete the cumulative frequency table.

Cost (£C)	Cumulative Frequency
$0 < C \leqslant 200$	
$0 < C \leqslant 400$	
$0 < C \leqslant 600$	
$0 < C \leqslant 800$	
$0 < C \leqslant 1000$	
$0 < C \leqslant 1200$	

(1)

(c) On the grid, draw a cumulative frequency diagram for your table.

blank



(2)

(d) Use the graph to find an estimate for the number of repairs which cost more than £700

.....

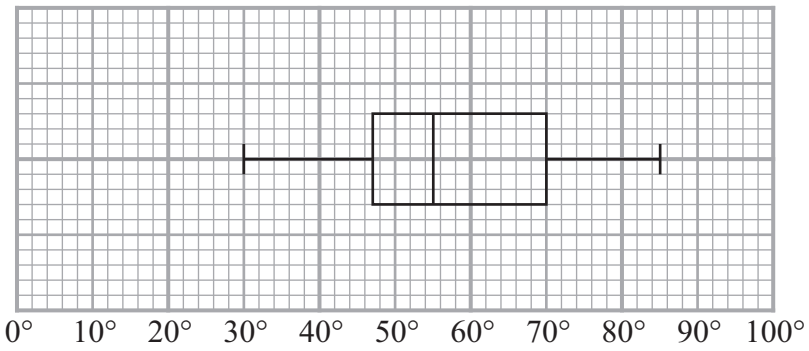
(2)

Q15

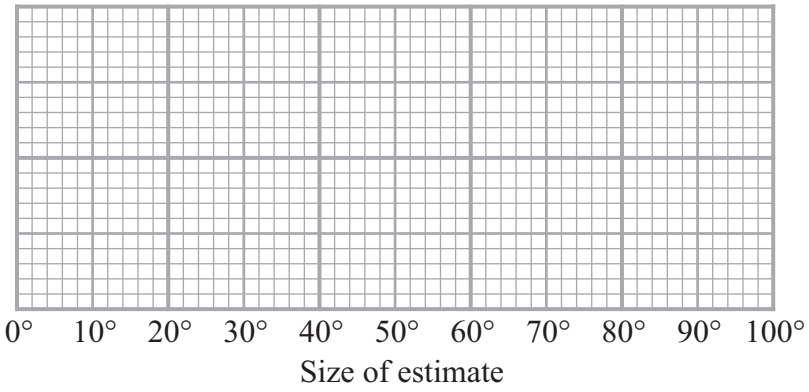
(Total 6 marks)

16. Barry drew an angle of 60°.
He asked some children to estimate the size of the angle he had drawn.
He recorded their estimates.
The box plot gives some information about these estimates.

Children's estimates



Adults' estimates



(a) Write down the median of the children's estimates.

..... °

(1)

(b) Find the interquartile range of the children's estimates.

..... °

(2)

blank

Barry then asked some adults to estimate the size of the angle he had drawn.
The table gives some information about the adults' estimates.

	Angle
Lowest estimate	20°
Lower quartile	45°
Median	62°
Upper quartile	75°
Highest estimate	95°

(c) On the grid opposite, draw a box plot to show this information.

(2)

(d) Use the two box plots, to compare the distribution of the children's estimates with the distribution of the adults' estimates.

.....

.....

.....

.....

(2)

(Total 7 marks)

Q16

9 Lyndsey records the number of miles (m) she drives each day for 120 days.

Some information about the results is given in the table.

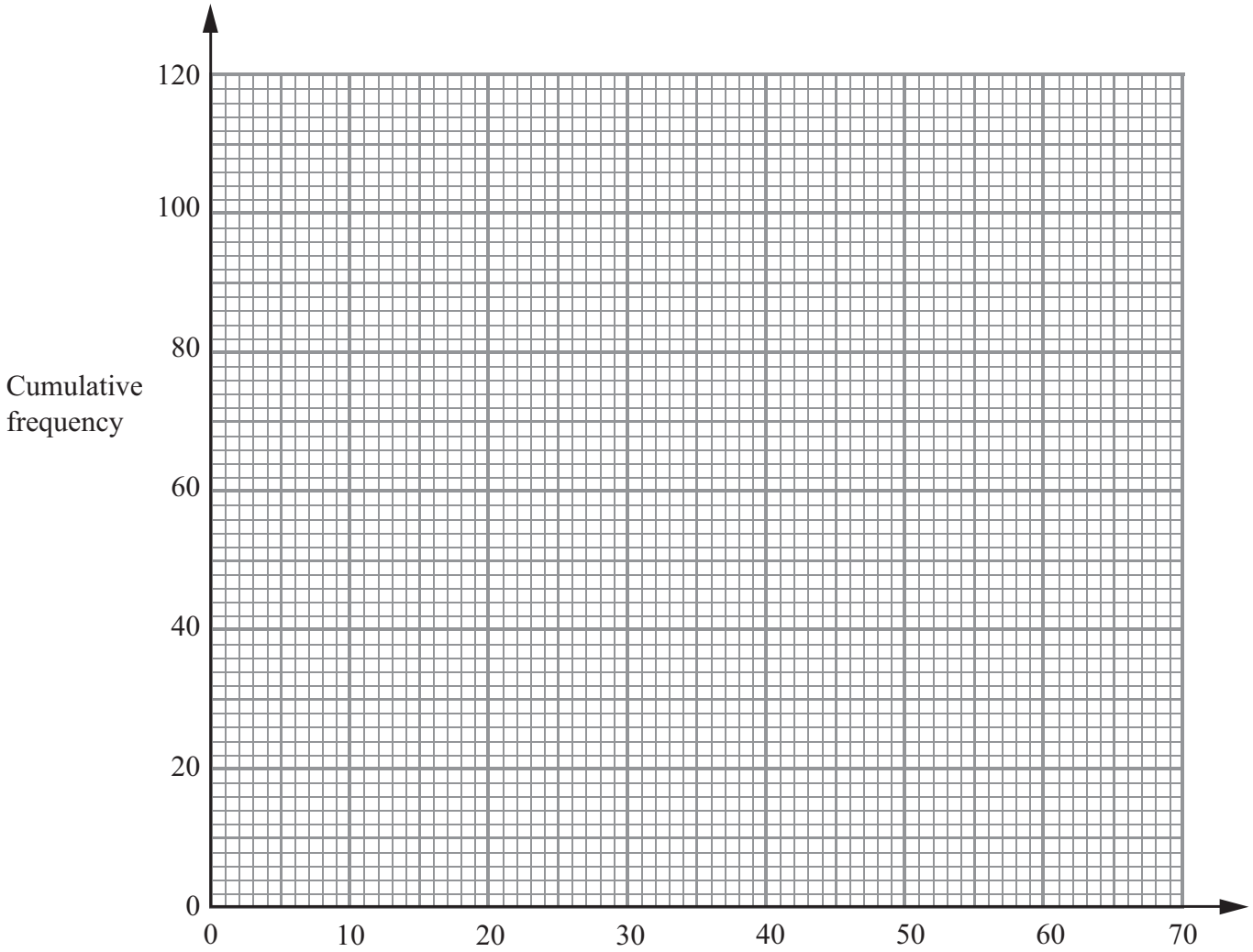
Distance (m miles)	Frequency
$0 < m \leqslant 10$	4
$10 < m \leqslant 20$	18
$20 < m \leqslant 30$	24
$30 < m \leqslant 40$	40
$40 < m \leqslant 50$	24
$50 < m \leqslant 60$	10

(a) Complete the cumulative frequency table.

Distance (m miles)	Cumulative frequency
$0 < m \leqslant 10$	
$0 < m \leqslant 20$	
$0 < m \leqslant 30$	
$0 < m \leqslant 40$	
$0 < m \leqslant 50$	
$0 < m \leqslant 60$	

(1)

(b) On the grid, draw a cumulative frequency graph.



(2)

(c) Work out an estimate for the number of days on which Lyndsey drives more than 36 miles.

..... days

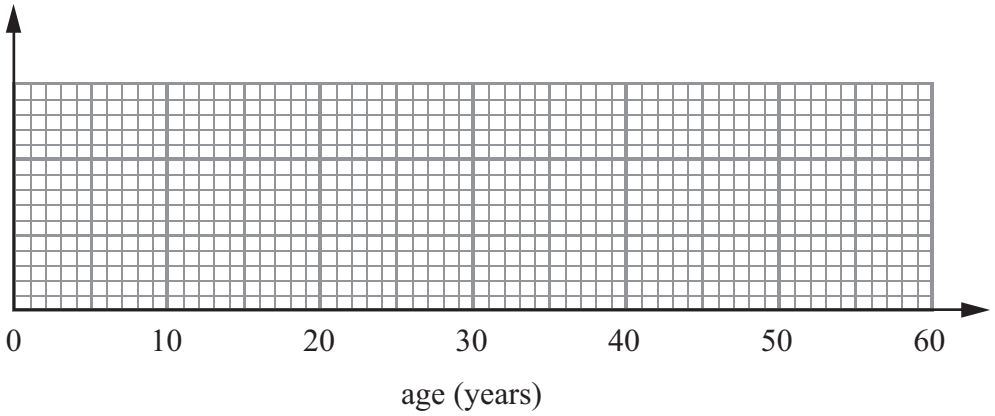
(2)

(Total for Question 9 is 5 marks)

10 Here are the ages, in years, of 15 women at West Ribble Tennis Club.

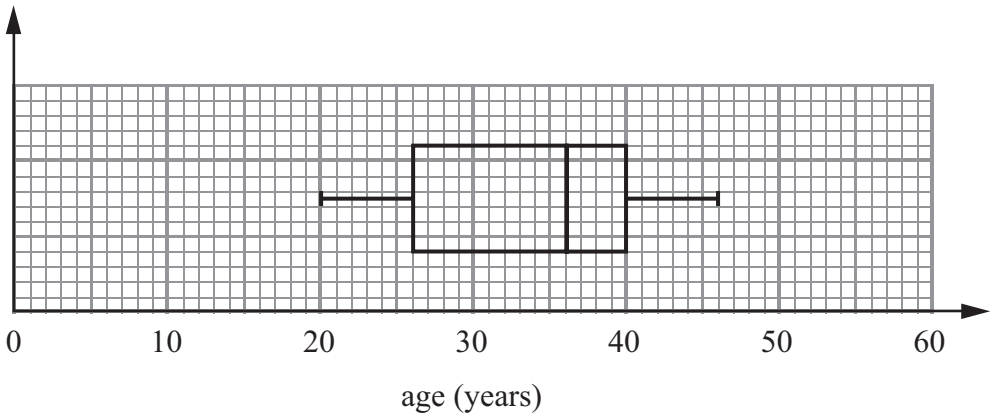
16, 18, 18, 20, 25, 25, 27, 28, 30, 35, 38, 42, 45, 46, 50

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



(3)

The box plot below shows the distribution of the ages of the men at West Ribble Tennis Club.

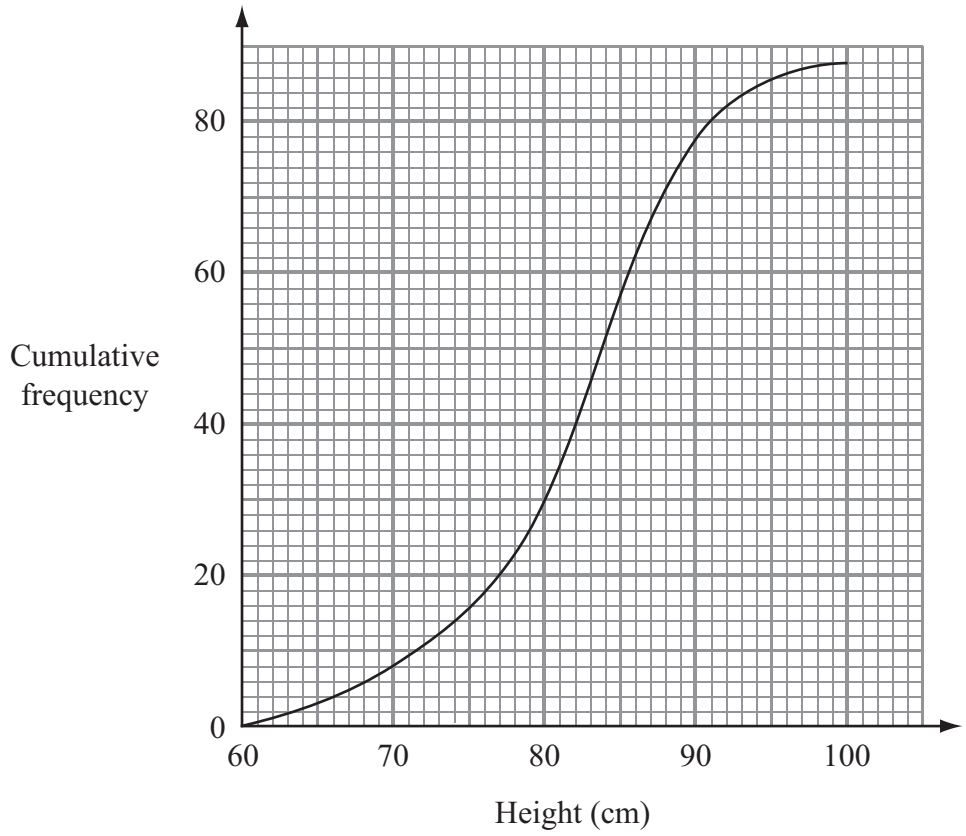


***(b)** Use the box plots to compare the distributions of the ages of these women and the distributions of the ages of these men.

(2)

(Total for Question 10 is 5 marks)

8 The cumulative frequency graph shows information about the heights of some hollyhock plants.



(a) Find an estimate for the median height.

..... cm

(1)

(b) Work out an estimate for the interquartile range.

..... cm

(2)

(c) Find an estimate for the number of hollyhock plants taller than 90 cm.

.....

(2)

(Total for Question 8 is 5 marks)

10 Daniela works in a shop.

Daniela served 50 customers in the morning.
She served 75 customers in the afternoon.

The mean time to serve 50 customers in the morning was 48.7 seconds.
The mean time to serve all 125 customers was 50.2 seconds.

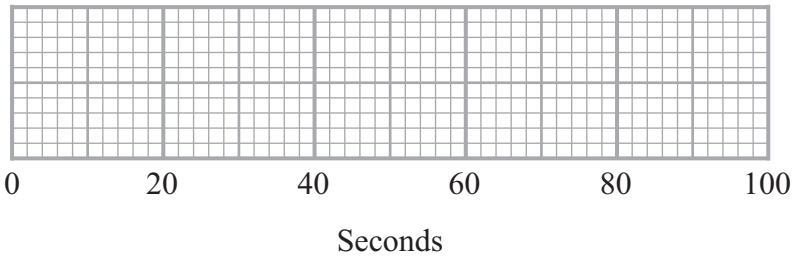
(a) Work out the mean time to serve the 75 customers in the afternoon.

..... seconds
(3)

For the 75 customers served in the afternoon

the least time was 18 seconds
the greatest time was 96 seconds
the median time was 56 seconds
the lower quartile was 32 seconds
the upper quartile was 72 seconds

(b) On the grid, draw a box plot for this information.



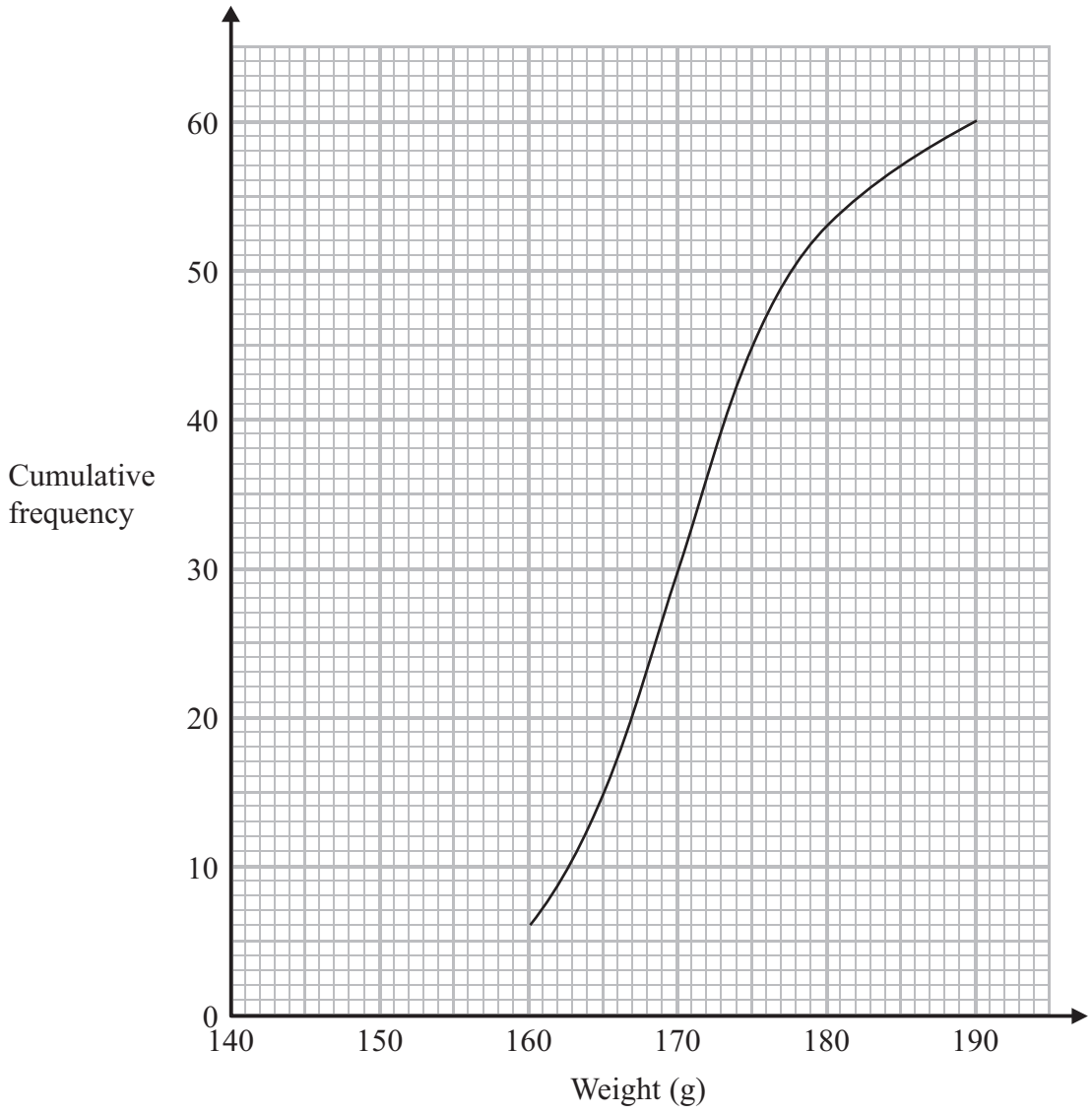
(3)

(Total for Question 10 is 6 marks)

15 Harry grows tomatoes.
This year he put his tomato plants into two groups, group A and group B.

Harry gave fertiliser to the tomato plants in group A.
He did not give fertiliser to the tomato plants in group B.

Harry weighed 60 tomatoes from group A.
The cumulative frequency graph shows some information about these weights.



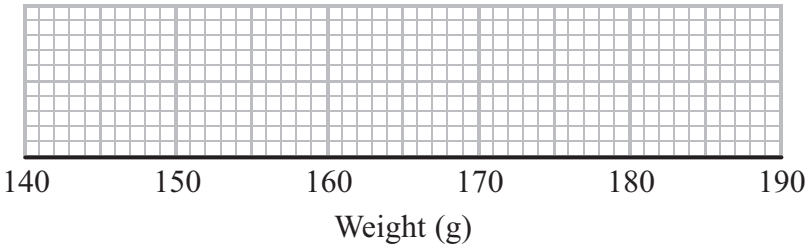
(a) Use the graph to find an estimate for the median weight.

..... g

(1)

The 60 tomatoes from group A
had a minimum weight of 153 grams
and a maximum weight of 186 grams.

(b) Use this information and the cumulative frequency graph to draw a box plot for the 60 tomatoes from group A.

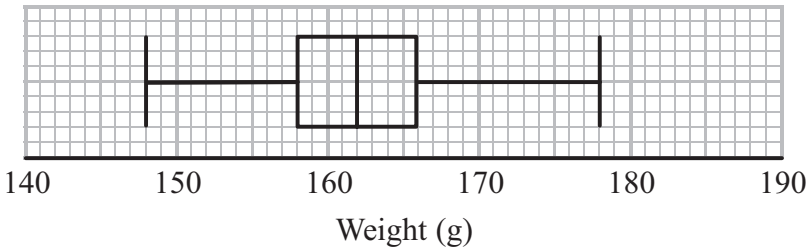


Group A

(3)

Harry did not give fertiliser to the tomato plants in group B.

Harry weighed 60 tomatoes from group B.
He drew this box plot for his results.



Group B

(c) Compare the distribution of the weights of the tomatoes from group A with the distribution of the weights of the tomatoes from group B.

.....

.....

.....

.....

(2)

(Total for Question 15 is 6 marks)

Question 28

7 The table shows information about the lengths, in seconds, of 40 TV adverts.

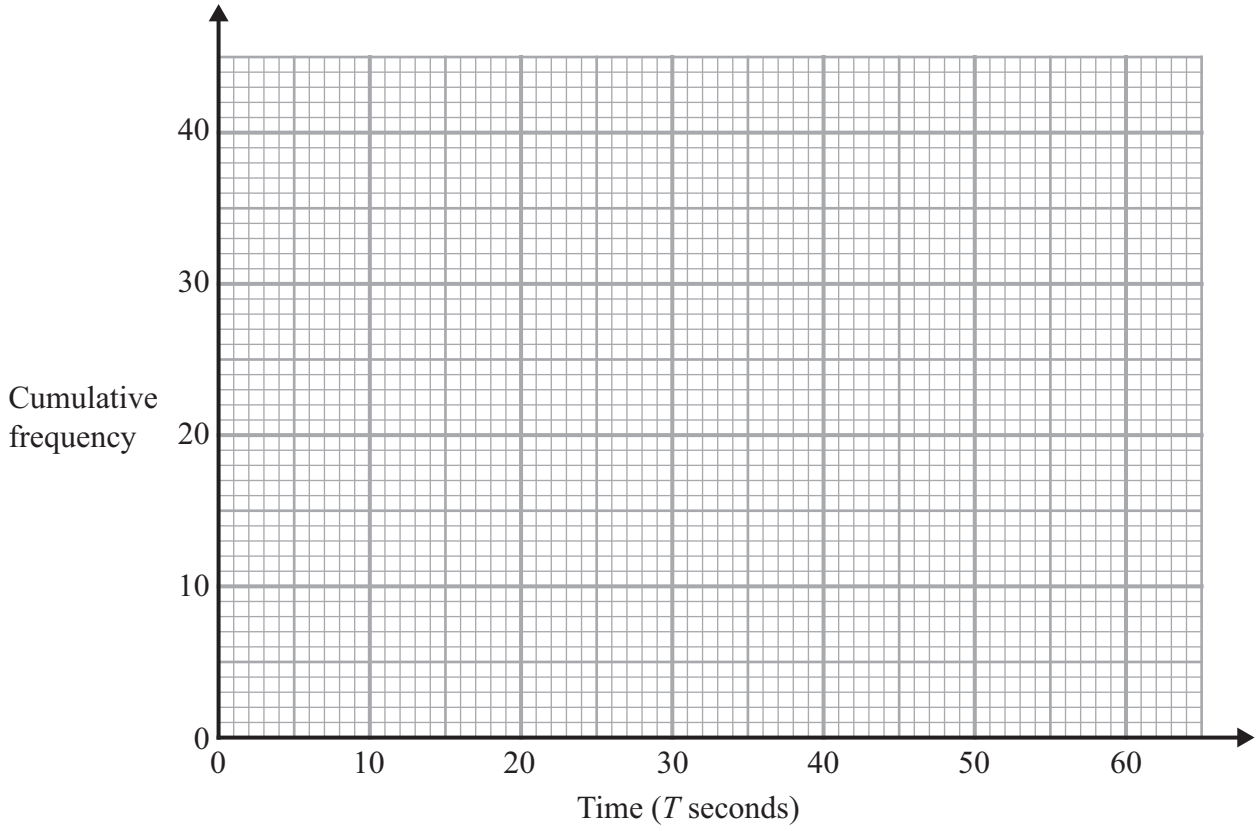
Time (T seconds)	Frequency
$10 < T \leqslant 20$	4
$20 < T \leqslant 30$	7
$30 < T \leqslant 40$	13
$40 < T \leqslant 50$	12
$50 < T \leqslant 60$	4

(a) Complete the cumulative frequency table for this information.

Time (T seconds)	Cumulative frequency
$10 < T \leqslant 20$	4
$10 < T \leqslant 30$	
$10 < T \leqslant 40$	
$10 < T \leqslant 50$	
$10 < T \leqslant 60$	

(1)

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



(2)

(c) Use your graph to find an estimate for the median length of these TV adverts.

..... seconds

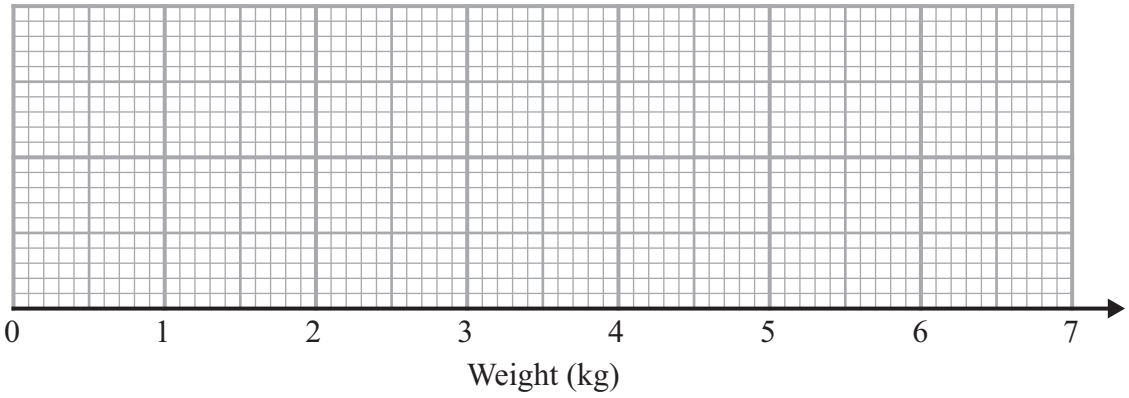
(1)

(Total for Question 7 is 4 marks)

9 The table gives some information about the weights of 60 babies.

Lowest	2.0 kg
Highest	6.5 kg
Lower quartile	2.8 kg
Upper quartile	4.2 kg
Median	3.0 kg

(a) Draw a box plot to show this information.



(2)

There are 60 babies.

(b) Work out an estimate for the number of these babies with a weight greater than 2.8 kg.

.....

(2)

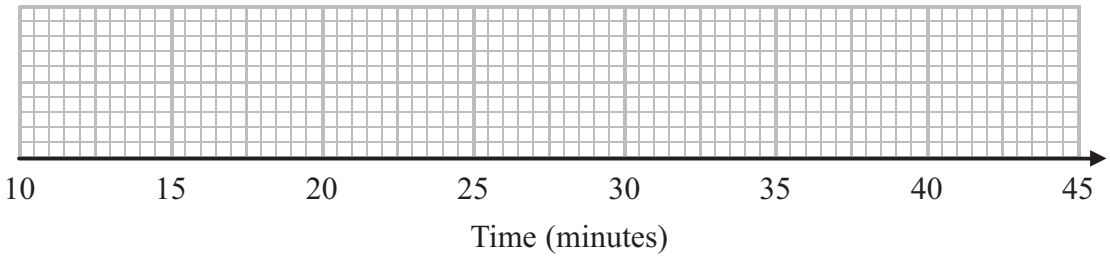
(Total for Question 9 is 4 marks)

19 Sameena recorded the times, in minutes, some girls took to do a jigsaw puzzle.

Sameena used her results to work out the information in this table.

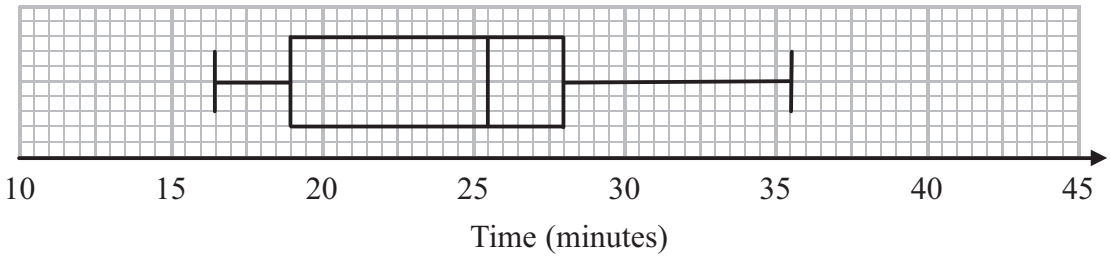
	Minutes
Shortest time	18
Lower quartile	25
Median	29
Upper quartile	33
Longest time	44

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



(2)

The box plot below shows information about the times, in minutes, some boys took to do the same jigsaw puzzle.



(b) Compare the distributions of the girls' times and the boys' times.

.....

.....

.....

.....

(2)

(Total for Question 19 is 4 marks)

21 The table shows information about the speeds of 100 lorries.

Speed (s) in km/h	Frequency
$0 < s \leqslant 20$	2
$20 < s \leqslant 40$	9
$40 < s \leqslant 60$	23
$60 < s \leqslant 80$	31
$80 < s \leqslant 100$	27
$100 < s \leqslant 120$	8

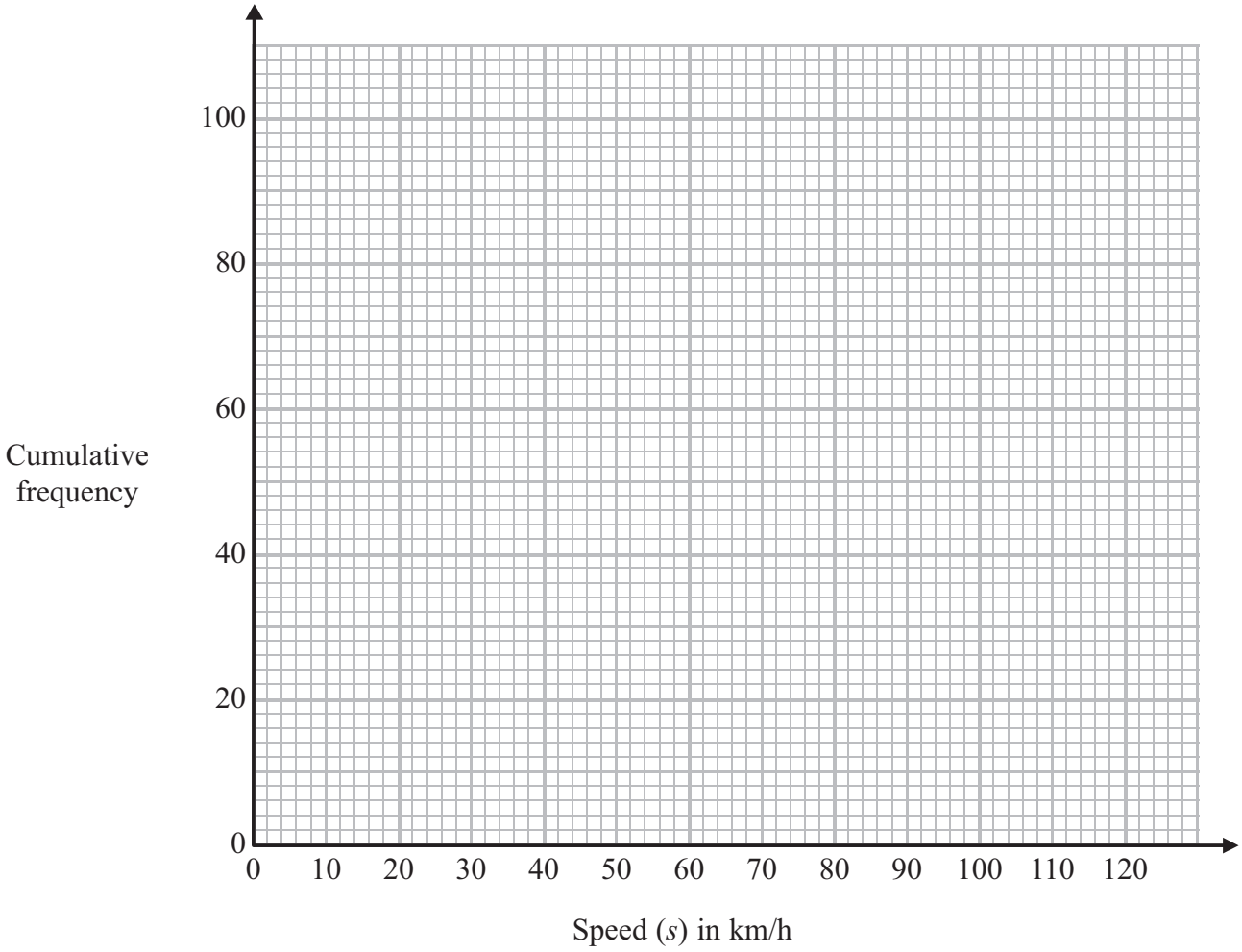
(a) Complete the cumulative frequency table for this information.

Speed (s) in km/h	Cumulative frequency
$0 < s \leqslant 20$	2
$0 < s \leqslant 40$	
$0 < s \leqslant 60$	
$0 < s \leqslant 80$	
$0 < s \leqslant 100$	
$0 < s \leqslant 120$	

(1)

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

(2)



(c) Find an estimate for the number of lorries with a speed of more than 90 km/h.

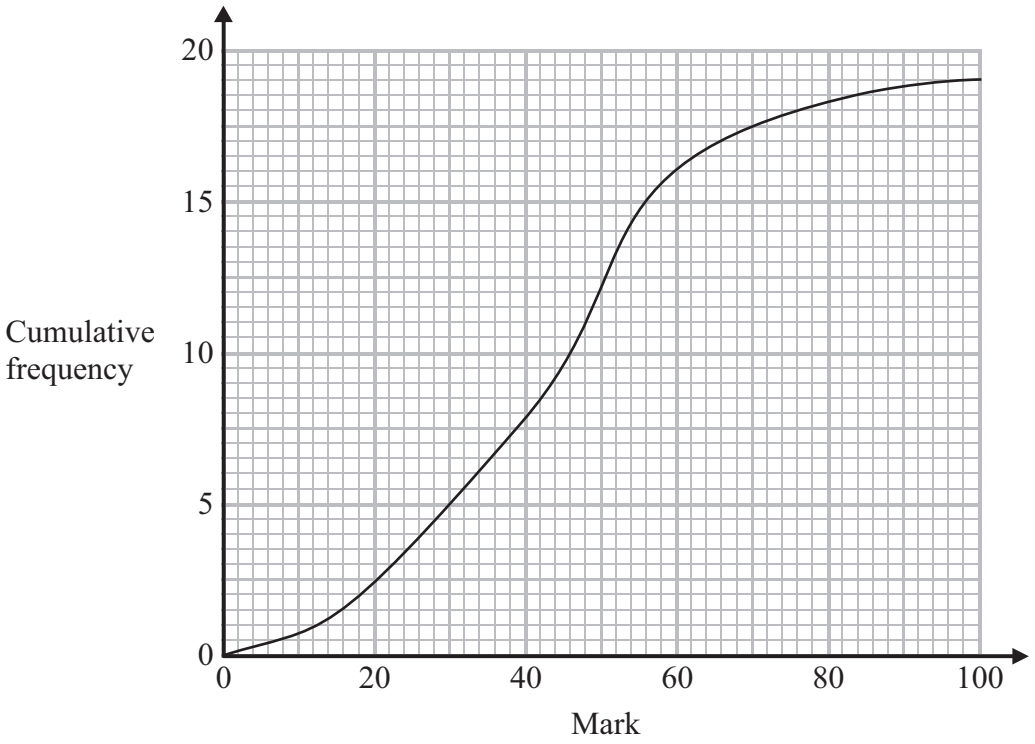
.....

(2)

(Total for Question 21 is 5 marks)

14 Mrs Angus's class did a maths test.

The cumulative frequency graph shows information about their marks.



(a) Use the cumulative frequency graph to find

(i) the median,

.....

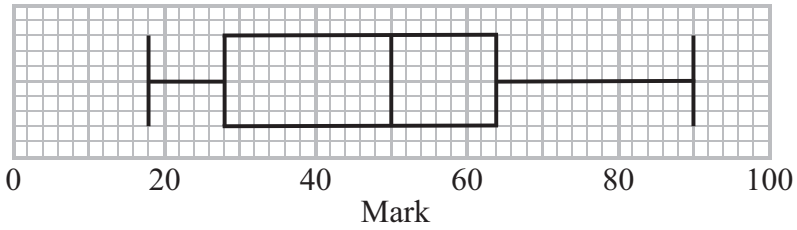
(ii) the interquartile range.

.....

(3)

Mr Wilson's class did the same maths test.

The box plot shows information about their marks.



*(b) Compare the interquartile range of the marks of Mr Wilson's class with the interquartile range of the marks of Mrs Angus's class.

(2)

(Total for Question 14 is 5 marks)

14 The grouped frequency table shows information about the weekly wages of 80 factory workers.

Weekly wage (£x)	Frequency
$100 < x \leqslant 200$	8
$200 < x \leqslant 300$	15
$300 < x \leqslant 400$	30
$400 < x \leqslant 500$	17
$500 < x \leqslant 600$	7
$600 < x \leqslant 700$	3

(a) Complete the cumulative frequency table.

Weekly wage (£x)	Cumulative Frequency
$100 < x \leqslant 200$	
$100 < x \leqslant 300$	
$100 < x \leqslant 400$	
$100 < x \leqslant 500$	
$100 < x \leqslant 600$	
$100 < x \leqslant 700$	

(1)

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

(2)

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

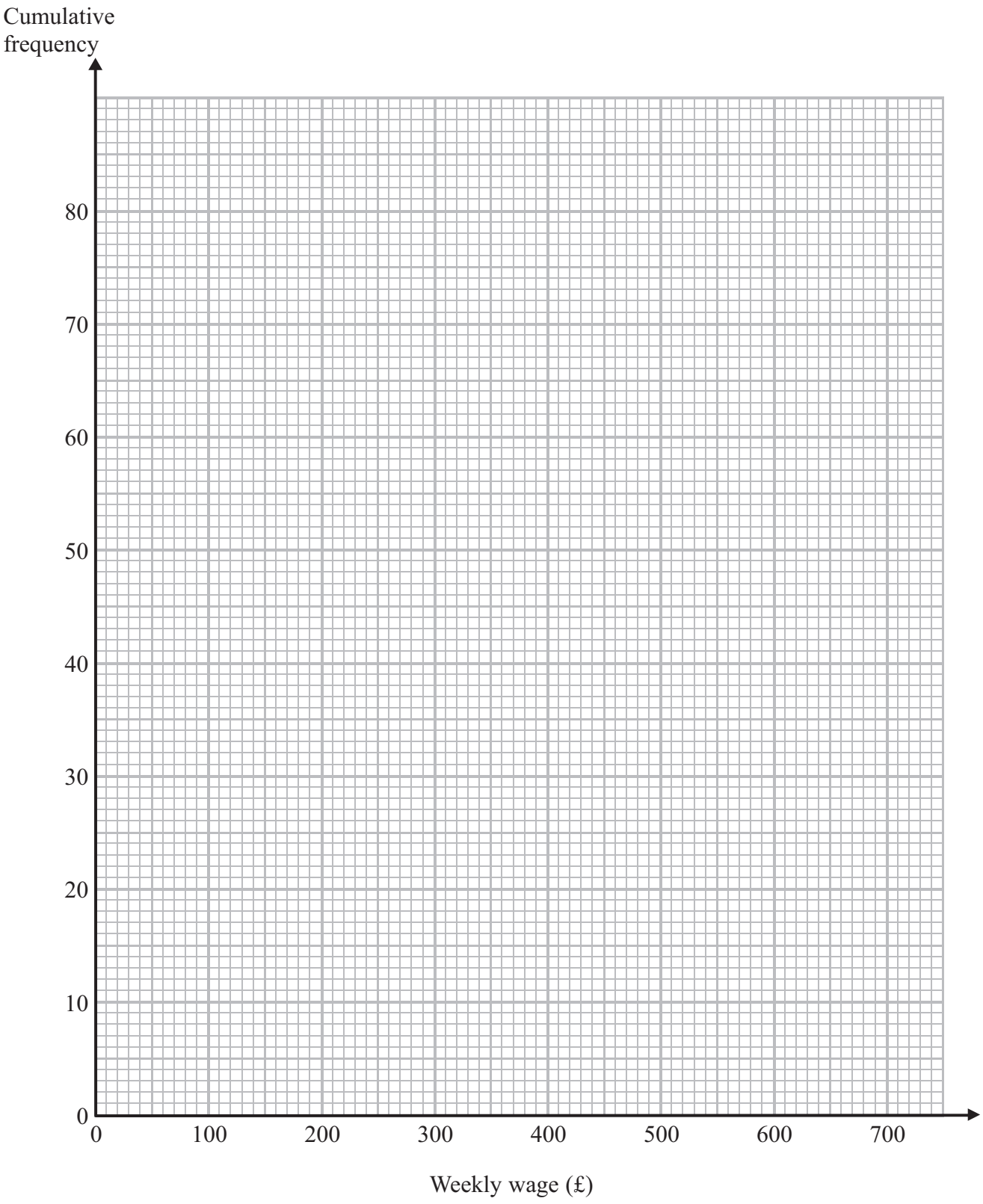
£ .....

(2)

(d) Use your graph to find an estimate for the number of workers with a weekly wage of more than £530

.....

(2)

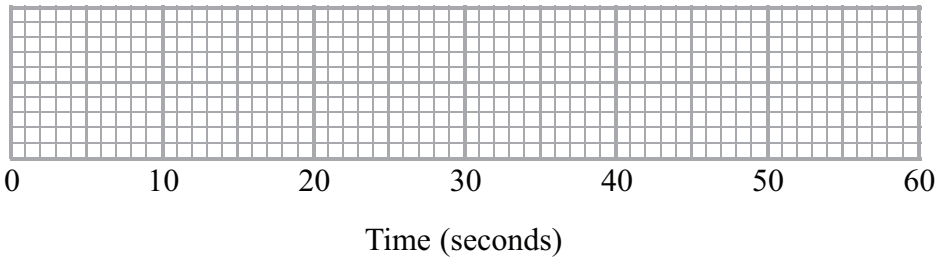


(Total for Question 14 is 7 marks)

18 Here are the times, in seconds, that 15 people waited to be served at Rose's garden centre.

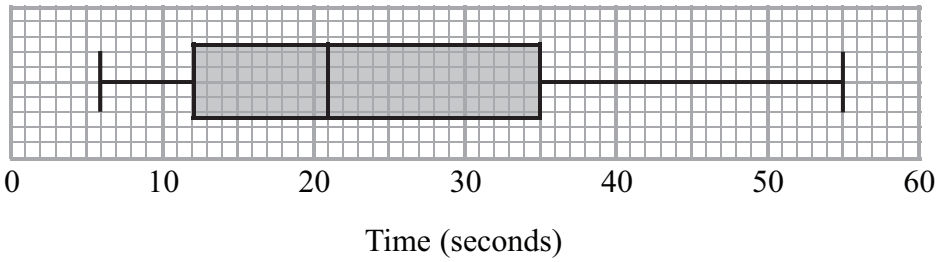
5 9 11 14 15 20 22 25 27 27 28 30 32 35 44

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



(3)

The box plot below shows the distribution of the times that people waited to be served at Green's garden centre.



(b) Compare the distribution of the times that people waited at Rose's garden centre and the distribution of the times that people waited at Green's garden centre.

.....

.....

.....

.....

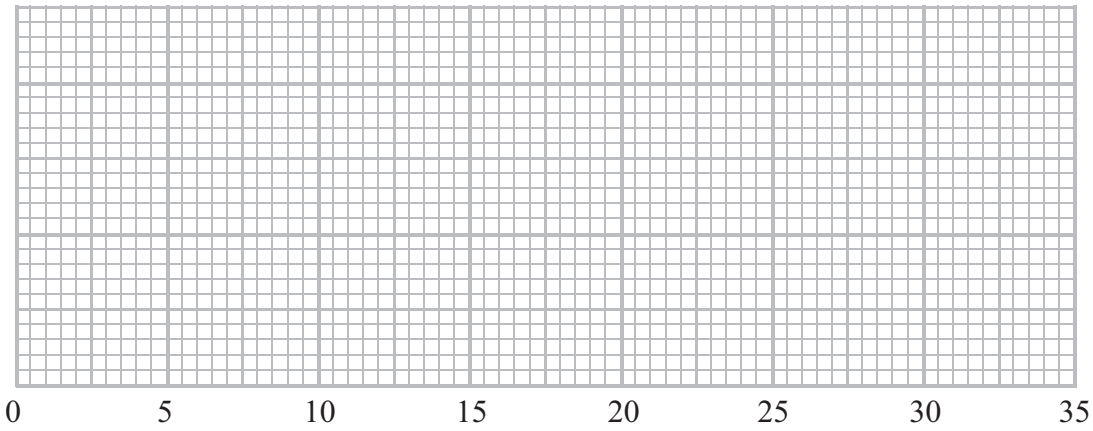
(2)

(Total for Question 18 is 5 marks)

8 The table below shows information about the times, in minutes, a group of students took to answer 10 maths questions.

	Least	Lower quartile	Median	Upper quartile	Greatest
Time in minutes	14	18	20	25	30

On the grid below, draw a box plot to show the information in the table.



(Total for Question 8 is 3 marks)

***9** There are two trays of plants in a greenhouse.
The first tray of plants was given fertiliser.
The second tray of plants was not given fertiliser.

On Monday the heights of the plants were measured in centimetres.
The boxes show some information about the heights of the plants.

Heights of the plants given fertiliser

22	29	30	35	37	40	44	47
48	48	54	56	59	66	72	

Information about the heights of plants not given fertiliser

Smallest	18	Lower quartile	26
Largest	64	Upper quartile	47
Median	44		

Compare the distribution of the heights of the plants given fertiliser to the distribution of the heights of the plants not given fertiliser.

(Total for Question 9 is 4 marks)

10 The table shows information about the ages of 90 employees in a factory.

Age (a years)	Frequency
$15 < a \leqslant 25$	12
$25 < a \leqslant 35$	27
$35 < a \leqslant 45$	18
$45 < a \leqslant 55$	23
$55 < a \leqslant 65$	10

(a) Calculate an estimate for the mean age.

.....years

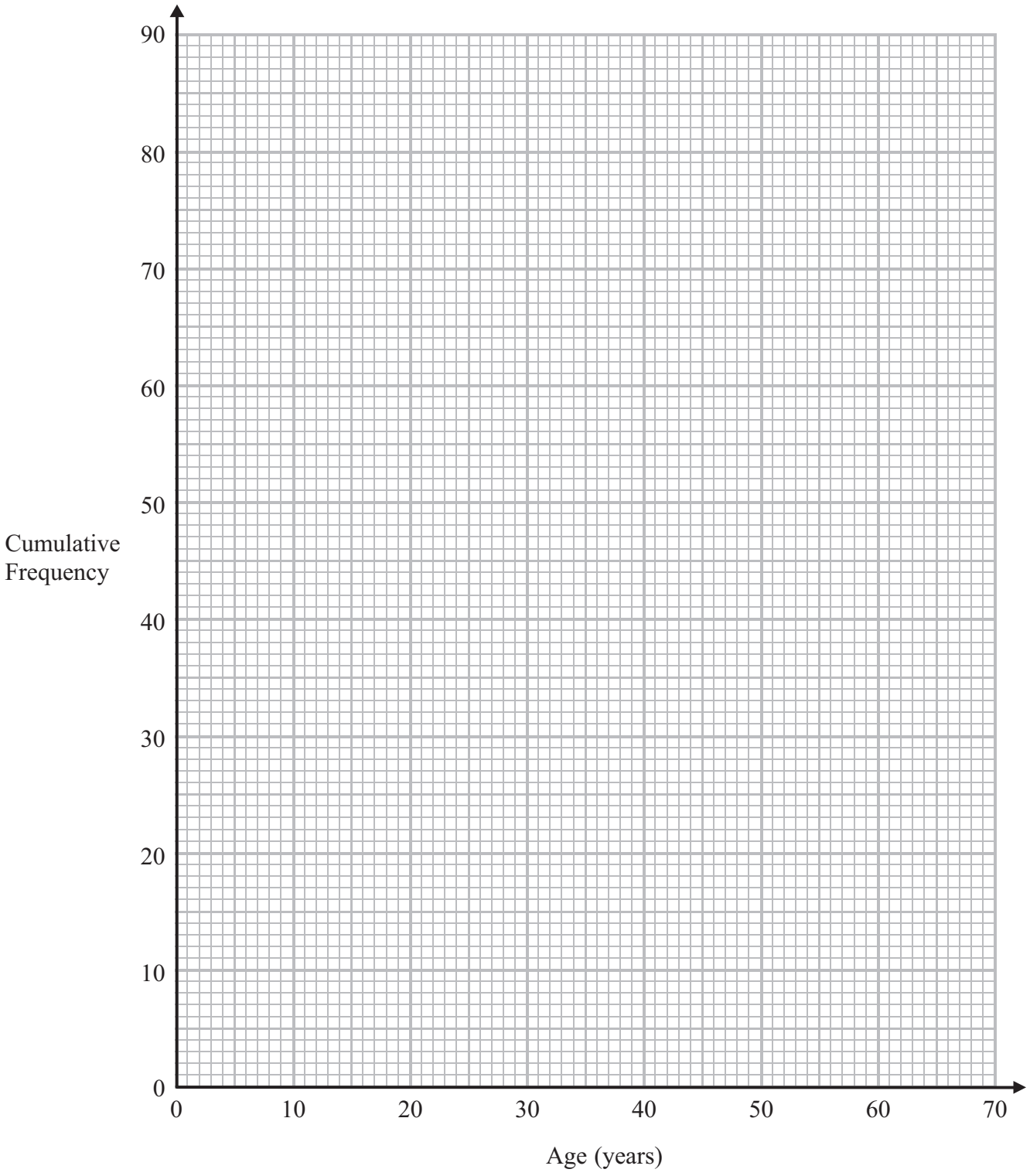
(4)

(b) Complete the cumulative frequency table.

Age (a years)	Cumulative Frequency
$15 < a \leqslant 25$	
$15 < a \leqslant 35$	
$15 < a \leqslant 45$	
$15 < a \leqslant 55$	
$15 < a \leqslant 65$	

(1)

(c) On the grid, draw a cumulative frequency graph for your table.



(2)

(d) Find an estimate for

(i) the median age,

.....years

(ii) the number of the employees over the age of 50

.....

(3)

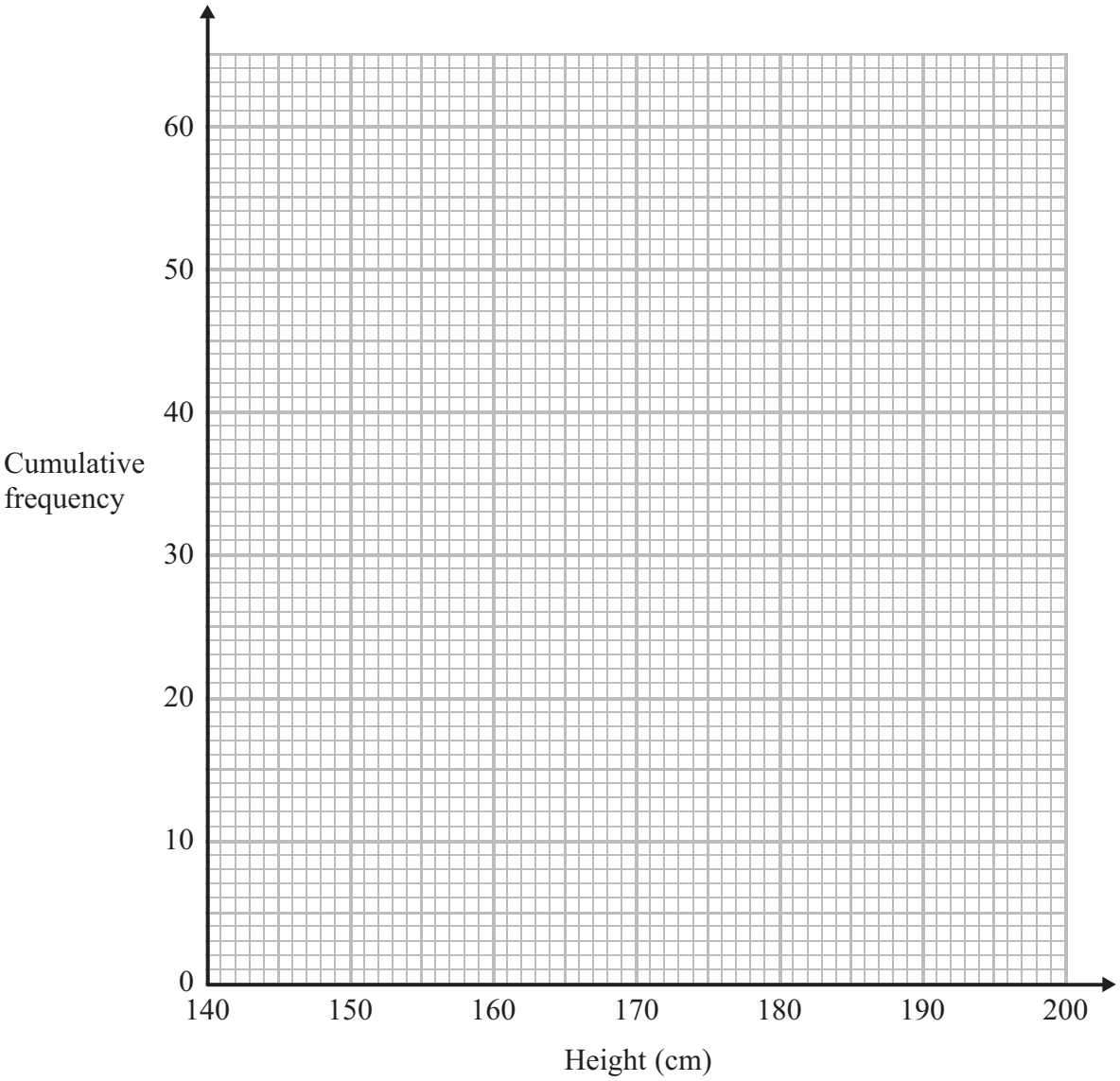
(Total for Question 10 is 10 marks)

21 The table below shows information about the heights of 60 students.

Height (x cm)	Number of students
$140 < x \leqslant 150$	4
$150 < x \leqslant 160$	5
$160 < x \leqslant 170$	16
$170 < x \leqslant 180$	27
$180 < x \leqslant 190$	5
$190 < x \leqslant 200$	3

(a) On the grid opposite, draw a cumulative frequency graph for the information in the table.

(3)



(b) Find an estimate

(i) for the median,

..... cm

(ii) for the interquartile range.

..... cm

(3)

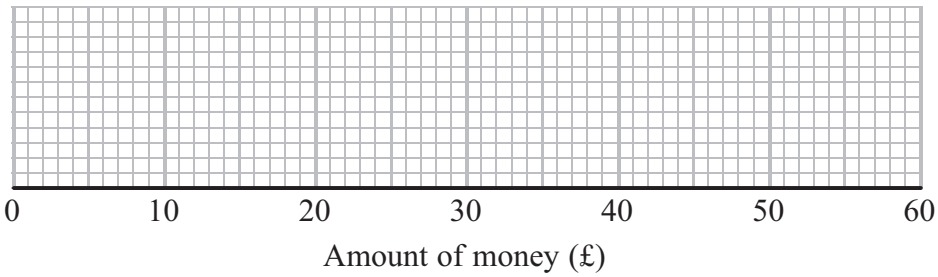
(Total for Question 21 is 6 marks)

17 Some girls did a sponsored swim to raise money for charity.

The table shows information about the amounts of money (£) the girls raised.

Least amount of money (£)	10
Greatest amount of money (£)	45
Median	25
Lower quartile	16
Upper quartile	42

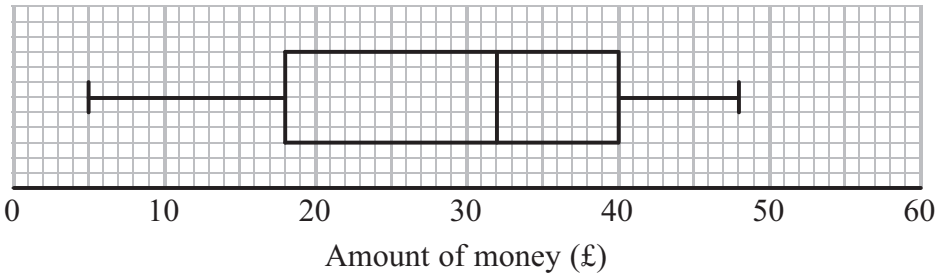
(a) On the grid, draw a box plot for the information in the table.



(2)

Some boys also did the sponsored swim.

The box plot shows information about the amounts of money (£) the boys raised.



(b) Compare the amounts of money the girls raised with the amounts of money the boys raised.

.....

.....

.....

.....

(2)

(Total for Question 17 is 4 marks)

11 Jodie picks all the apples from her 56 apple trees.
For each tree she records the total weight of its apples.

The table shows some information about these total weights in kg.

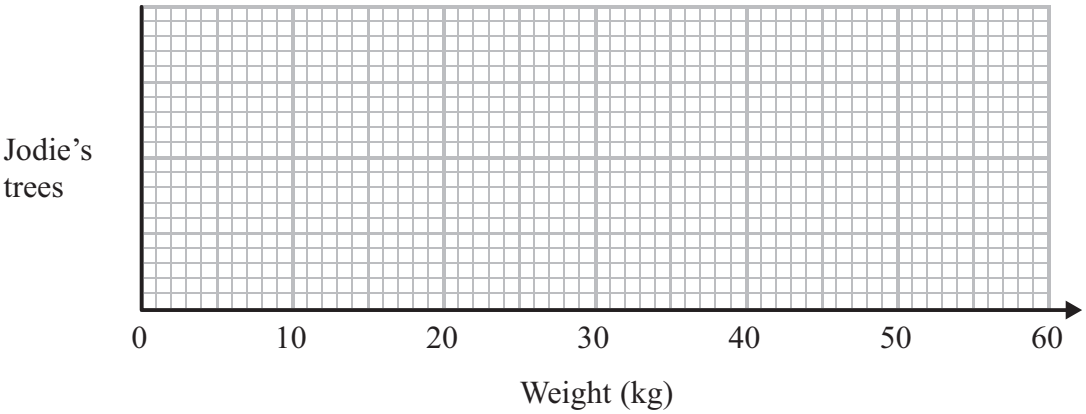
least weight	25
greatest weight	55
median	40
lower quartile	35
upper quartile	45

(a) Work out how many of Jodie's apple trees have a total weight of apples of less than 45 kg.

.....

(2)

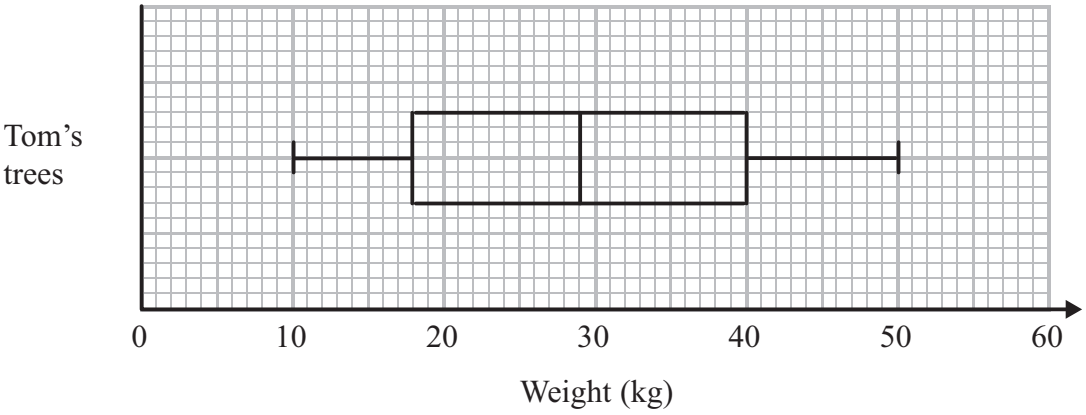
(b) On the grid, draw a box plot for the information in the table.



(2)

Tom has 59 apple trees.

The box plot shows the distribution of the total weights of the apples Tom picks from each of his apple trees.



*(c) Compare the distribution of the weights of apples Jodie picks with the distribution of the weights of apples Tom picks.

.....

.....

.....

.....

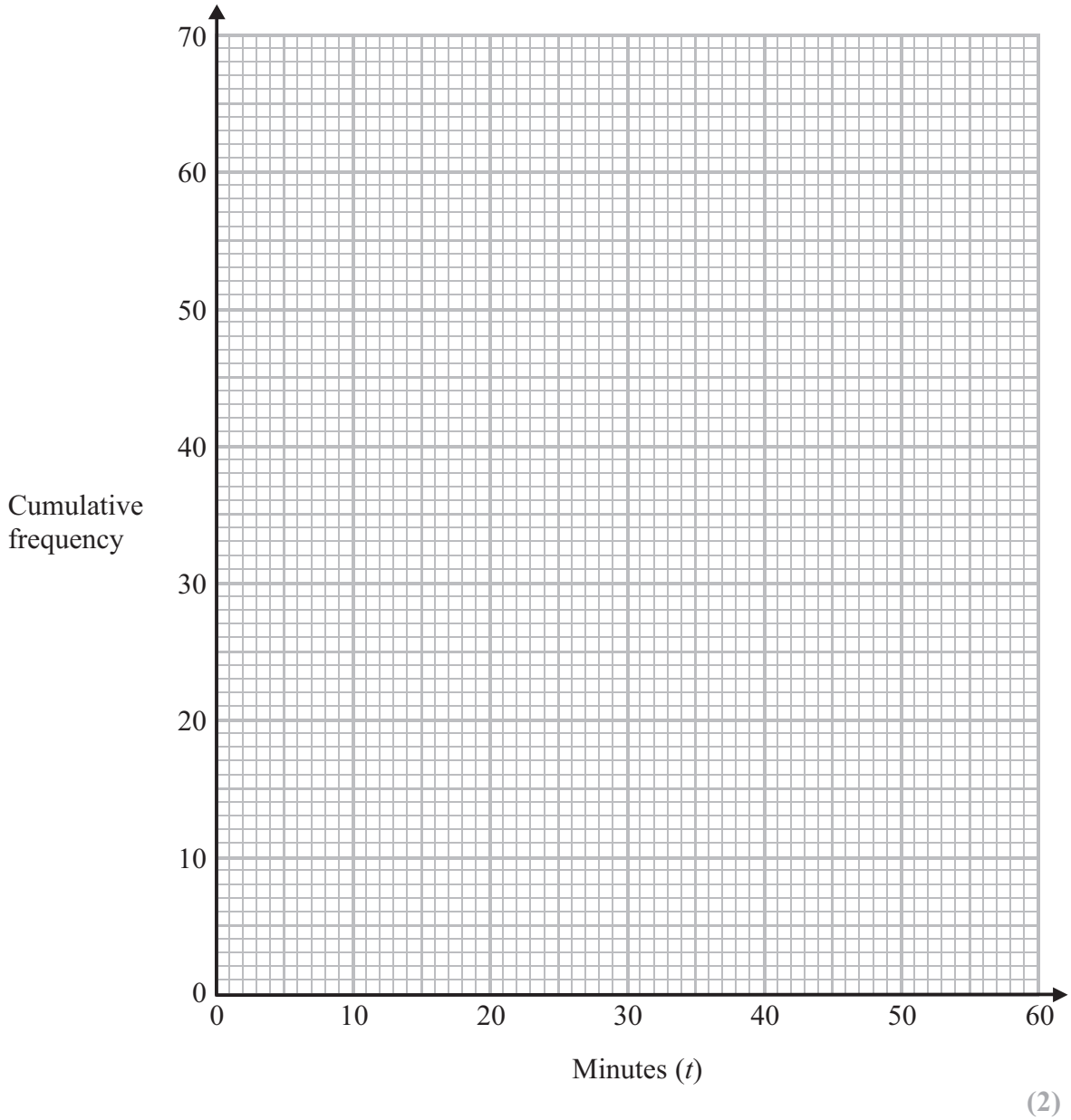
(2)

(Total for Question 11 is 6 marks)

12 The cumulative frequency table gives information about the number of minutes it took Jill to travel from home to school each day last term.

Minutes (t)	Cumulative frequency
$0 < t \leqslant 10$	0
$0 < t \leqslant 20$	2
$0 < t \leqslant 30$	15
$0 < t \leqslant 40$	50
$0 < t \leqslant 50$	63
$0 < t \leqslant 60$	65

(a) On the grid, draw a cumulative frequency graph for the information.



(2)

(b) Use your cumulative frequency graph to find the interquartile range.

..... minutes

(2)

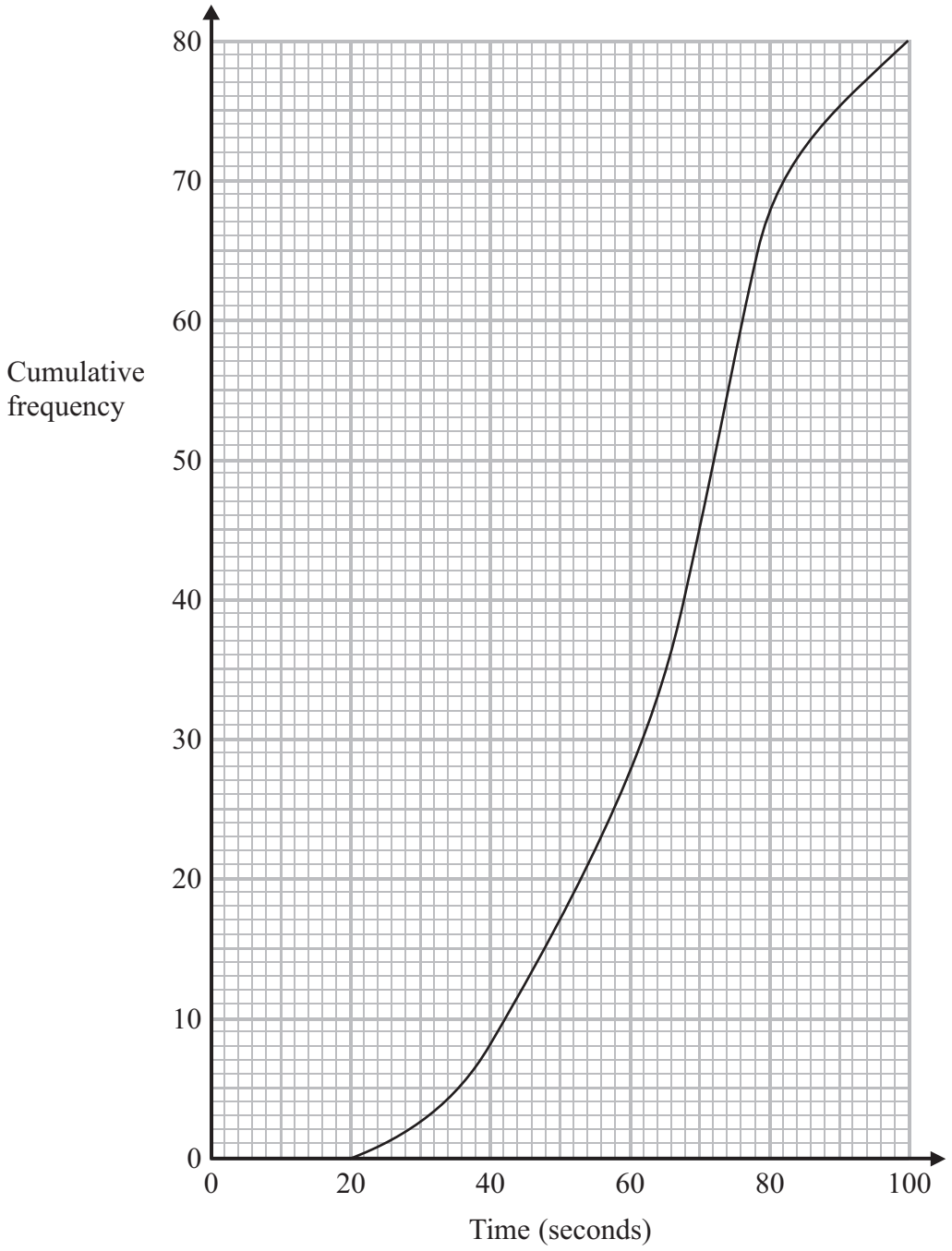
(c) Find an estimate for the number of times Jill took more than 45 minutes to get to school.

.....

(2)

(Total for Question 12 is 6 marks)

18 The cumulative frequency graph shows information about the times 80 swimmers take to swim 50 metres.



(a) Use the graph to find an estimate for the median time.

..... seconds

(1)

A swimmer has to swim 50 metres in 60 seconds or less to qualify for the swimming team.

The team captain says,

"More than 25% of swimmers have qualified for the swimming team."

*(b) Is the team captain right?

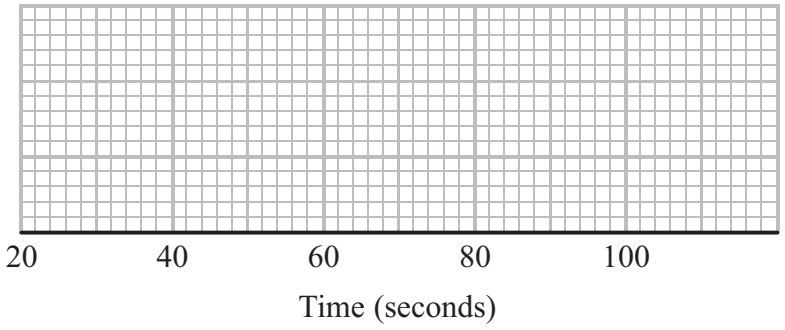
You must show how you got your answer.

(3)

For these 80 swimmers

the least time taken was 28 seconds
and the greatest time taken was 96 seconds.

(c) Use the cumulative frequency graph and the information above to draw a box plot for the times taken by the swimmers.



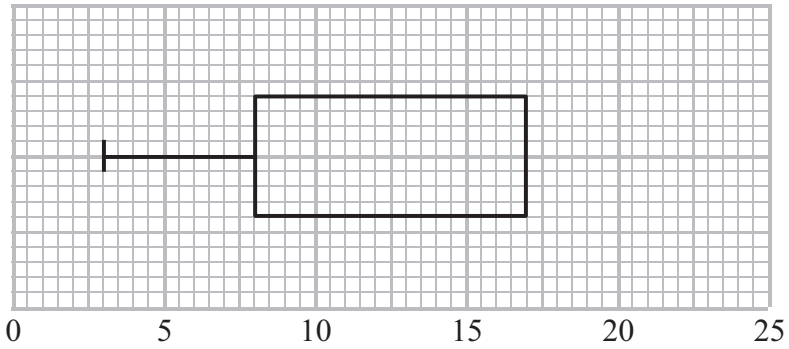
(3)

(Total for Question 18 is 7 marks)

9 Presta recorded the number of lemons on each of 60 lemon trees.

The incomplete table and box plot give information about her results.

	Number of lemons
Smallest number	
Lower quartile	8
Median	11
Upper quartile	
Greatest number	22



(a) (i) Use the information in the table to complete the box plot.

(ii) Use the information in the box plot to complete the table.

(3)

Some of these 60 lemon trees have 8 or more lemons on them.

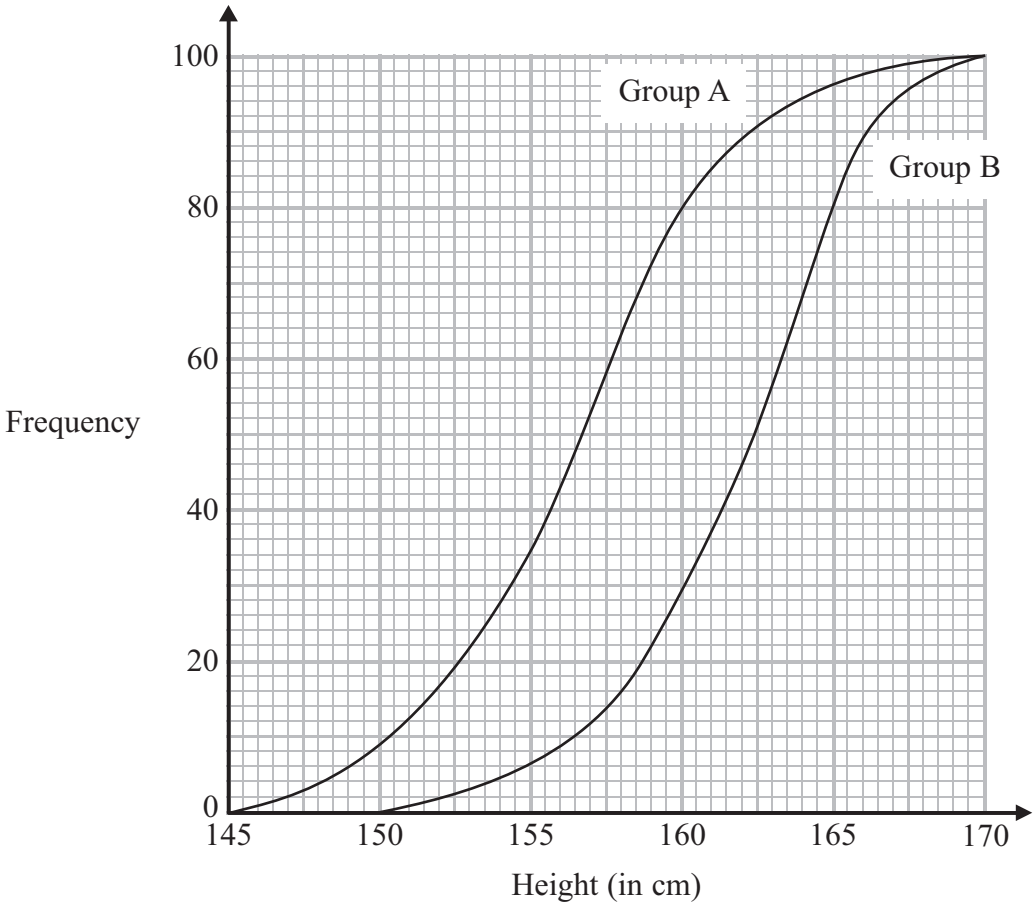
(b) Find an estimate for the number of lemon trees with 8 or more lemons on them.

.....

(2)

(Total for Question 9 is 5 marks)

11 The cumulative frequency graphs give information about the heights of two groups of children, group A and group B.



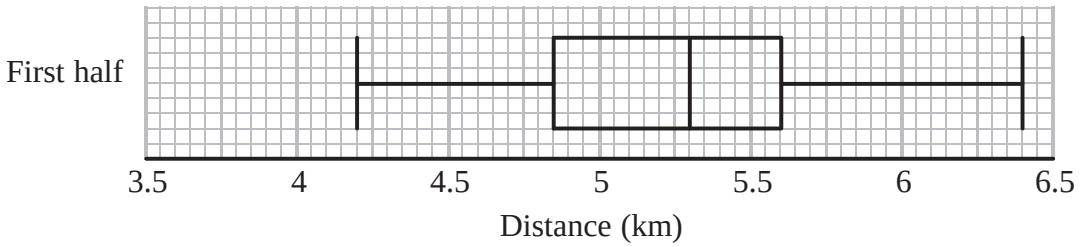
Compare the heights of the children in group A and the heights of the children in group B.

(Total for Question 11 is 2 marks)

16 Colin took a sample of 80 football players.

He recorded the total distance, in kilometres, each player ran in the first half of their matches on Saturday.

Colin drew this box plot for his results.



(a) Work out the interquartile range.

..... km

(2)

There were 80 players in Colin's sample.

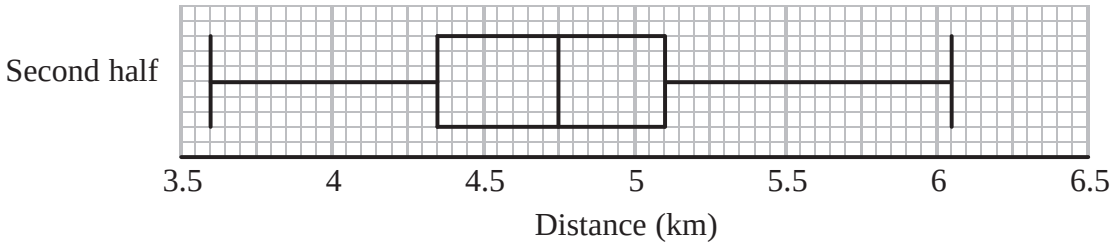
(b) Work out the number of players who ran a distance of more than 5.6 km.

.....

(2)

Colin also recorded the total distance each player ran in the second half of their matches.

He drew the box plot below for this information.



(c) Compare the distribution of the distances run in the first half with the distribution of the distances run in the second half.

.....

.....

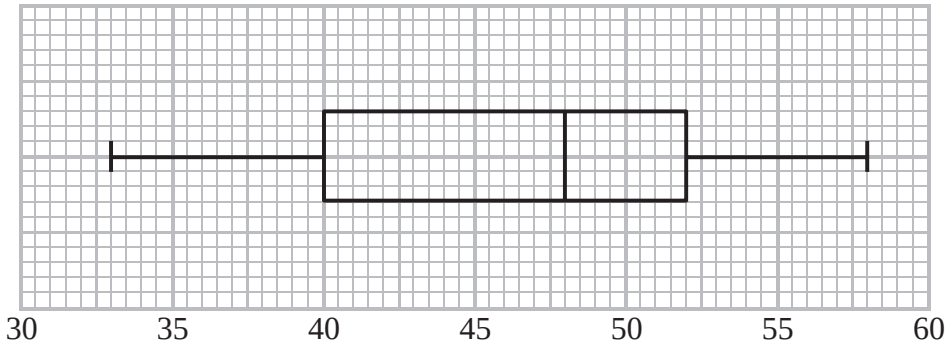
.....

.....

(2)

(Total for Question 16 is 6 marks)

9 The box plot gives information about the weights of a group of children.



(a) Write down the median.

..... kg

(1)

(b) Work out the interquartile range.

..... kg

(1)

There are 80 children in the group.

(c) Work out an estimate for the number of children who weigh 52 kg or more.

.....

(2)

(Total for Question 9 is 4 marks)

10 The table shows some information about the times, in minutes, 60 people took to get to work.

Time (x minutes)	Frequency		
$0 < x \leqslant 10$	5		
$10 < x \leqslant 30$	11		
$30 < x \leqslant 50$	23		
$50 < x \leqslant 80$	13		
$80 < x \leqslant 100$	8		

(a) Calculate an estimate for the mean.

..... minutes

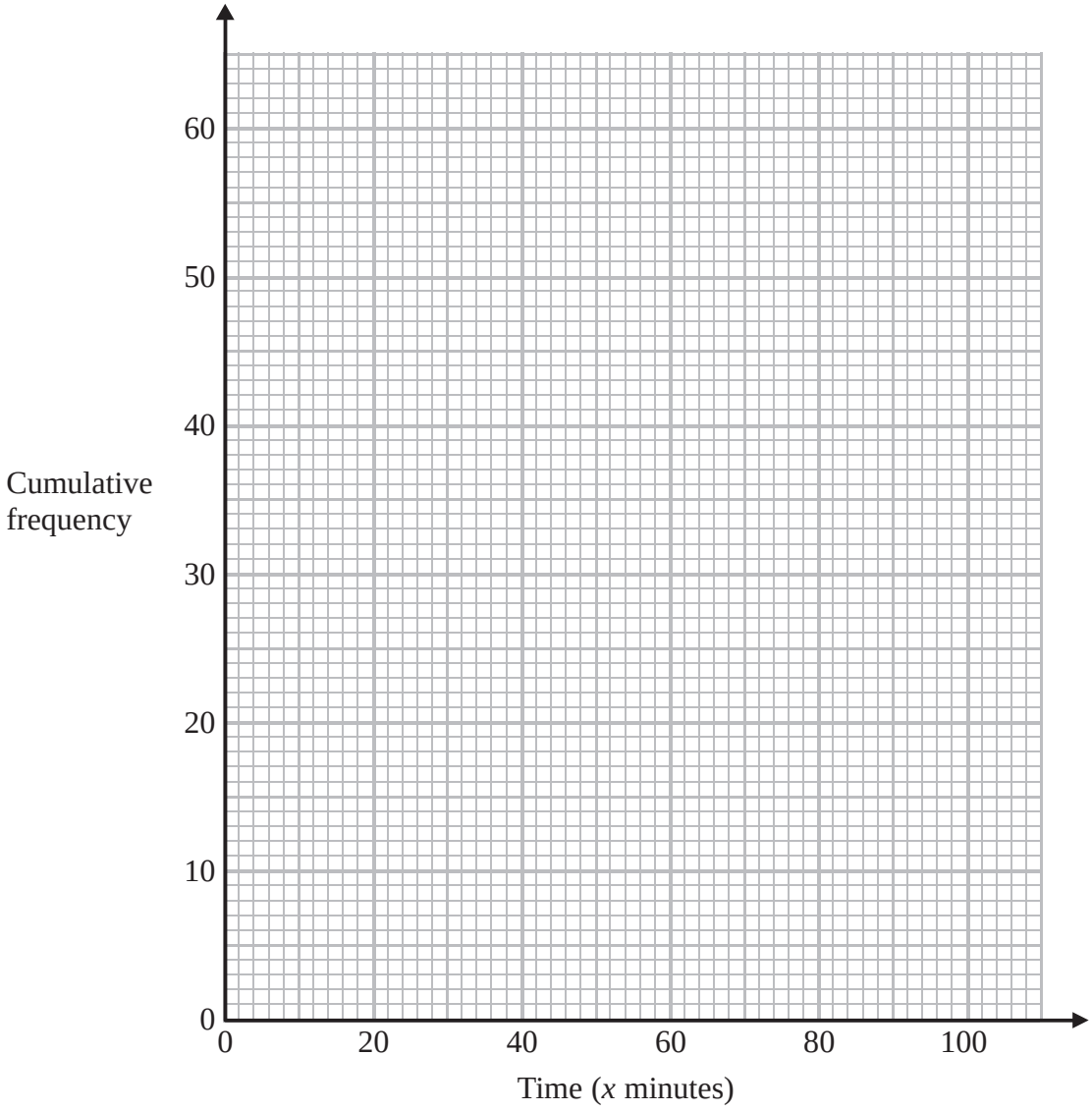
(4)

(b) Complete the cumulative frequency table.

Time (x minutes)	Cumulative frequency
$0 < x \leqslant 10$	
$0 < x \leqslant 30$	
$0 < x \leqslant 50$	
$0 < x \leqslant 80$	
$0 < x \leqslant 100$	

(1)

(c) On the grid draw a cumulative frequency graph for your table.



(2)

(d) Find an estimate for the number of people who took **more** than 1 hour to travel to work.

.....

(2)

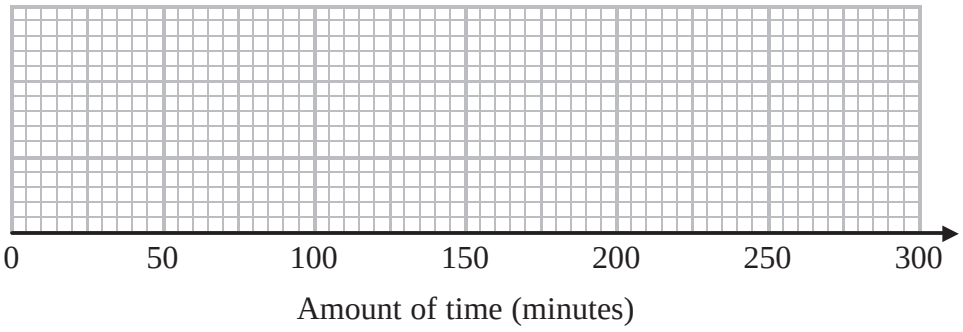
(Total for Question 10 is 9 marks)

15 The students in a class kept a record of the amount of time, in minutes, they spent doing homework last week.

The table shows information about the amount of time the girls spent doing homework last week.

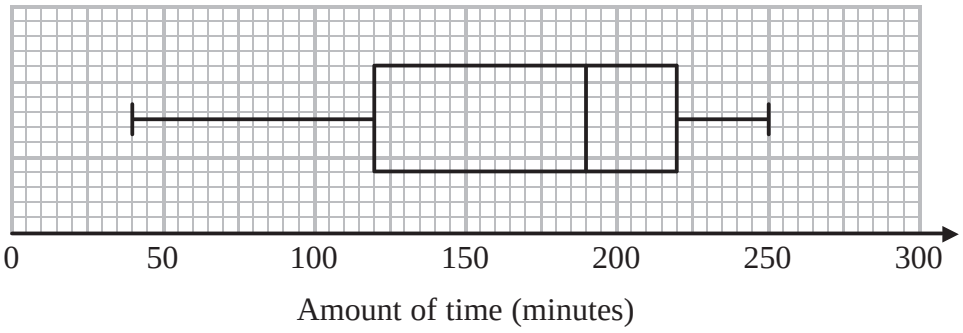
	Minutes
Least amount of time	60
Range	230
Median	170
Lower quartile	100
Upper quartile	220

(a) On the grid, draw a box plot for the information in the table.



(2)

The box plot below shows information about the amount of time the boys spent doing homework last week.



*(b) Compare the amount of time the girls spent doing homework with the amount of time the boys spent doing homework.

.....

.....

.....

.....

(2)

(Total for Question 15 is 4 marks)

16 There are 200 workers at a factory.

The cumulative frequency table gives information about their ages.

Age (a years)	Cumulative frequency
$0 < a \leqslant 20$	25
$0 < a \leqslant 30$	70
$0 < a \leqslant 40$	138
$0 < a \leqslant 50$	175
$0 < a \leqslant 60$	186
$0 < a \leqslant 70$	194
$0 < a \leqslant 80$	200

(a) On the grid opposite, draw a cumulative frequency graph for this information.

(2)

(b) Graham says,

"10% of workers at the factory are older than 65"

Is Graham correct?
You must show how you get your answer.

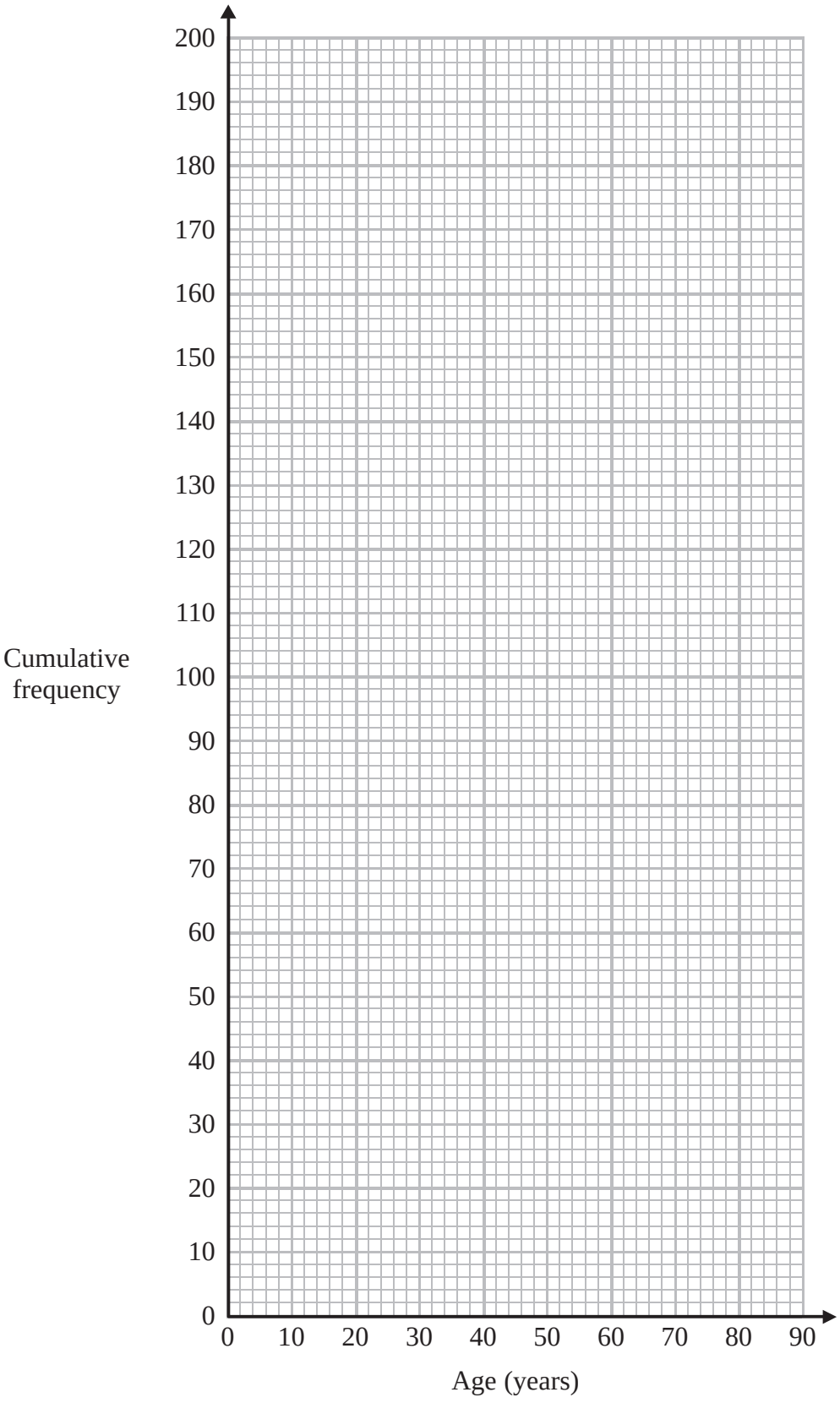
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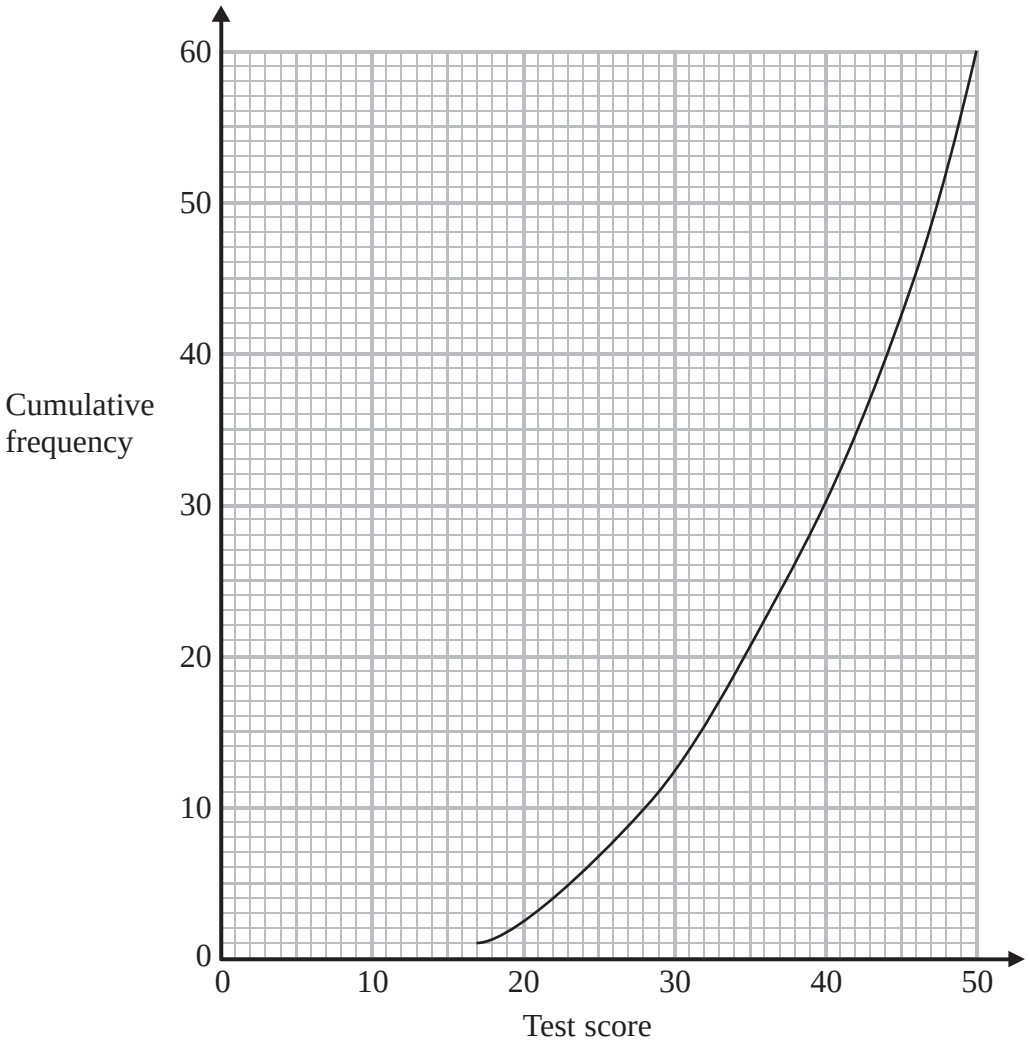
(2)



(Total for Question 16 is 4 marks)

12 60 people took a driving theory test.

The cumulative frequency graph shows information about their test scores.



(a) Use the graph to find an estimate for the median test score.

.....

(1)

People pass the test when their test score is 43 or more.

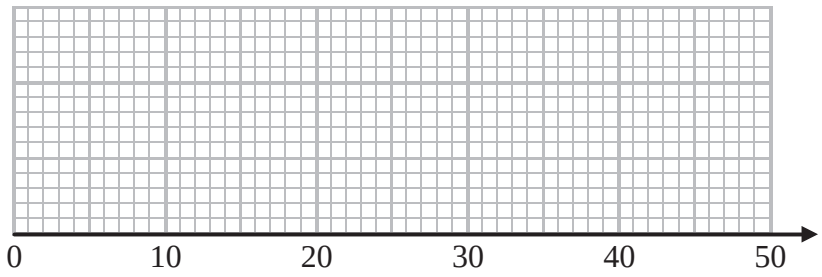
(b) Find an estimate for the number of these people who passed the test.

.....

(2)

The lowest test score was 17
The highest test score was 50

(c) Use this information and the information from the cumulative frequency graph to draw a box plot.



(3)

(Total for Question 12 is 6 marks)

16 The table shows information about the times taken by 100 people in a fun run.

Time (t minutes)	Frequency
$20 < t \leqslant 30$	4
$30 < t \leqslant 40$	16
$40 < t \leqslant 50$	36
$50 < t \leqslant 60$	24
$60 < t \leqslant 70$	14
$70 < t \leqslant 80$	6

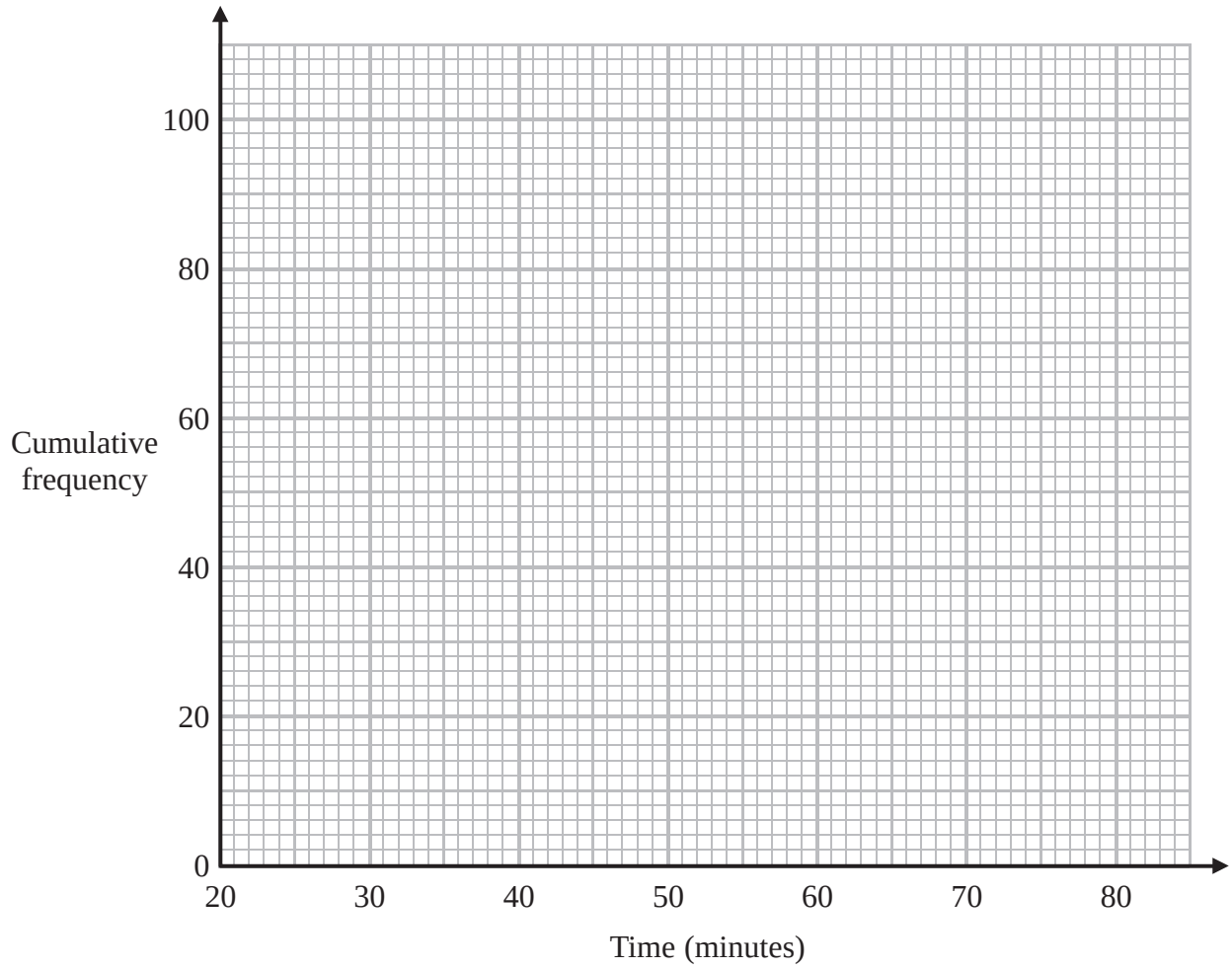
(a) Complete the cumulative frequency table for this information.

Time (t minutes)	Cumulative frequency
$20 < t \leqslant 30$	
$20 < t \leqslant 40$	
$20 < t \leqslant 50$	
$20 < t \leqslant 60$	
$20 < t \leqslant 70$	
$20 < t \leqslant 80$	

(1)

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

(2)



(c) Use your graph to find an estimate for the median time.

..... minutes

(1)

(d) Use your graph to find an estimate for the number of people who took longer than 63 minutes.

.....

(2)

(Total for Question 16 is 6 marks)

18 The owners of a car park recorded the number of cars parked at 12 noon each day.

The table shows information about the number of cars parked in the car park at 12 noon each day in July and in December.

	July	**December**
Least number of cars	75	100
Lower quartile	90	115
Median	95	130
Upper quartile	150	150
Greatest number of cars	178	180

(a) What type of diagram could you draw to represent the information for each month?

.....

(1)

*(b) Compare the distribution of the number of cars recorded in July with the distribution of the number of cars recorded in December.

.....

.....

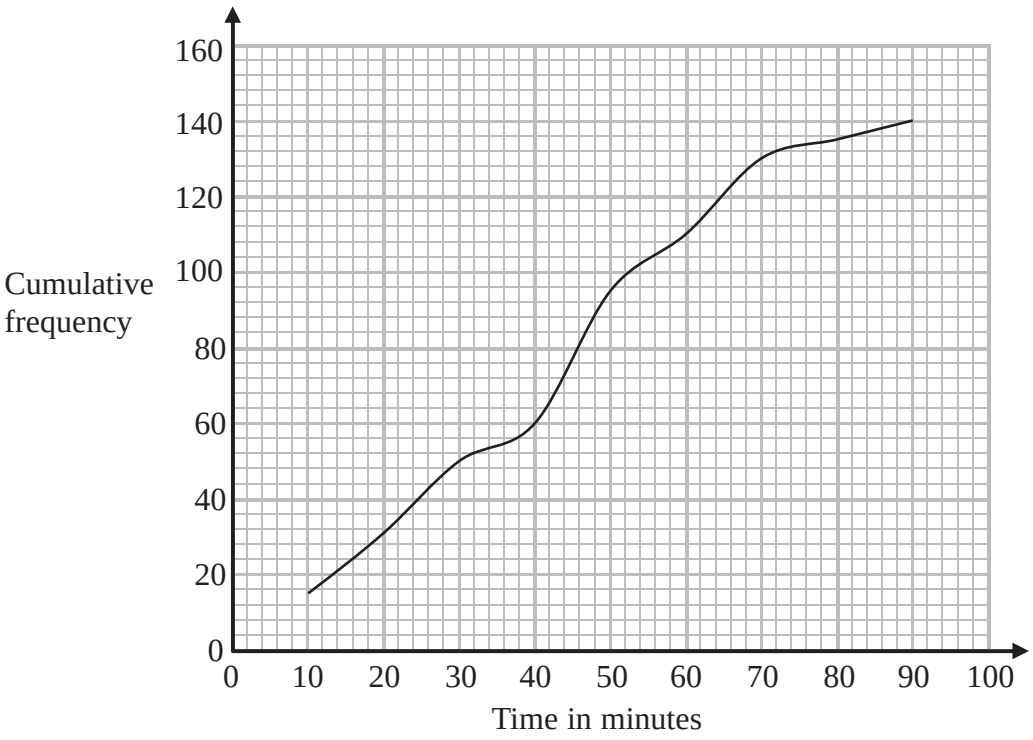
.....

.....

(2)

(Total for Question 18 is 3 marks)

9 The cumulative frequency graph gives information about the times, in minutes, 140 girls revised for an exam.



(a) Find an estimate for the median.

..... minutes

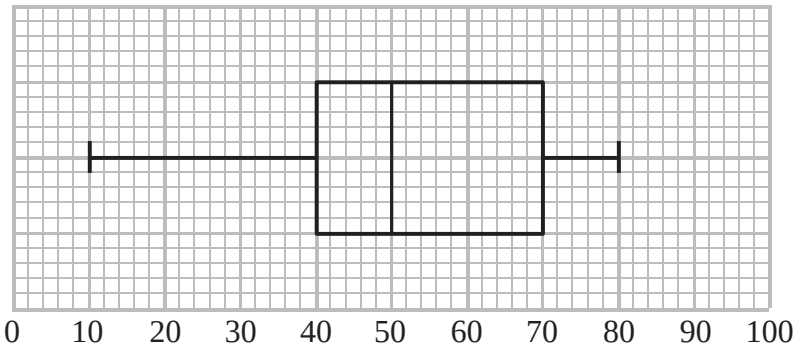
(1)

(b) Find an estimate for the number of girls who revised for more than 30 minutes.

.....

(2)

The box plot gives information about the times, in minutes, 140 boys revised for the same exam.



The lower quartile for the times the girls revised is 22 minutes.
The upper quartile for the times the girls revised is 56 minutes.

*(c) Compare the distribution of the times the girls revised with the distribution of the times the boys revised.

(4)

(Total for Question 9 is 7 marks)

15 Sue works for a company that delivers parcels.

One day the company delivered 80 parcels.
The table shows information about the weights, in kg, of these parcels.

Weight (w kg)	Frequency
$0 < w \leqslant 1$	19
$1 < w \leqslant 2$	17
$2 < w \leqslant 3$	15
$3 < w \leqslant 4$	12
$4 < w \leqslant 5$	10
$5 < w \leqslant 6$	7

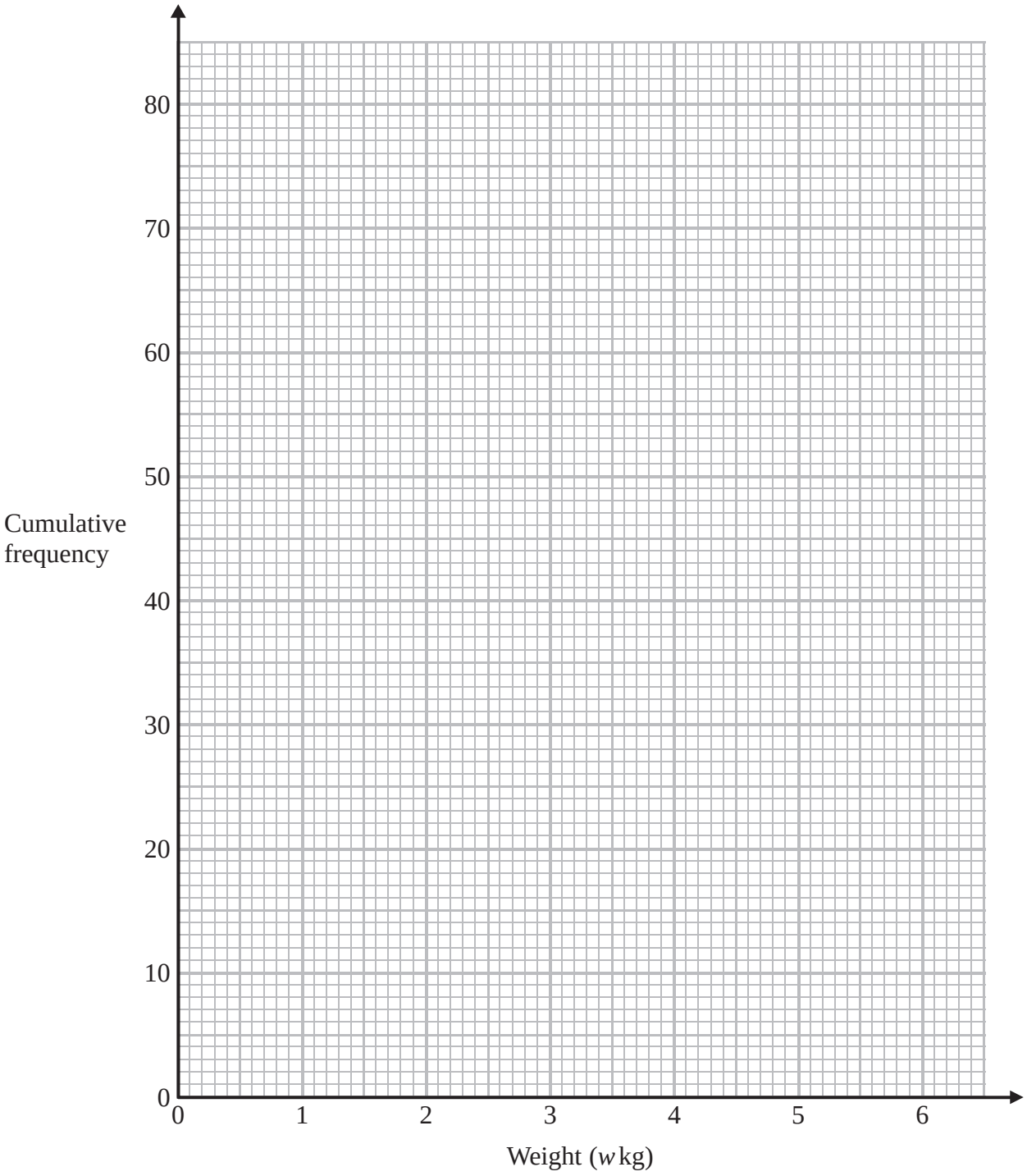
(a) Complete the cumulative frequency table.

Weight (w kg)	Cumulative frequency
$0 < w \leqslant 1$	
$0 < w \leqslant 2$	
$0 < w \leqslant 3$	
$0 < w \leqslant 4$	
$0 < w \leqslant 5$	
$0 < w \leqslant 6$	

(1)

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

(2)



Sue says,

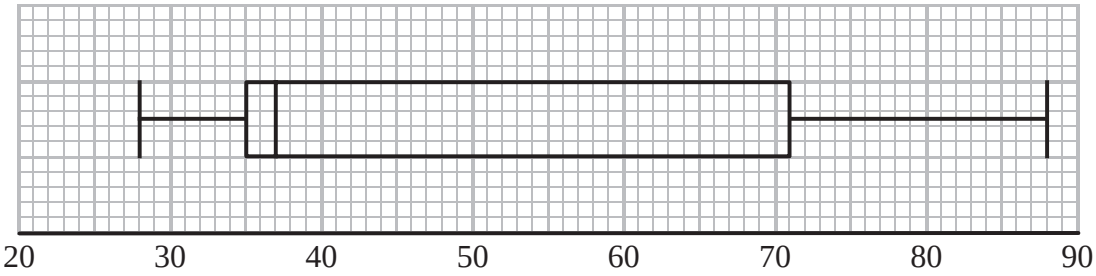
"75% of the parcels weigh less than 3.4 kg."

*(c) Is Sue correct?
You must show how you get your answer.

(3)

(Total for Question 15 is 6 marks)

18 The box plot shows information about the number of countries competing in each Winter Olympic Games since 1948



Number of countries in the Winter Olympics

(a) Write down the median.

.....

(1)

(b) Work out the interquartile range.

.....

(2)

The table below shows information about the number of countries competing in each Summer Olympic Games since 1948

	Smallest	**Lower quartile**	**Median**	**Upper quartile**	**Largest**
Number of countries	59	83	121	199	204

*(c) Compare the two distributions.

.....

.....

.....

.....

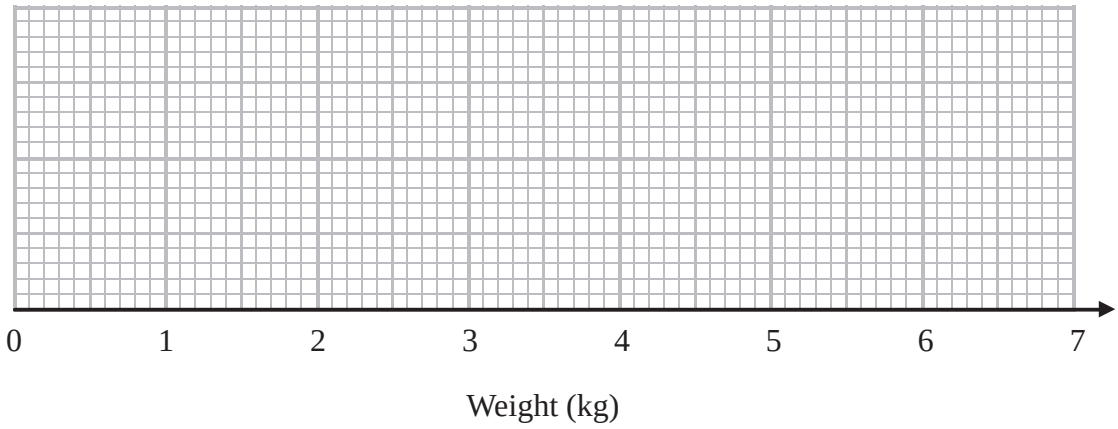
(2)

(Total for Question 18 is 5 marks)

9 The table gives information about the weights of 60 parcels.

Lowest	1.5 kg
Highest	6.3 kg
Lower quartile	2.7 kg
Interquartile range	1.7 kg
Median	3.2 kg

Draw a box plot for this information.



(Total for Question 9 is 3 marks)

10 The table shows information about the heights of 40 plants.

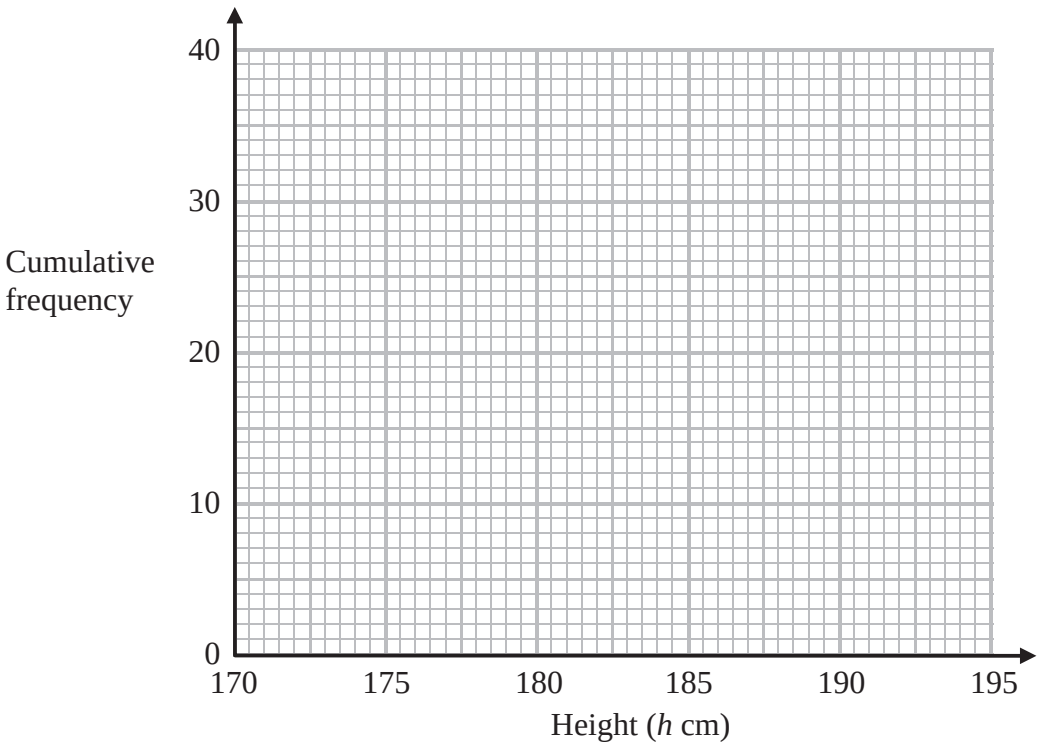
Height (h cm)	Frequency
$170 < h \leqslant 175$	5
$175 < h \leqslant 180$	18
$180 < h \leqslant 185$	12
$185 < h \leqslant 190$	4
$190 < h \leqslant 195$	1

(a) Complete the cumulative frequency table.

Height (h cm)	Cumulative frequency
$170 < h \leqslant 175$	
$170 < h \leqslant 180$	
$170 < h \leqslant 185$	
$170 < h \leqslant 190$	
$170 < h \leqslant 195$	

(1)

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



(2)

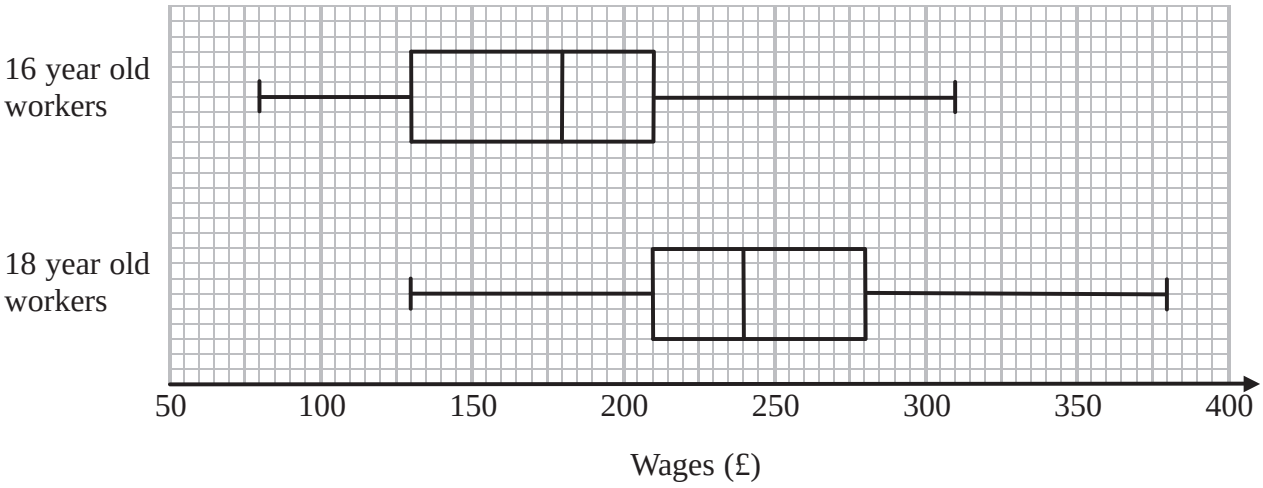
(c) Find an estimate for the number of plants with a height greater than 187 cm.

.....

(2)

(Total for Question 10 is 5 marks)

15 The box plots give information about the wages of a group of 16 year old workers and a group of 18 year old workers.



*(a) Compare the distribution of the wages of the 16 year old workers with the distribution of the wages of the 18 year old workers.

(3)

There are 200 workers who are 16 years old.

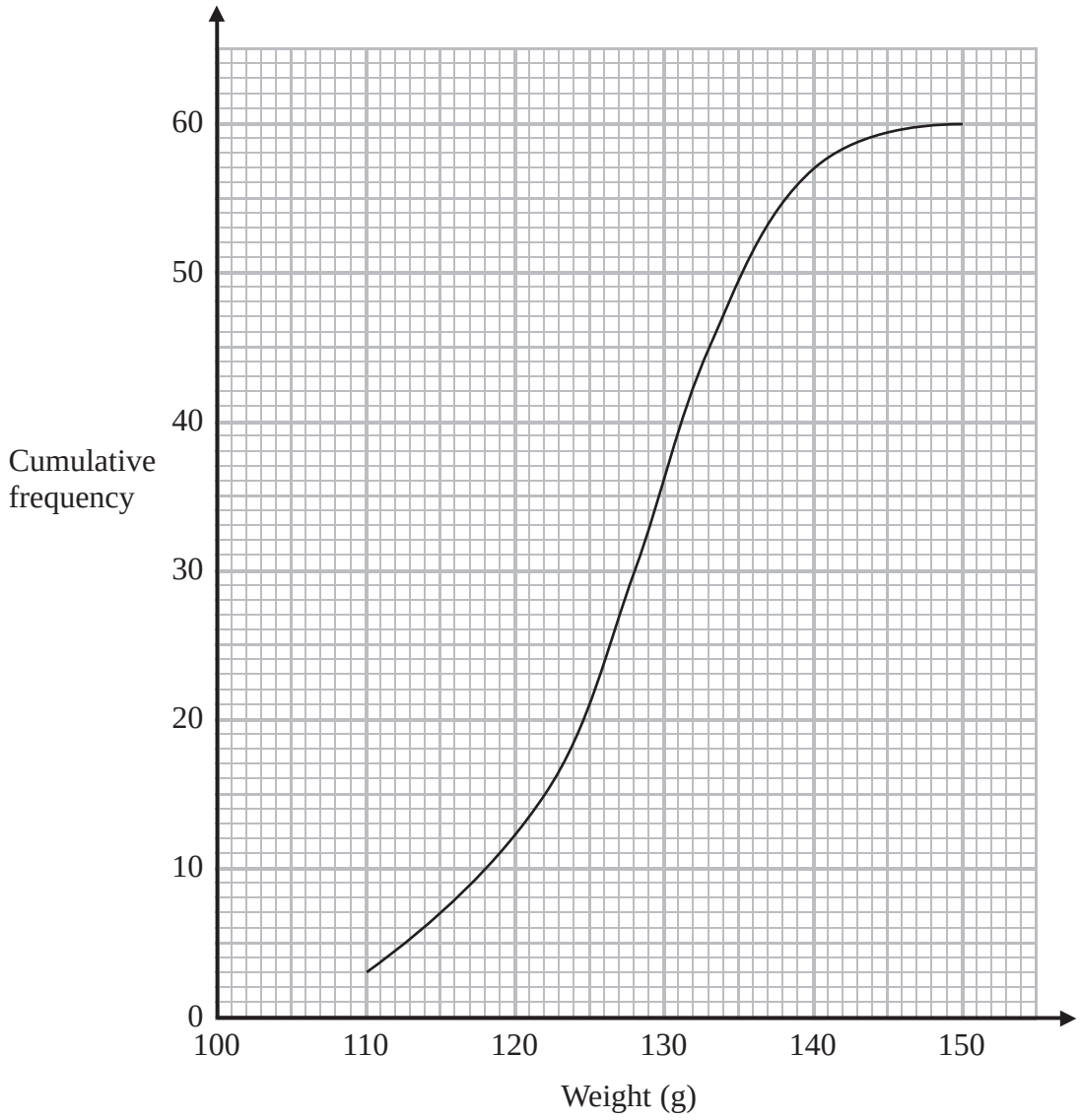
(b) Work out an estimate for the number of these workers whose wages are £130 or more.

.....

(2)

(Total for Question 15 is 5 marks)

16 The cumulative frequency graph shows information about the weights of 60 apples.



(a) Use the graph to find an estimate for the median weight.

.....g

(1)

(b) Use the graph to find an estimate for the interquartile range of the weights.

.....g

(2)

(Total for Question 16 is 3 marks)

7 The table shows some information about the prices of 64 secondhand cars that are for sale.

Price (£x)	Frequency		
$0 < x \leqslant 2000$	8		
$2000 < x \leqslant 4000$	14		
$4000 < x \leqslant 6000$	28		
$6000 < x \leqslant 8000$	10		
$8000 < x \leqslant 10000$	4		

(a) Calculate an estimate for the mean price.

£ .....

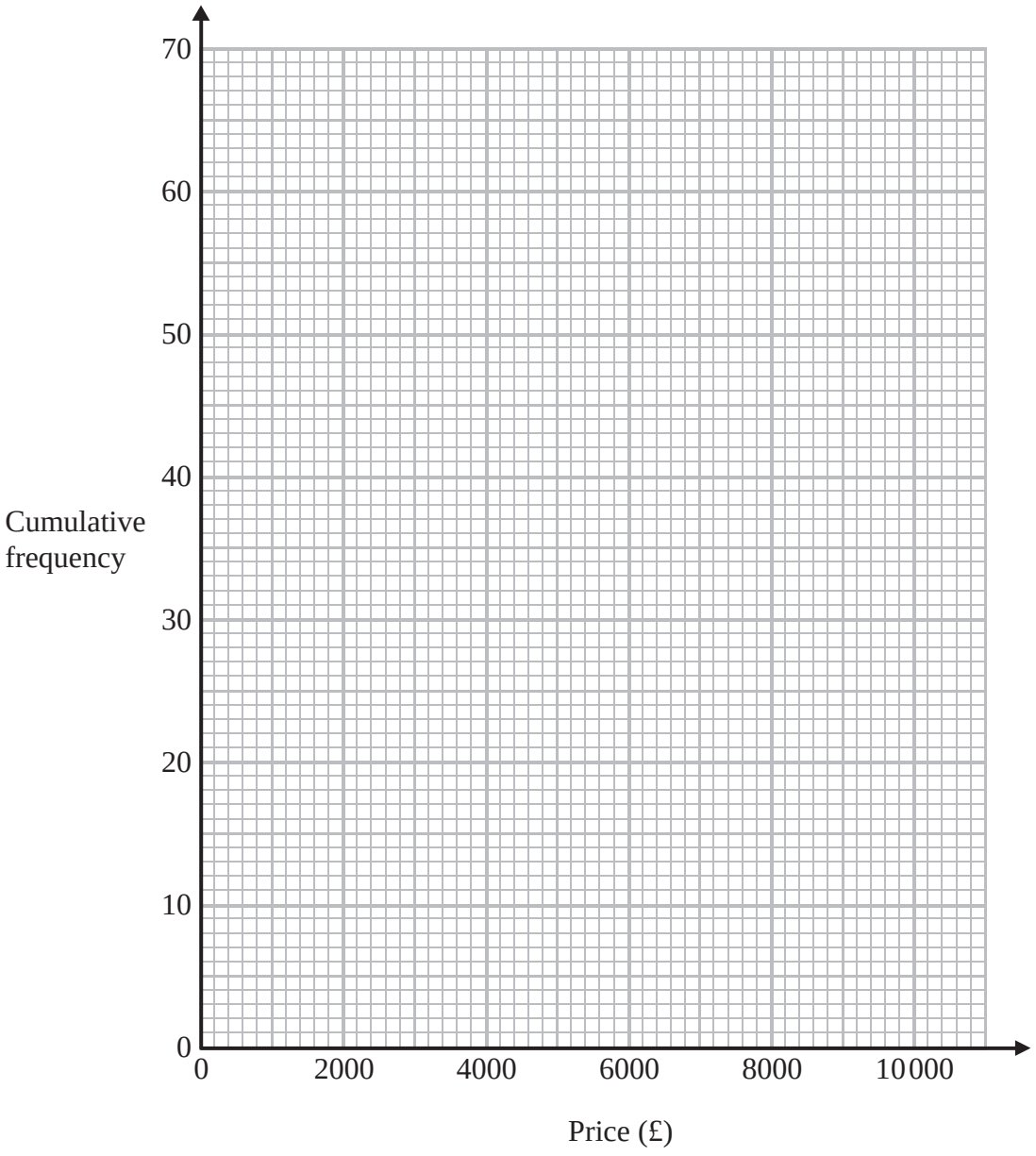
(4)

(b) Complete the cumulative frequency table.

Price (£x)	Cumulative frequency
$0 < x \leqslant 2000$	
$0 < x \leqslant 4000$	
$0 < x \leqslant 6000$	
$0 < x \leqslant 8000$	
$0 < x \leqslant 10000$	

(1)

(c) On the grid, draw a cumulative frequency graph for your table.



(2)

(d) Find an estimate for the interquartile range.

£.....

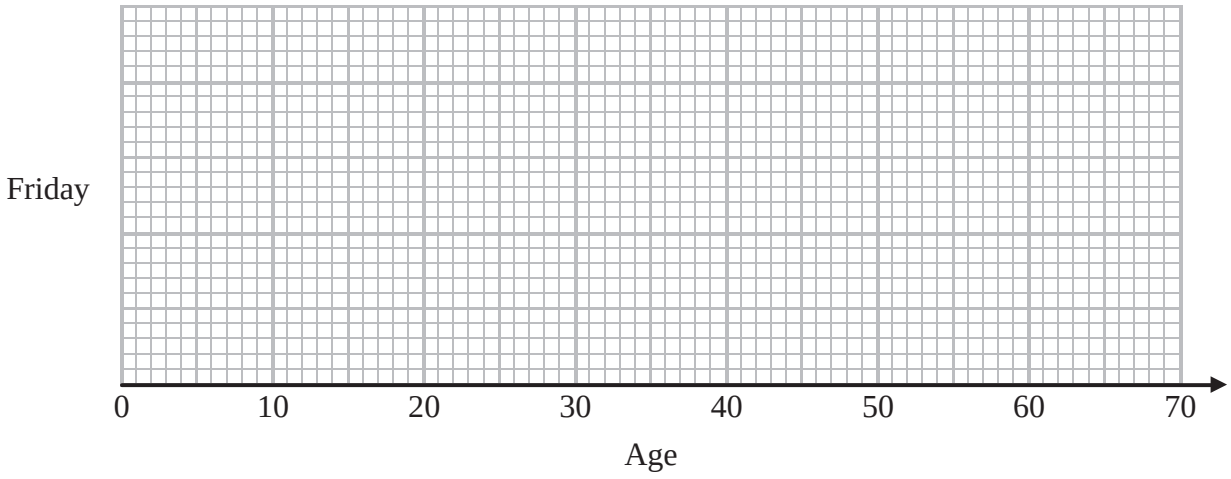
(2)

(Total for Question 7 is 9 marks)

9 Here are the ages of 15 people at a party on Friday.

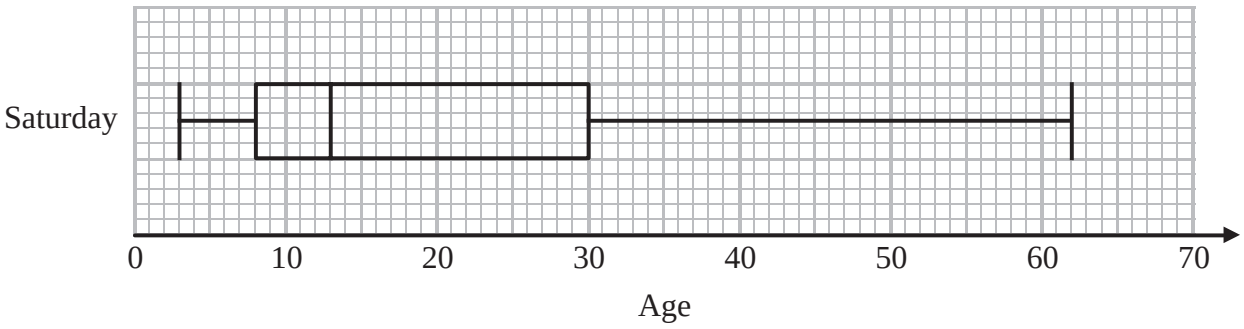
16 16 17 18 19 21 23 27 34 34 35 36 47 54 57

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



(3)

This box plot shows information about the ages of people at a party on Saturday.



*(b) Compare the distribution of the ages of the people at the party on Saturday with the distribution of the ages of the people at the party on Friday.

.....

.....

.....

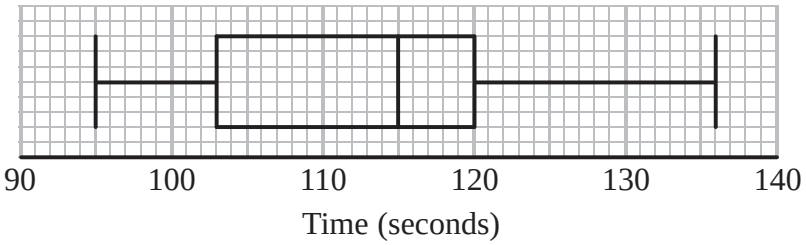
.....

(2)

(Total for Question 9 is 5 marks)

***18** Tom recorded the times, in seconds, some boys took to complete an obstacle course.

He drew this box plot for his results.



Tom also recorded the times some girls took to complete the obstacle course.

Here are the times, in seconds, for the girls.

99	101	103	106	108	109	110	110	111	112
113	114	115	115	117	120	124	125	132	

Compare the distribution of the times for the boys with the distribution of the times for the girls.

(Total for Question 18 is 4 marks)

13 Charlotte grows some potatoes.

The table shows information about the weights of her potatoes.

Weight (w grams)	Frequency
$100 < w \leqslant 120$	5
$120 < w \leqslant 140$	25
$140 < w \leqslant 160$	30
$160 < w \leqslant 180$	15
$180 < w \leqslant 200$	5

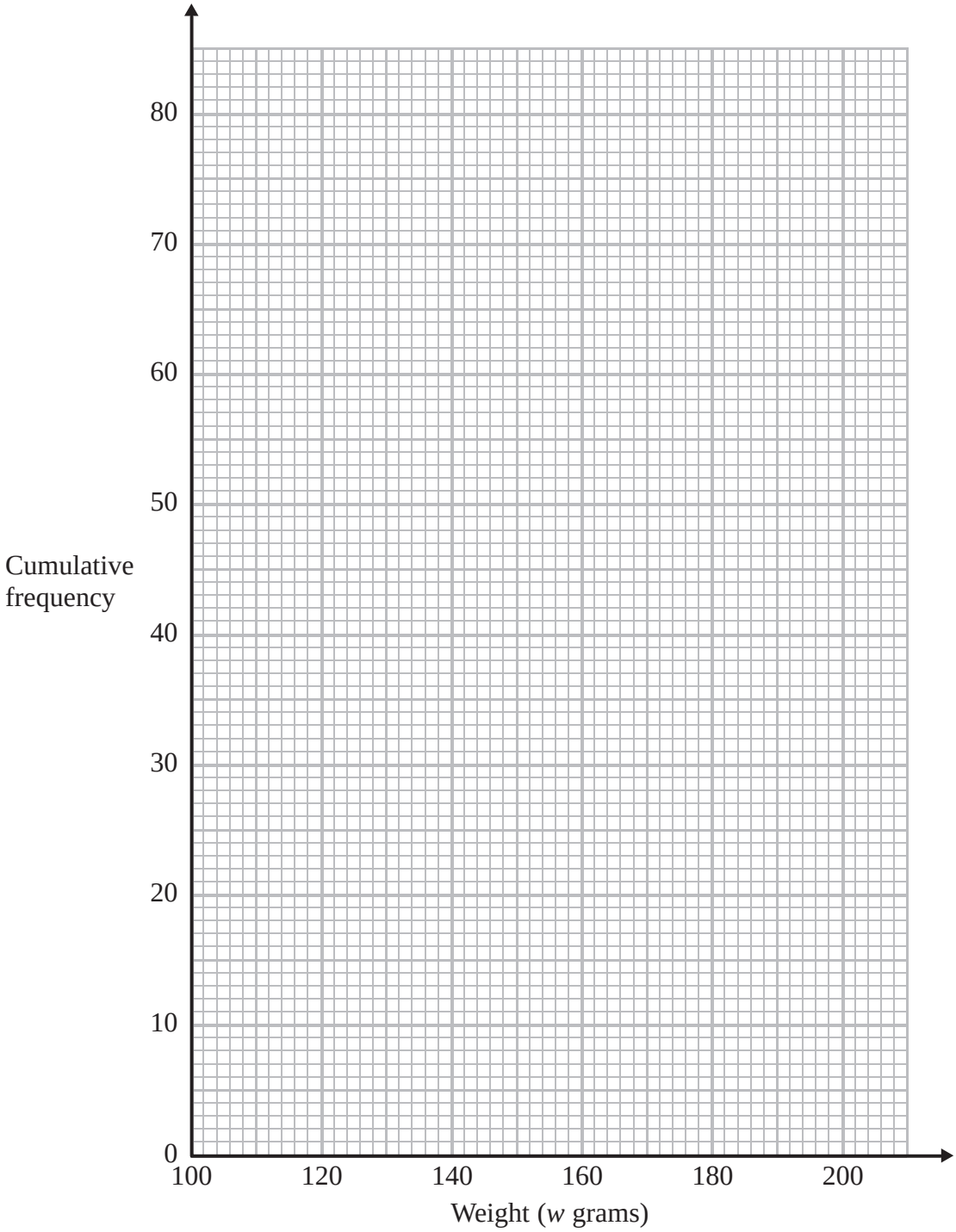
(a) Complete the cumulative frequency table.

Weight (w grams)	Cumulative frequency
$100 < w \leqslant 120$	
$100 < w \leqslant 140$	
$100 < w \leqslant 160$	
$100 < w \leqslant 180$	
$100 < w \leqslant 200$	

(1)

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

(2)



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

..... grams

(2)

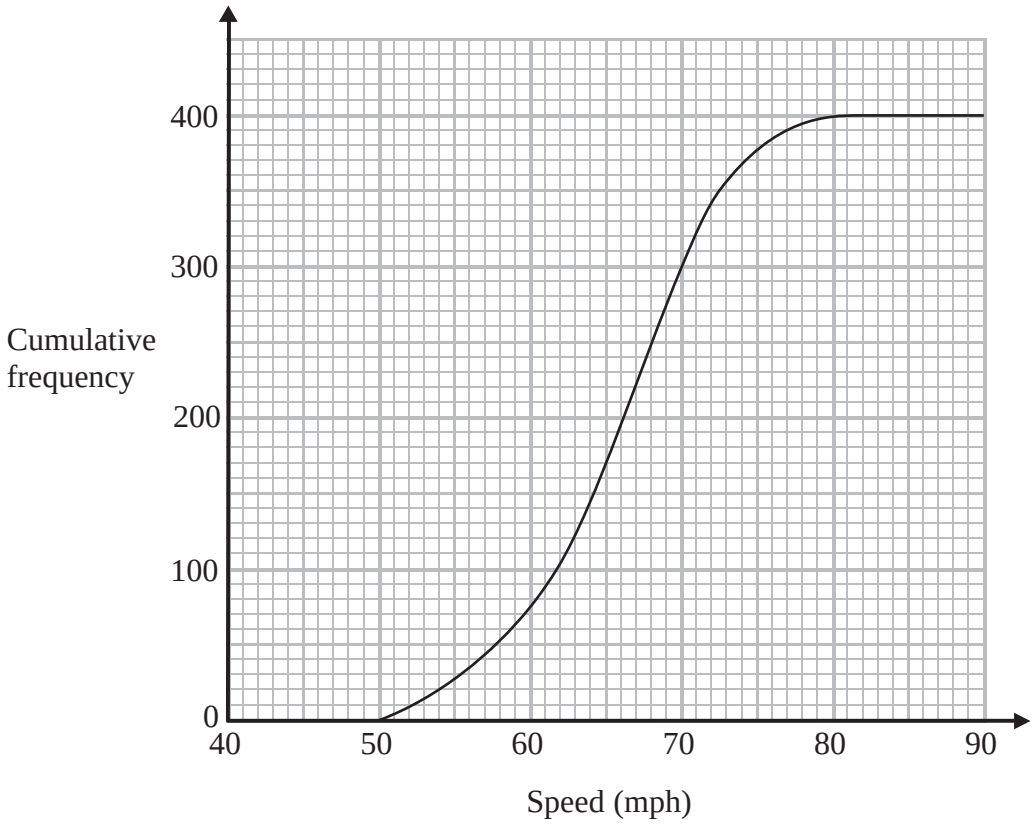
(d) Use your graph to find an estimate for the percentage of Charlotte's potatoes with a weight less than 150 grams.

..... %

(3)

(Total for Question 13 is 8 marks)

12 The cumulative frequency graph gives information about the speeds, in mph, of 400 cars passing a speed camera between 7 am and 8 am one day.



(a) Work out an estimate for the number of cars passing this speed camera at speeds greater than 72 mph.

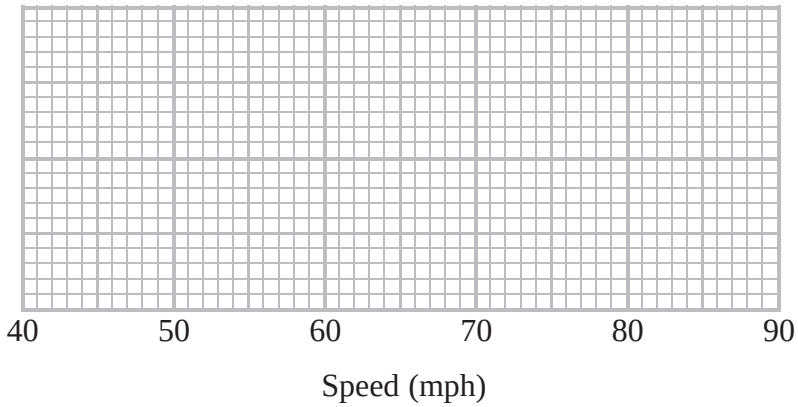
.....

(2)

The least speed for these 400 cars was 50 mph.
The greatest speed for these 400 cars was 81 mph.

(b) Use the cumulative frequency graph and the information above to draw a box plot to show the distribution of the speeds of these 400 cars.

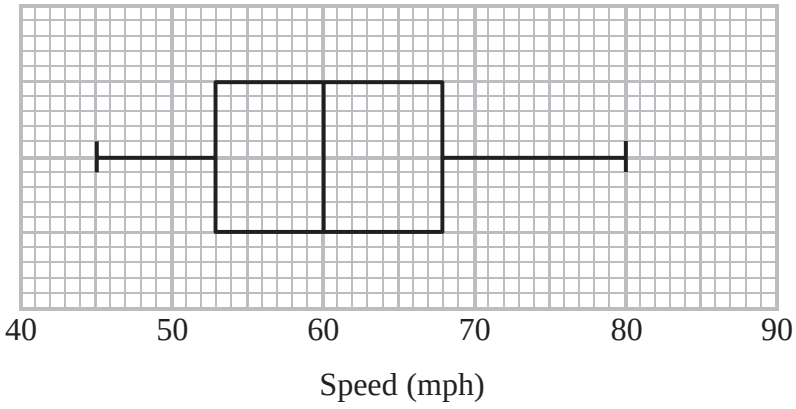
between 7 am and 8 am



(3)

The box plot below shows the distribution of the speeds of the cars passing the speed camera between 1 pm and 2 pm the same day.

between 1 pm and 2 pm



*(c) Compare the two distributions of the speeds.

.....

.....

.....

.....

(2)

(Total for Question 12 is 7 marks)

16 The table gives information about the marks gained by some students in an exam.

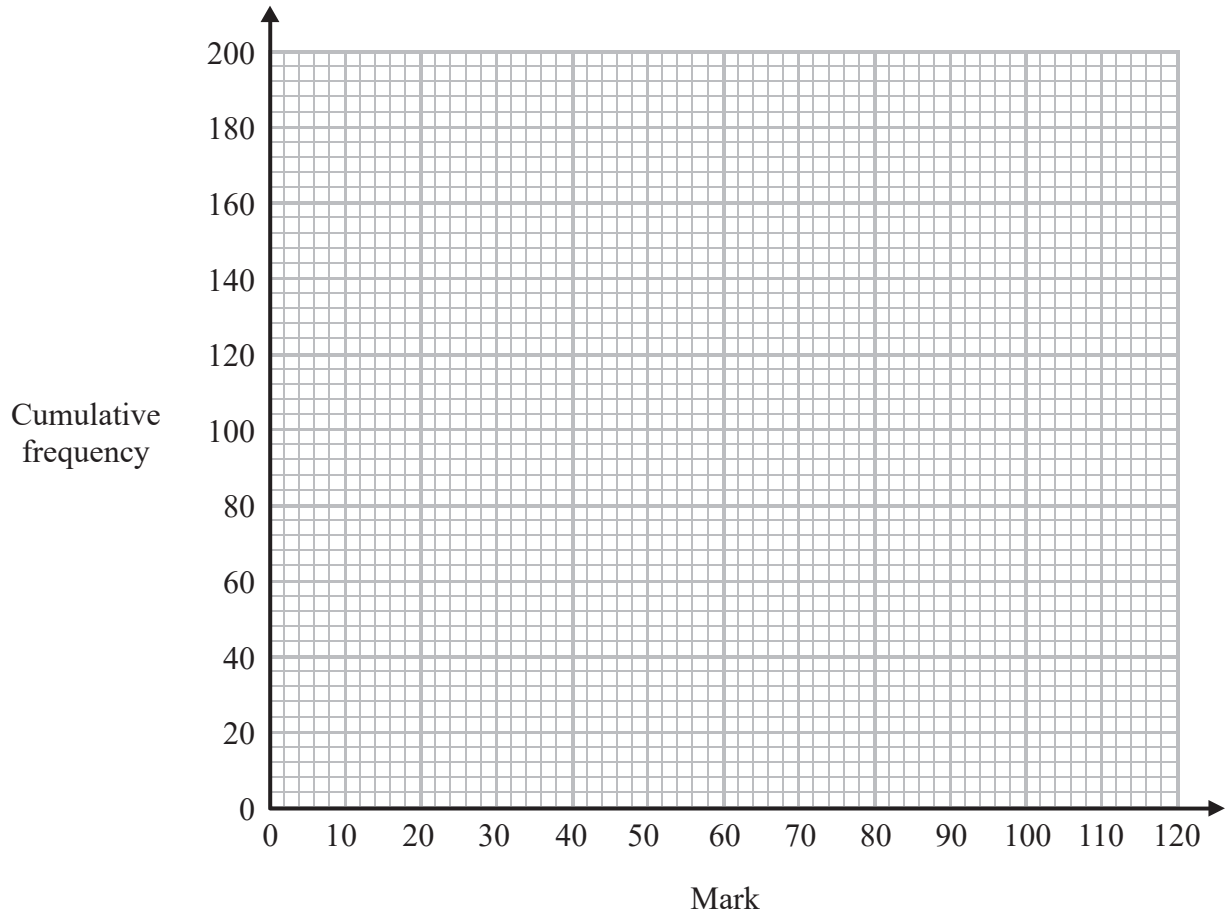
Mark (m)	Frequency
$0 < m \leqslant 20$	40
$20 < m \leqslant 40$	70
$40 < m \leqslant 60$	60
$60 < m \leqslant 80$	15
$80 < m \leqslant 100$	10
$100 < m \leqslant 120$	5

(a) Complete the cumulative frequency table for this information.

Mark (m)	Cumulative frequency
$0 < m \leqslant 20$	
$0 < m \leqslant 40$	
$0 < m \leqslant 60$	
$0 < m \leqslant 80$	
$0 < m \leqslant 100$	
$0 < m \leqslant 120$	

(1)

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



(2)

(c) Use your graph to find an estimate for the number of students who gained a mark of more than 54

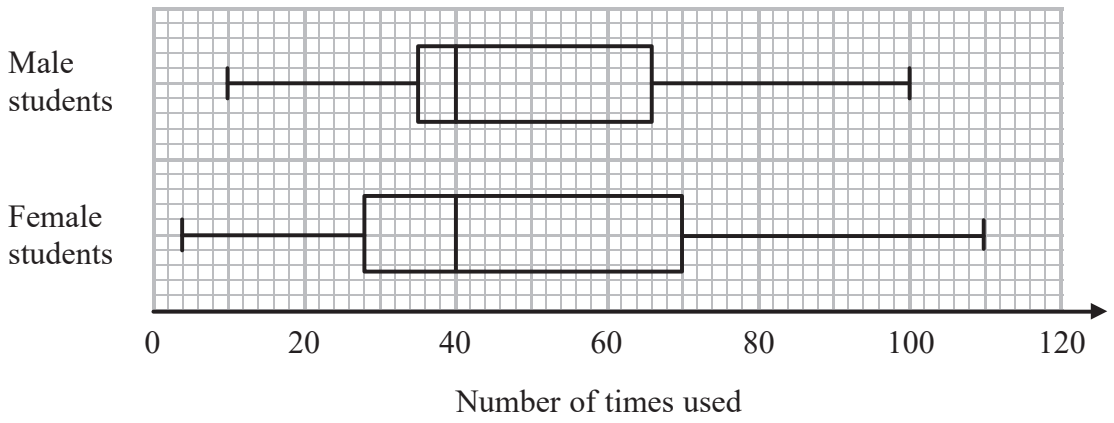
.....

(2)

(Total for Question 16 is 5 marks)

***19** Some students were asked how many times they each used their mobile phones last week.

The box plots give information about the male students' answers and about the female students' answers.



Compare the two distributions represented by the box plots.

.....

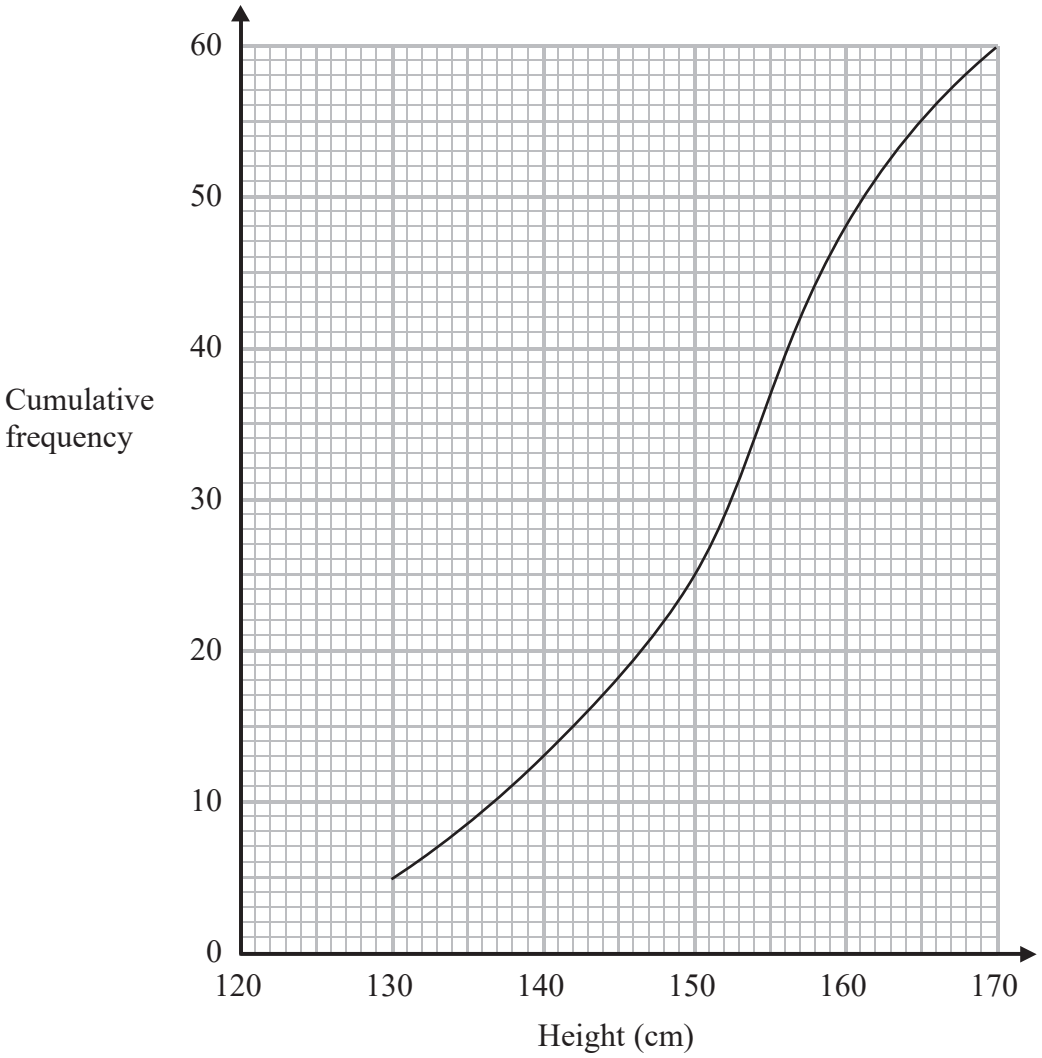
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(Total for Question 19 is 3 marks)

8 The cumulative frequency graph shows some information about the heights, in cm, of 60 students.

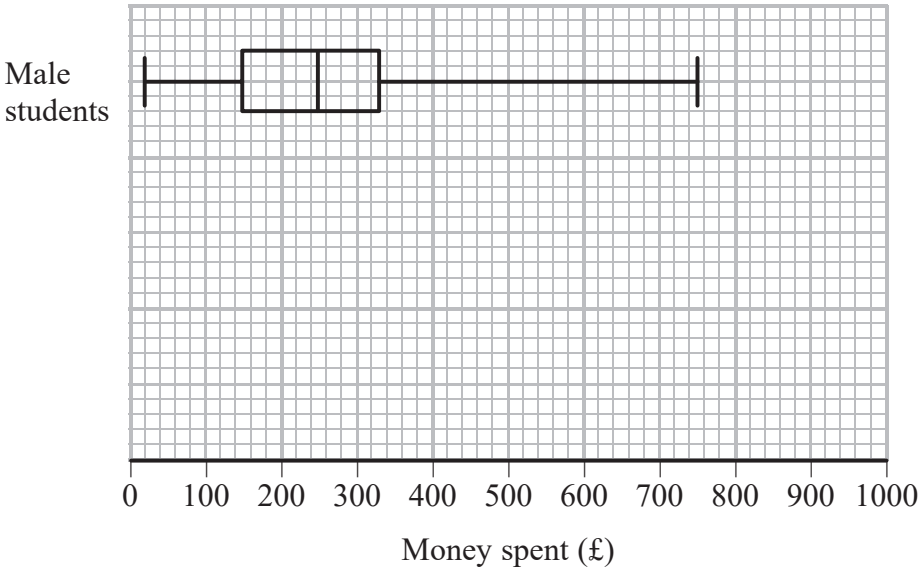


Work out an estimate for the number of these students with a height greater than 160 cm.

.....

(Total for Question 8 is 2 marks)

9 The box plot shows information about the distribution of the amounts of money spent by some male students on their holidays.



(a) Work out the interquartile range for the amounts of money spent by these male students.

£.....

(2)

The table below shows information about the distribution of the amounts of money spent by some female students on their holidays.

	Smallest	Lower quartile	Median	Upper quartile	Largest
Money spent (£)	60	180	300	350	650

(b) On the grid above, draw a box plot for the information in the table.

(2)

Chris says,

"The box plots show that the female students spent more money than the male students."

(c) Is Chris correct?
Give a reason for your answer.

.....

.....

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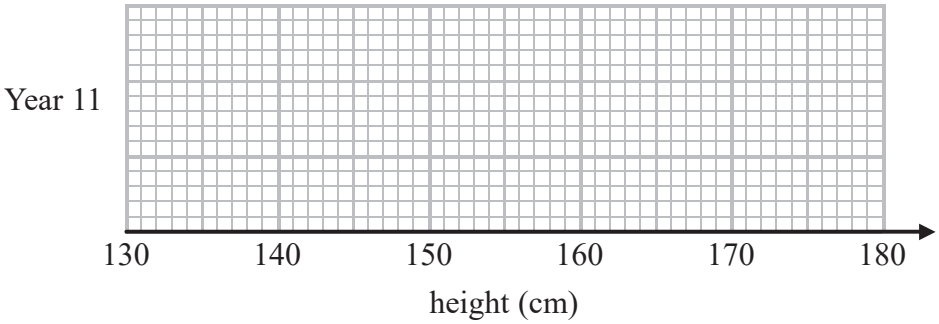
(1)

(Total for Question 9 is 5 marks)

12 The table shows information about the heights, in cm, of a group of Year 11 girls.

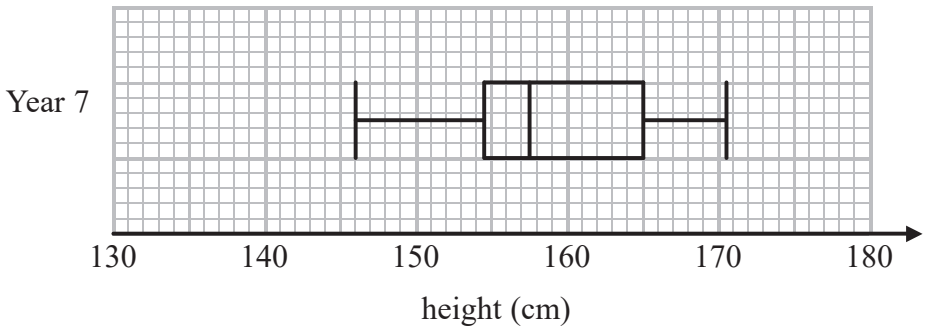
	height (cm)
least height	154
median	165
lower quartile	161
interquartile range	7
range	20

(a) Draw a box plot for this information.



(3)

The box plot below shows information about the heights, in cm, of a group of Year 7 girls.



(b) Compare the distribution of heights of the Year 7 girls with the distribution of heights of the Year 11 girls.

.....

.....

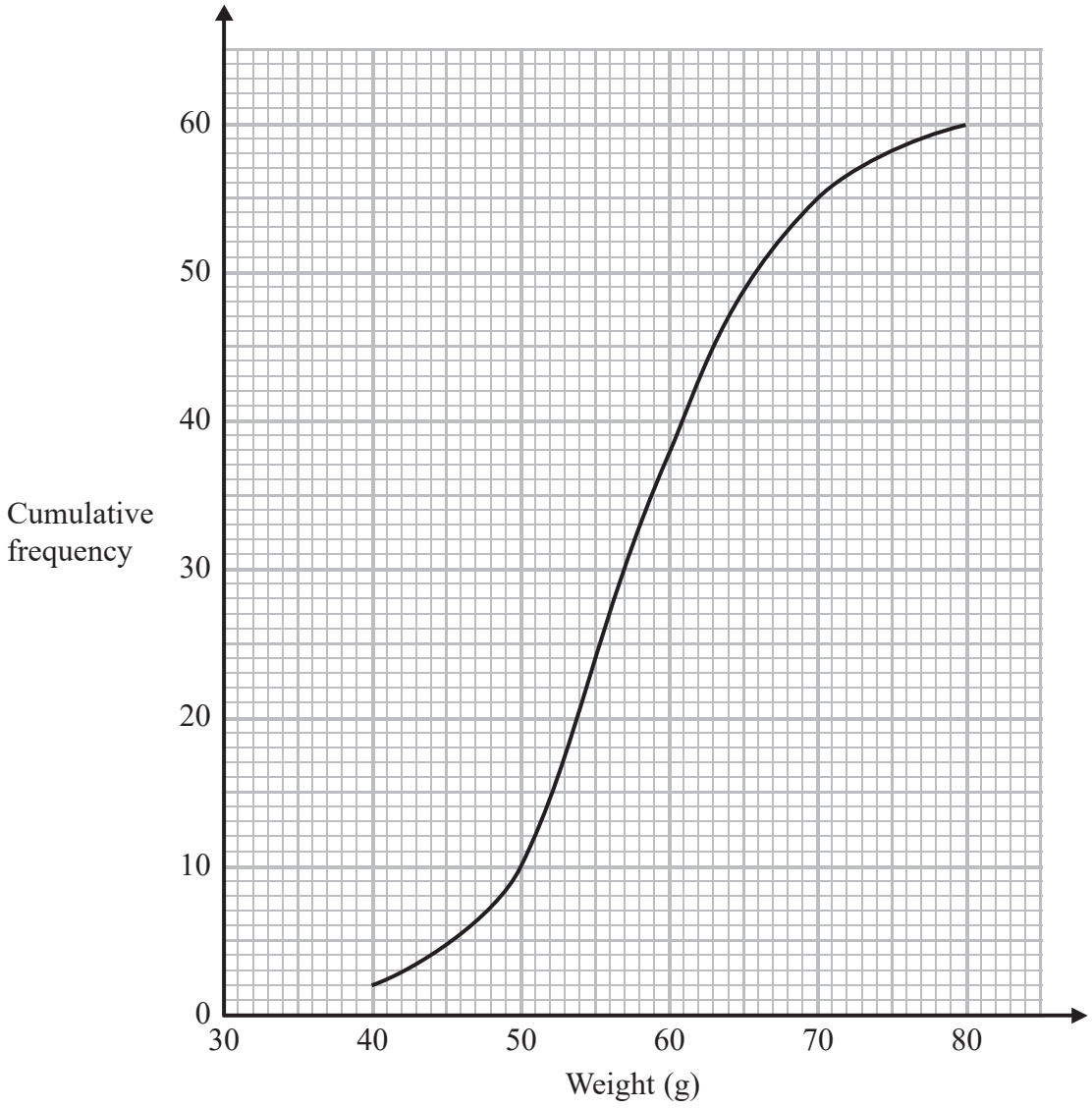
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(2)

(Total for Question 12 is 5 marks)

11 The cumulative frequency graph shows information about the weights of 60 potatoes.



(a) Use the graph to find an estimate for the median weight.

..... g

(1)

Jamil says,

"80 − 40 = 40 so the range of the weights is 40 g."

(b) Is Jamil correct?
You must give a reason for your answer.

.....

.....

(1)

(c) Show that less than 25% of the potatoes have a weight greater than 65 g.

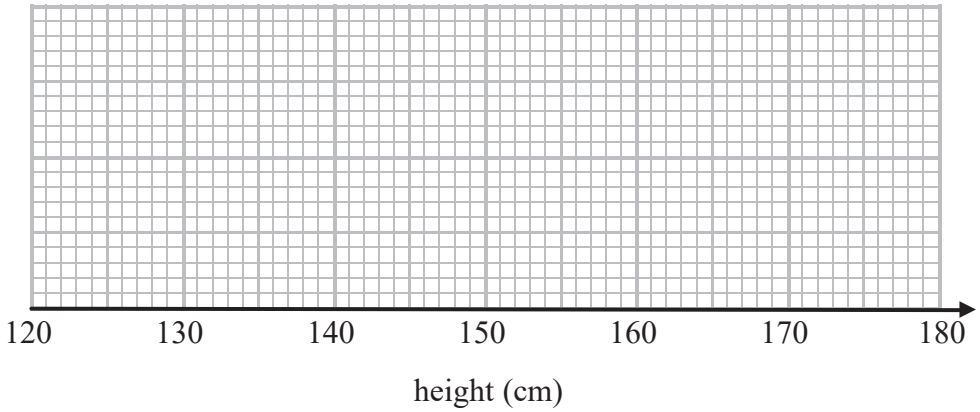
(2)

(Total for Question 11 is 4 marks)

10 The table gives some information about the heights of 80 girls.

Least height	133 cm
Greatest height	170 cm
Lower quartile	145 cm
Upper quartile	157 cm
Median	151 cm

(a) Draw a box plot to represent this information.



(3)

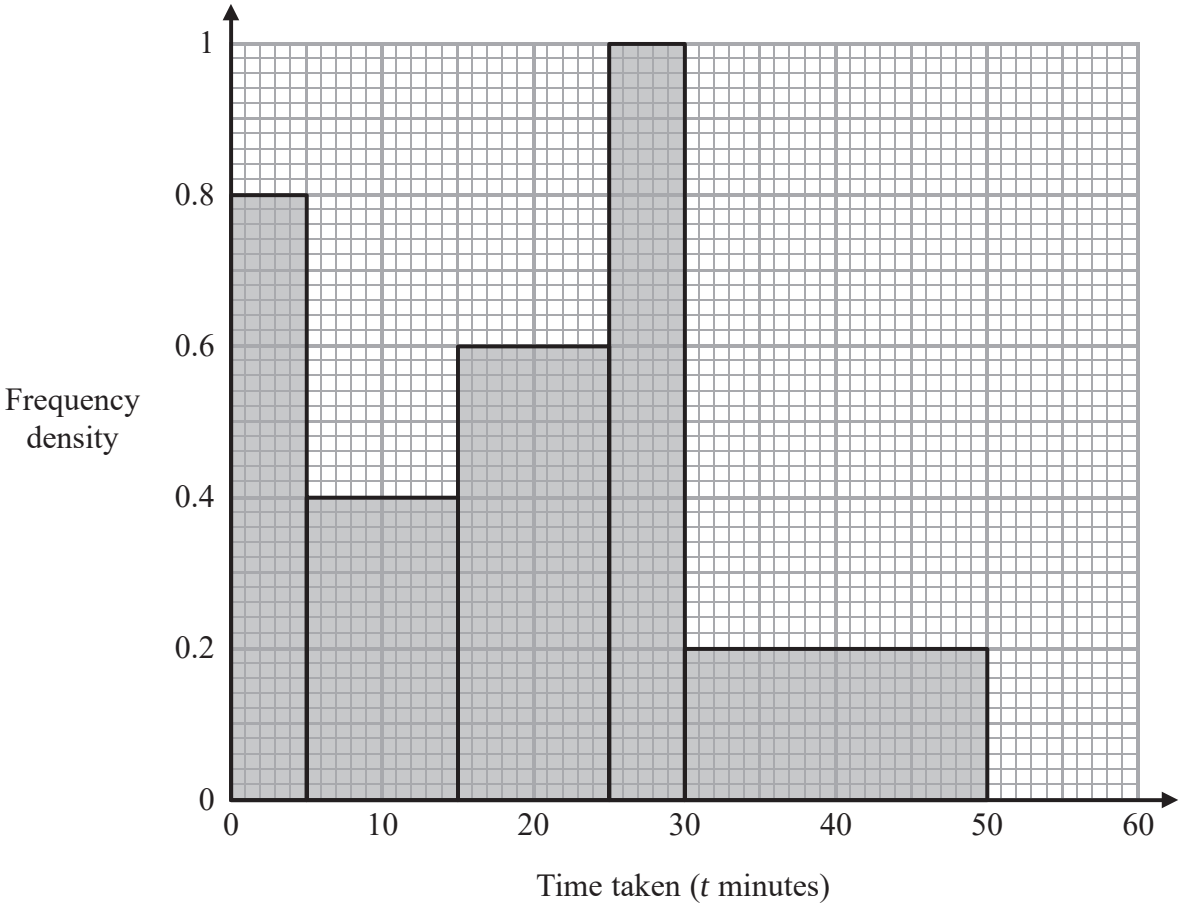
(b) Work out an estimate for the number of these girls with a height between 133 cm and 157 cm.

.....

(2)

(Total for Question 10 is 5 marks)

17 The histogram shows information about the times taken by some students to finish a puzzle.



(a) Complete the frequency table for this information.

Time taken (t minutes)	Frequency
$0 < t \leqslant 5$	4
$5 < t \leqslant 15$	
$15 < t \leqslant 25$	
$25 < t \leqslant 30$	
$30 < t \leqslant 50$	

(2)

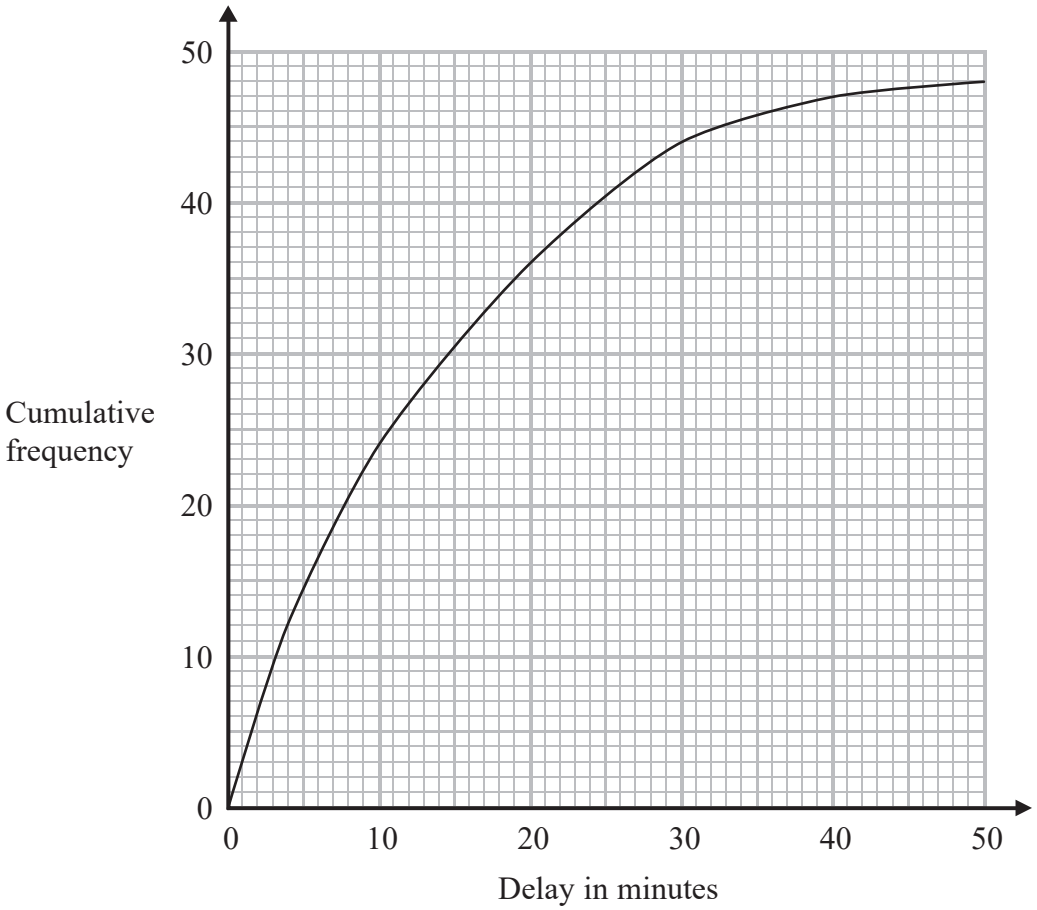
(b) Find an estimate for the lower quartile of the times taken to finish the puzzle.

..... minutes
(2)

(Total for Question 17 is 4 marks)

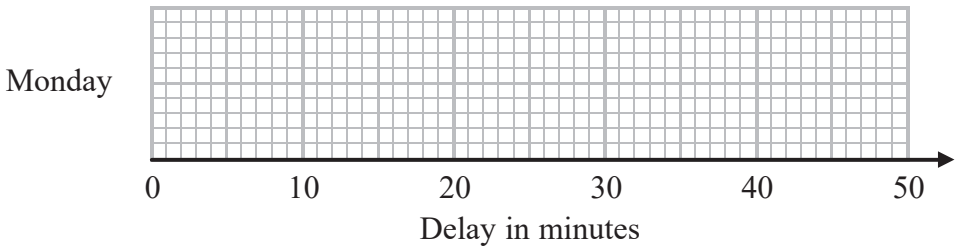
9 The times that 48 trains left a station on Monday were recorded.

The cumulative frequency graph gives information about the numbers of minutes the trains were delayed, correct to the nearest minute.



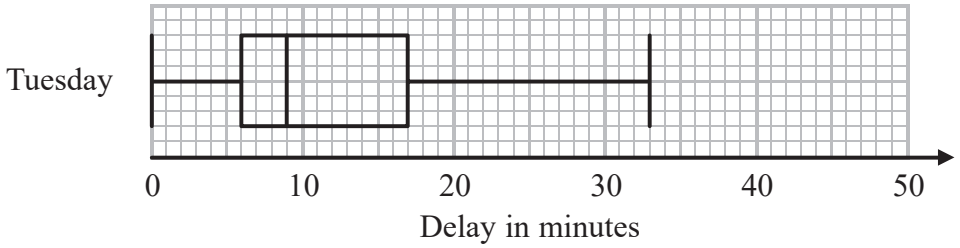
The shortest delay was 0 minutes.
The longest delay was 42 minutes.

(a) On the grid below, draw a box plot for the information about the delays on Monday.



(3)

48 trains left the station on Tuesday.
The box plot below gives information about the delays on Tuesday.



(b) Compare the distribution of the delays on Monday with the distribution of the delays on Tuesday.

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.....

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(2)

Mary says,

"The longest delay on Tuesday was 33 minutes.
This means that there must be some delays of between 25 minutes and 30 minutes."

(c) Is Mary right?
You must give a reason for your answer.

.....

.....

(1)

(Total for Question 9 is 6 marks)

11 A bus company recorded the ages, in years, of the people on coach A and the people on coach B.

Here are the ages of the 23 people on coach A.

41	42	44	48	52	53	53	53	56	57	57	59
60	61	63	64	64	66	67	69	74	77	79	

(a) Complete the table below to show information about the ages of the people on coach A.

Median	
Lower quartile	
Upper quartile	
Least age	41
Greatest age	79

(2)

Here is some information about the ages of the people on coach B.

Median	70
Lower quartile	54
Upper quartile	73
Least age	42
Greatest age	85

Richard says that the people on coach A are younger than the people on coach B.

(b) Is Richard correct?
You must give a reason for your answer.

.....

.....

.....

(1)

Richard says that the people on coach A vary more in age than the people on coach B.

(c) Is Richard correct?
You must give a reason for your answer.

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(1)

(Total for Question 11 is 4 marks)

11 The grouped frequency table gives information about the times, in minutes, that 80 office workers take to get to work.

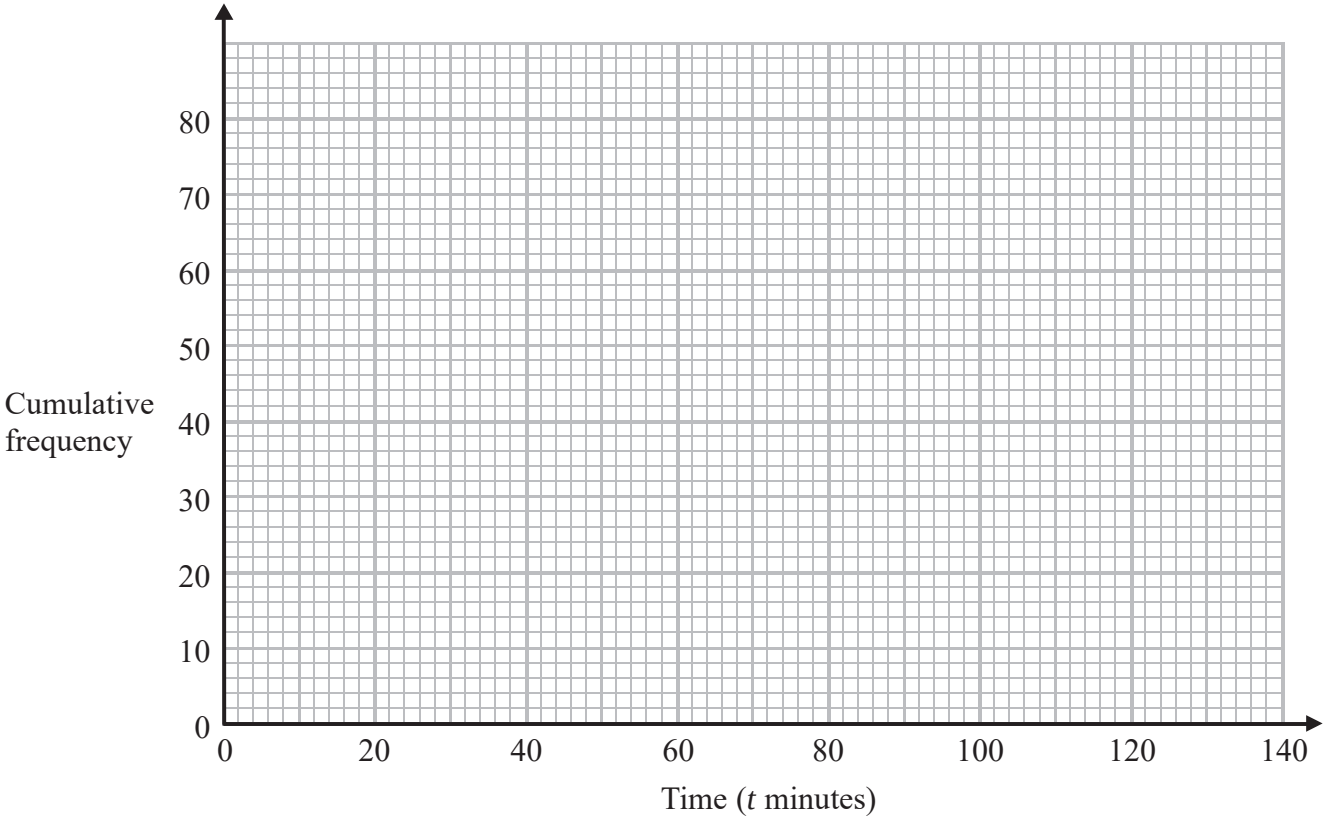
Time (t minutes)	Frequency
$0 < t \leqslant 20$	5
$20 < t \leqslant 40$	30
$40 < t \leqslant 60$	20
$60 < t \leqslant 80$	15
$80 < t \leqslant 100$	8
$100 < t \leqslant 120$	2

(a) Complete the cumulative frequency table.

Time (t minutes)	Cumulative frequency
$0 < t \leqslant 20$	
$0 < t \leqslant 40$	
$0 < t \leqslant 60$	
$0 < t \leqslant 80$	
$0 < t \leqslant 100$	
$0 < t \leqslant 120$	

(1)

(b) On the grid, draw the cumulative frequency graph for this information.



(2)

(c) Use your graph to find an estimate for the percentage of these office workers who take more than 90 minutes to get to work.

.....%

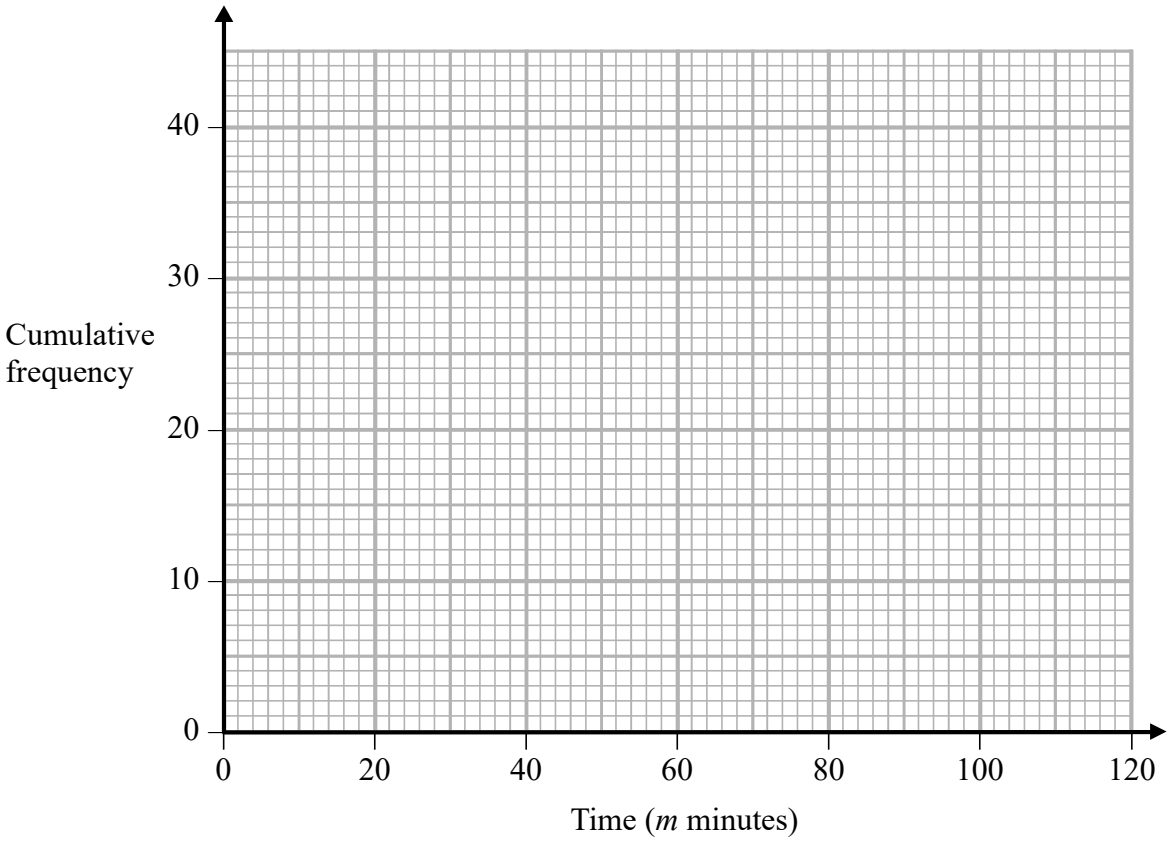
(3)

(Total for Question 11 is 6 marks)

10 The cumulative frequency table shows information about the times, in minutes, taken by 40 people to complete a puzzle.

Time (m minutes)	Cumulative frequency
$20 < m \leqslant 40$	5
$20 < m \leqslant 60$	25
$20 < m \leqslant 80$	35
$20 < m \leqslant 100$	38
$20 < m \leqslant 120$	40

(a) On the grid below, draw a cumulative frequency graph for this information.



(2)

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

..... minutes
(2)

One of the 40 people is chosen at random.

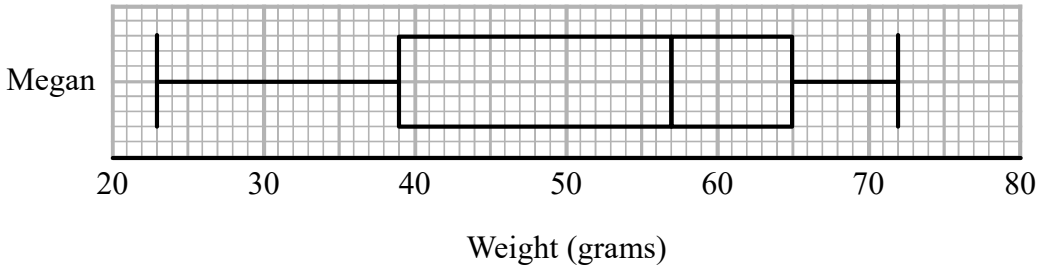
(c) Use your graph to find an estimate for the probability that this person took between 50 minutes and 90 minutes to complete the puzzle.

.....
(2)

(Total for Question 10 is 6 marks)

11 Megan grows potatoes.

The box plot below shows information about the weights of Megan's potatoes.



Megan says that half of her potatoes weigh less than 50 grams each.

(a) Is Megan correct?
Give a reason for your answer.

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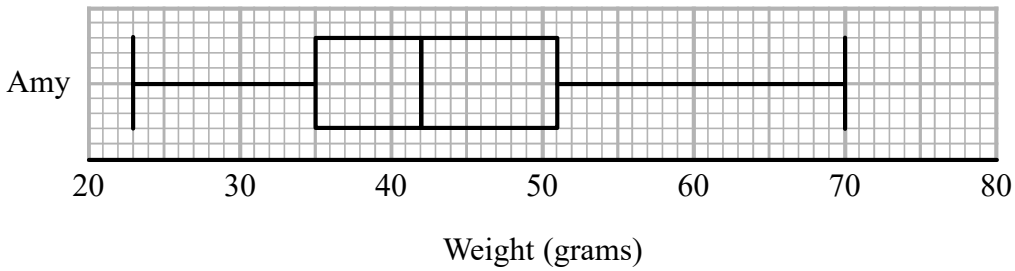
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(1)

Amy also grows potatoes.

The box plot below shows information about the weights of Amy's potatoes.



(b) Compare the distribution of the weights of Megan's potatoes with the distribution of the weights of Amy's potatoes.

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(2)

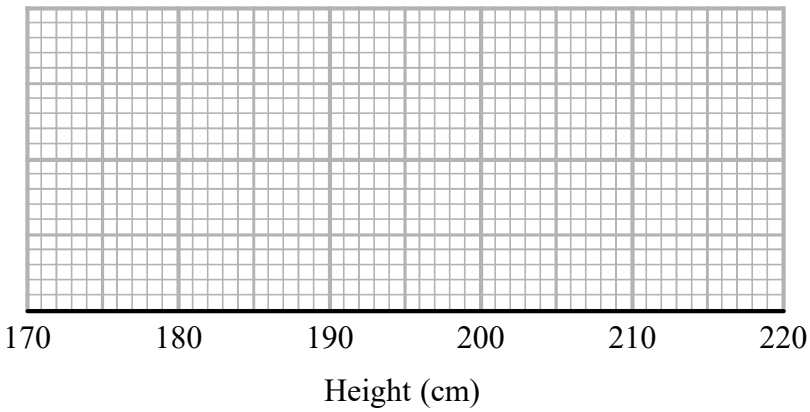
(Total for Question 11 is 3 marks)

12 The stem and leaf diagram shows information about the heights, in cm, of 23 sunflowers.

17	3	4	9				
18	6	8	8				
19	0	0	1	4	6	7	8
20	1	4	7	7	9	9	
21	4	8	8	9			

Key: 17|3 represents 173 cm

On the grid, draw a box plot for this information.



(Total for Question 12 is 3 marks)

12 The table gives information about the weekly wages of 80 people.

Wage (£w)	Frequency
$200 < w \leqslant 250$	5
$250 < w \leqslant 300$	10
$300 < w \leqslant 350$	20
$350 < w \leqslant 400$	20
$400 < w \leqslant 450$	15
$450 < w \leqslant 500$	10

(a) Complete the cumulative frequency table.

Wage (£w)	Cumulative frequency
$200 < w \leqslant 250$	
$200 < w \leqslant 300$	
$200 < w \leqslant 350$	
$200 < w \leqslant 400$	
$200 < w \leqslant 450$	
$200 < w \leqslant 500$	

(1)

(b) On the grid opposite, draw a cumulative frequency graph for your completed table.

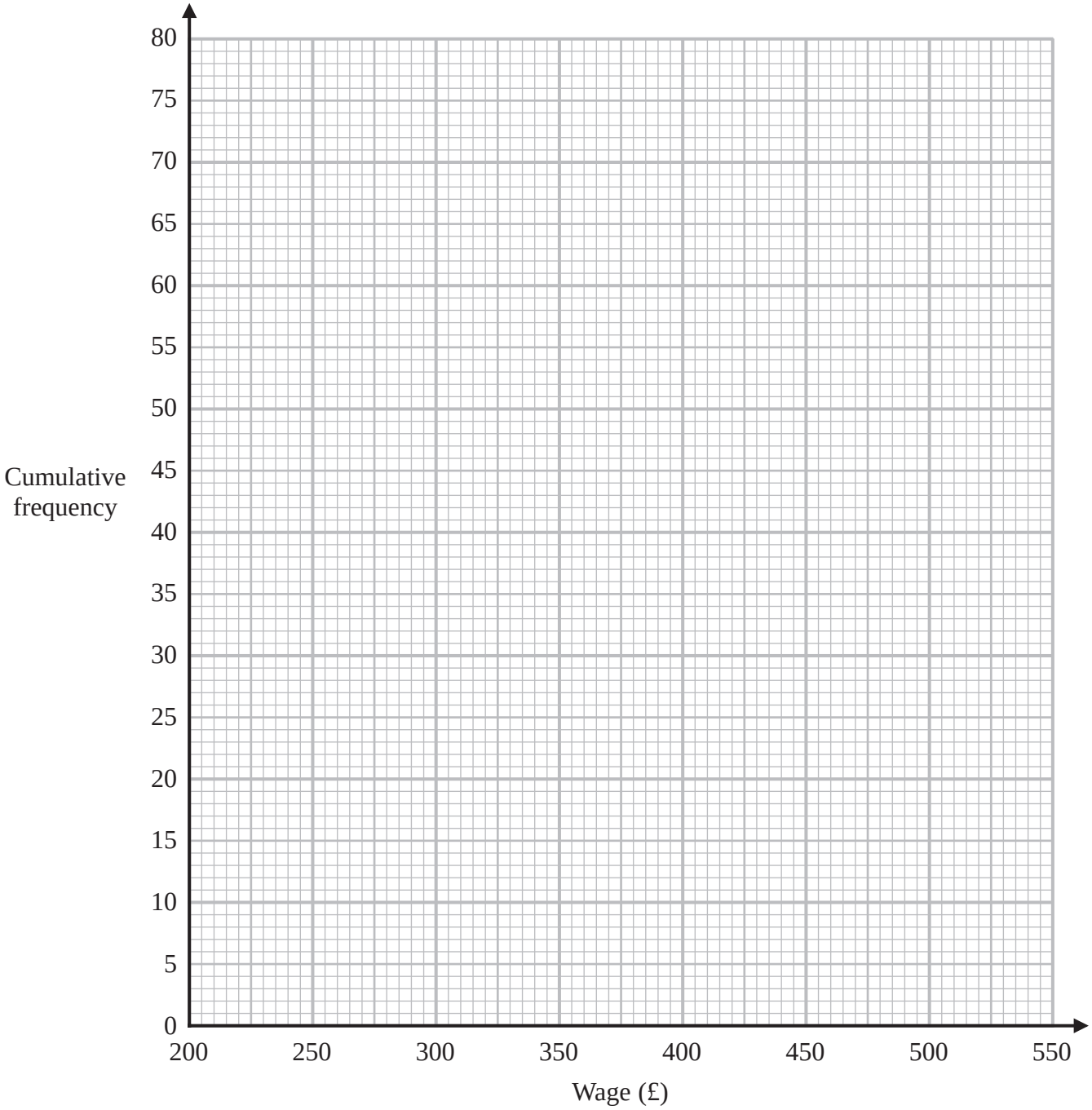
(2)

Juan says

"60% of this group of people have a weekly wage of £360 or less."

(c) Is Juan correct?
You must show how you get your answer.

(3)

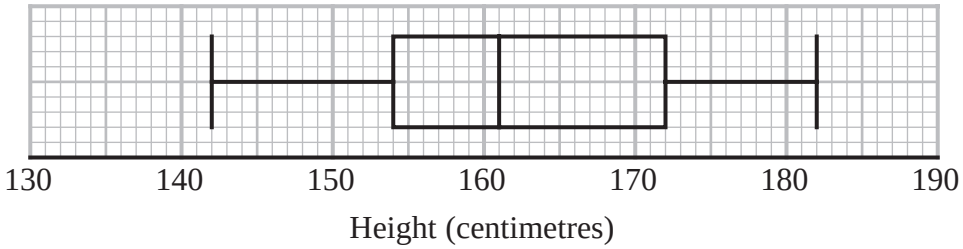


(Total for Question 12 is 6 marks)

9 Aisha recorded the heights, in centimetres, of some girls.
She used her results to work out the information in this table.

Least height	142 cm
Lower quartile	154 cm
Interquartile range	17 cm
Median	162 cm
Range	40 cm

Aisha drew this box plot for the information in the table.
The box plot is **not** fully correct.



Write down the two things Aisha should do to make the box plot fully correct.

1 .....

.....

.....

2 .....

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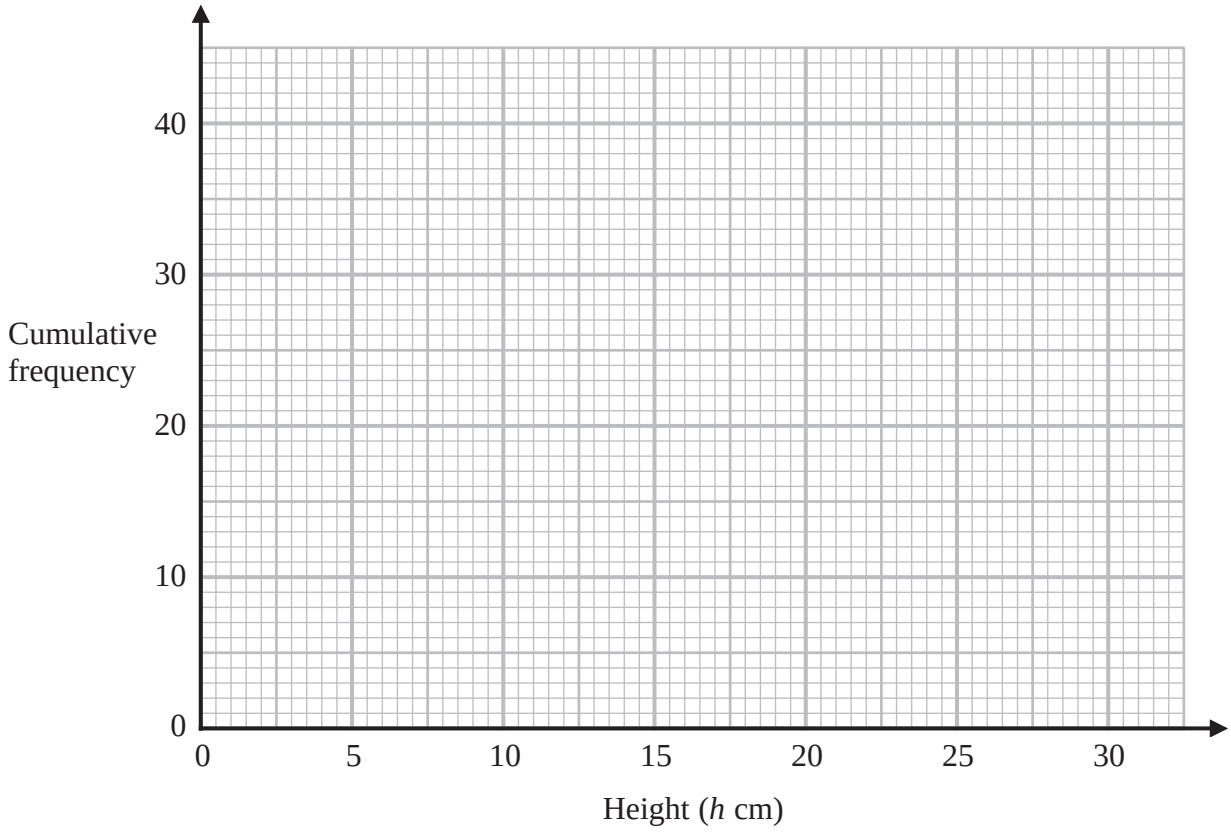
.....

(Total for Question 9 is 2 marks)

12 The cumulative frequency table gives information about the heights, in cm, of 40 plants.

Height (h cm)	Cumulative Frequency
$0 < h \leqslant 5$	4
$0 < h \leqslant 10$	11
$0 < h \leqslant 15$	24
$0 < h \leqslant 20$	34
$0 < h \leqslant 25$	38
$0 < h \leqslant 30$	40

(a) On the grid, draw a cumulative frequency graph for this information.



(2)

(b) Use the graph to find an estimate for the median height of the plants.

..... cm

(1)

(Total for Question 12 is 3 marks)

8 The grouped frequency table gives information about the time, in minutes, taken by 50 people to solve a puzzle.

Time (t minutes)	Frequency
$0 < t \leqslant 10$	5
$10 < t \leqslant 20$	8
$20 < t \leqslant 30$	12
$30 < t \leqslant 40$	15
$40 < t \leqslant 50$	7
$50 < t \leqslant 60$	3

Brian was asked to draw a cumulative frequency table for this information.

This is the table that Brian drew.

Time (t minutes)	Cumulative frequency
$0 < t \leqslant 10$	5
$10 < t \leqslant 20$	13
$20 < t \leqslant 30$	25
$30 < t \leqslant 40$	40
$40 < t \leqslant 50$	47
$50 < t \leqslant 60$	50

Write down **one** thing that is wrong with this cumulative frequency table.

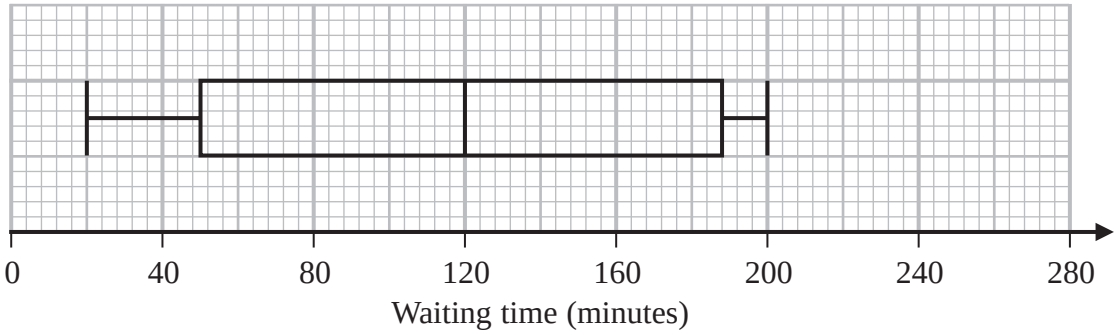
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(Total for Question 8 is 1 mark)

9 The box plot shows information about the length of time, in minutes, some people waited to see a doctor at a hospital on Monday.



(a) Work out the interquartile range of the information in the box plot.

..... minutes

(2)

Becky says,

"50% of the people waited for at least 2 hours."

(b) Is Becky correct?
Explain why.

.....

.....

.....

(1)

The table gives information about the length of time, in minutes, some people waited to see a doctor at the same hospital on Tuesday.

	Waiting time (minutes)
Shortest time	20
Lower quartile	50
Median	100
Upper quartile	140
Longest time	210

Becky was asked to compare the distribution of the lengths of times people waited on Monday with the distribution of the lengths of times people waited on Tuesday.

She wrote,

"People had to wait longer on Tuesday than on Monday."

(c) Give **one** reason why Becky may be wrong.

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(1)

(Total for Question 9 is 4 marks)

10 The table shows some information about the profit made each day at a cricket club on 100 days.

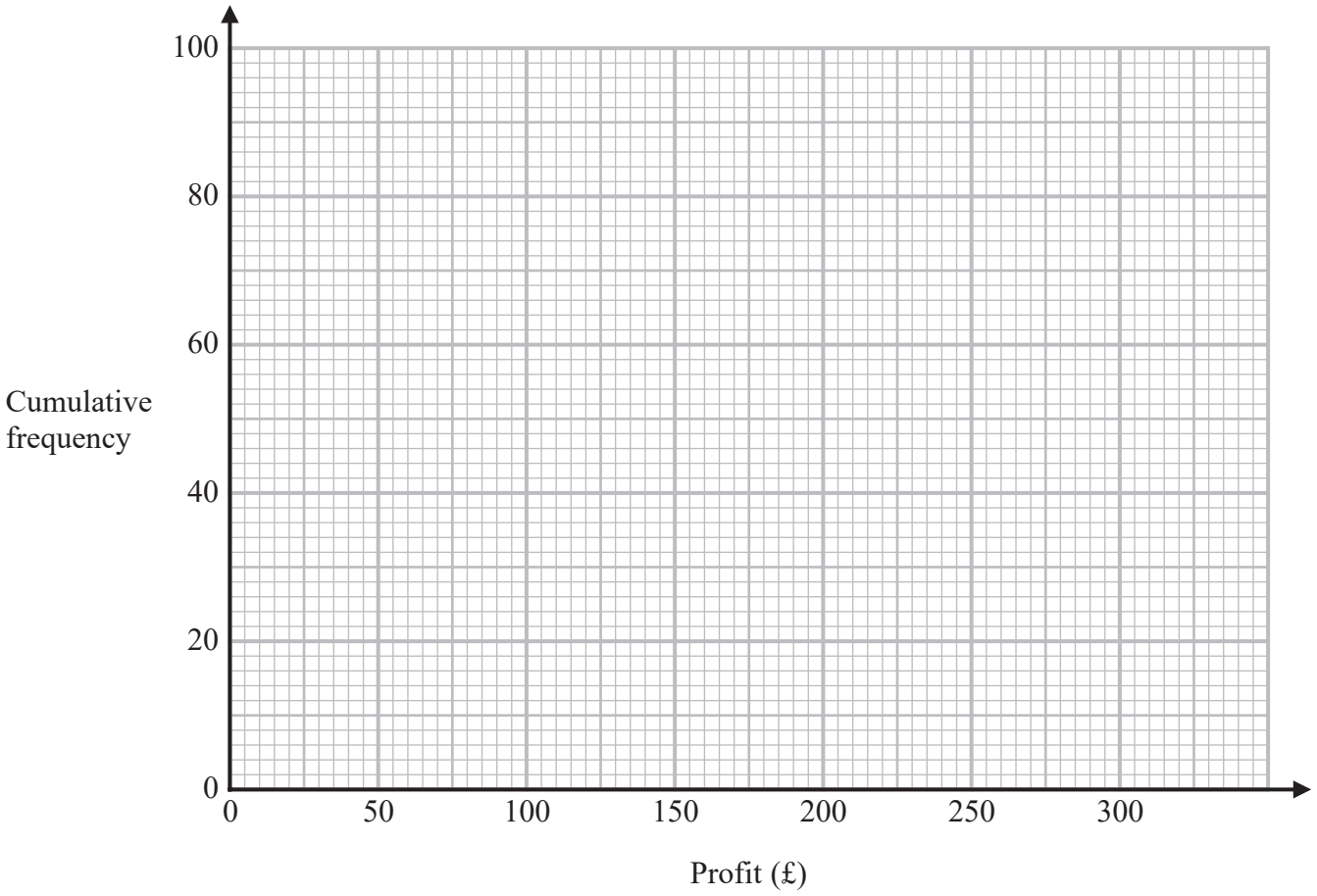
Profit (£x)	Frequency
$0 \leqslant x < 50$	10
$50 \leqslant x < 100$	15
$100 \leqslant x < 150$	25
$150 \leqslant x < 200$	30
$200 \leqslant x < 250$	5
$250 \leqslant x < 300$	15

(a) Complete the cumulative frequency table.

Profit (£x)	Cumulative frequency
$0 \leqslant x < 50$	
$0 \leqslant x < 100$	
$0 \leqslant x < 150$	
$0 \leqslant x < 200$	
$0 \leqslant x < 250$	
$0 \leqslant x < 300$	

(1)

(b) On the grid, draw a cumulative frequency graph for this information.



(2)

(c) Use your graph to find an estimate for the number of days on which the profit was less than £125

..... days

(1)

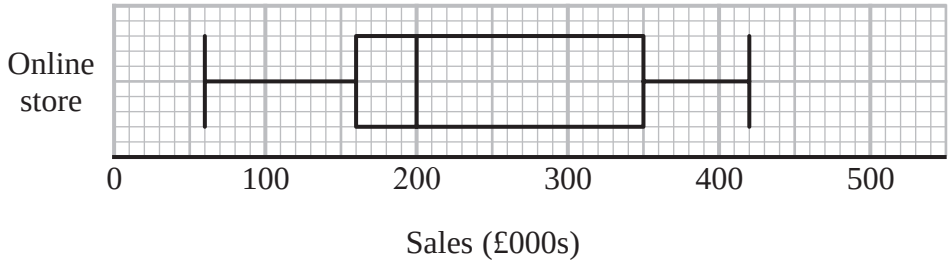
(d) Use your graph to find an estimate for the interquartile range.

£.....

(2)

(Total for Question 10 is 6 marks)

10 The box plot shows information about the sales, in thousands of pounds (£000s), of an online store each month.



Andrew says,

> "Three quarters of the given data lies between 160 000 and 350 000 because these are the values of the lower quartile and the upper quartile."

Andrew is wrong.

(a) Explain why.

.....

.....

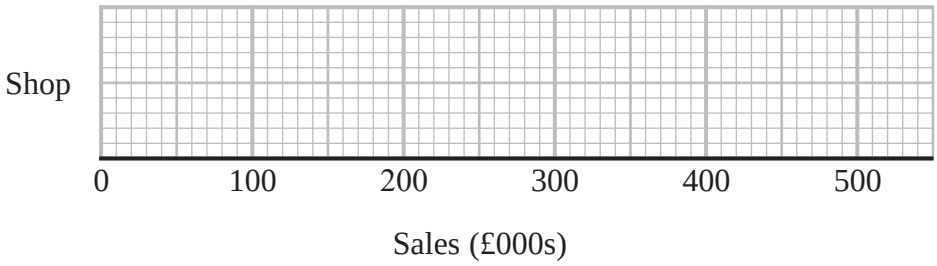
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(1)

The table shows information about the sales, in £000s, in a shop each month.

	Sales (£000s)
least value	30
lower quartile	80
median	170
upper quartile	260
greatest value	350

(b) On the grid below, draw a box plot for this information.



(2)

(c) Compare the distribution of the sales of the online store with the distribution of the sales in the shop.

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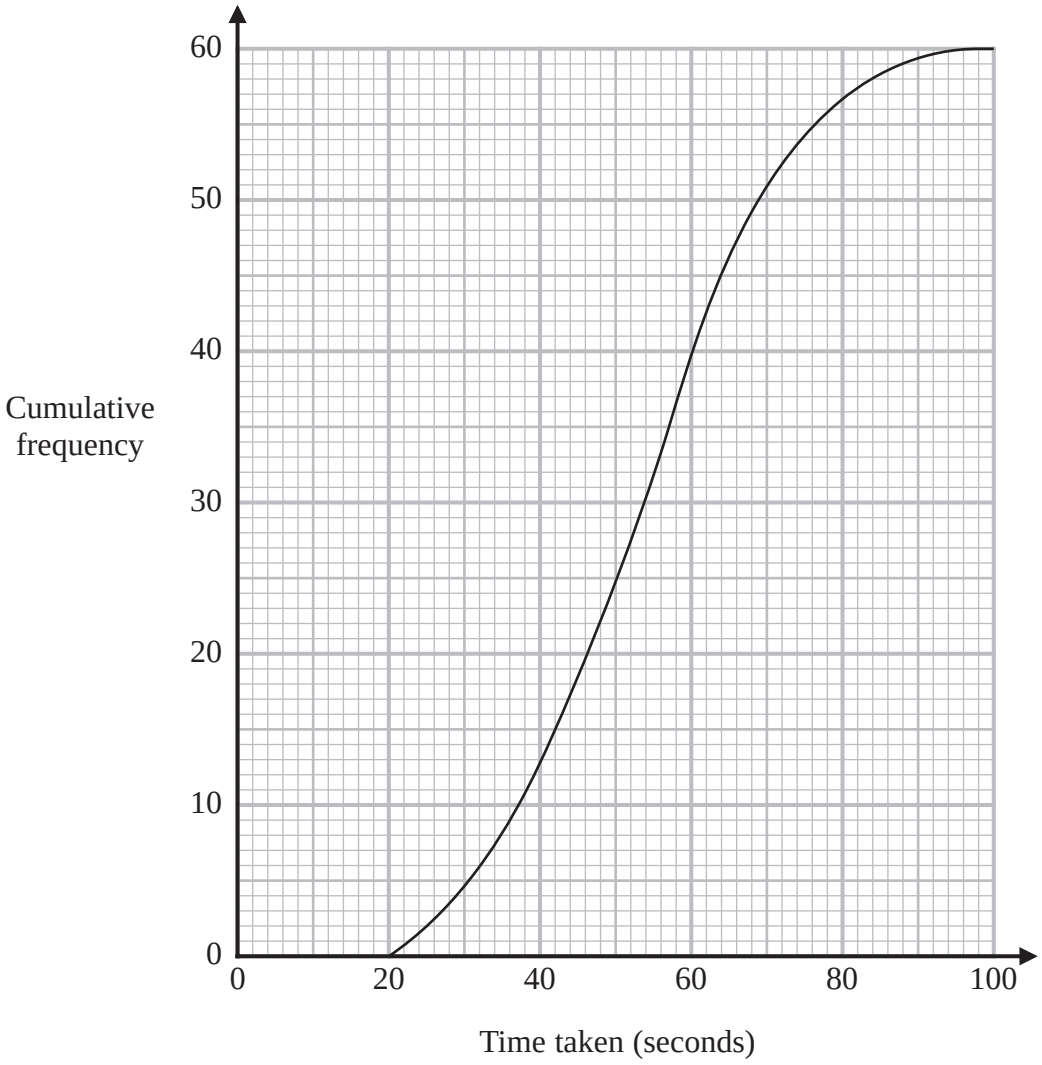
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(2)

(Total for Question 10 is 5 marks)

11 In an experiment, 60 students each completed a puzzle.

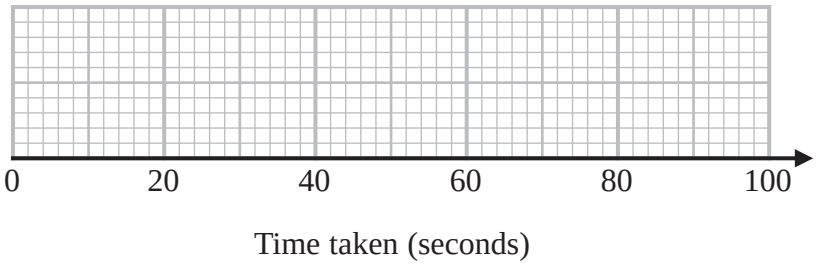
The cumulative frequency graph shows information about the times taken for the 60 students to complete the puzzle.



For these 60 students,

the least time taken was 24 seconds
the greatest time taken was 96 seconds.

On the grid below, draw a box plot for the distribution of the times taken by the students.

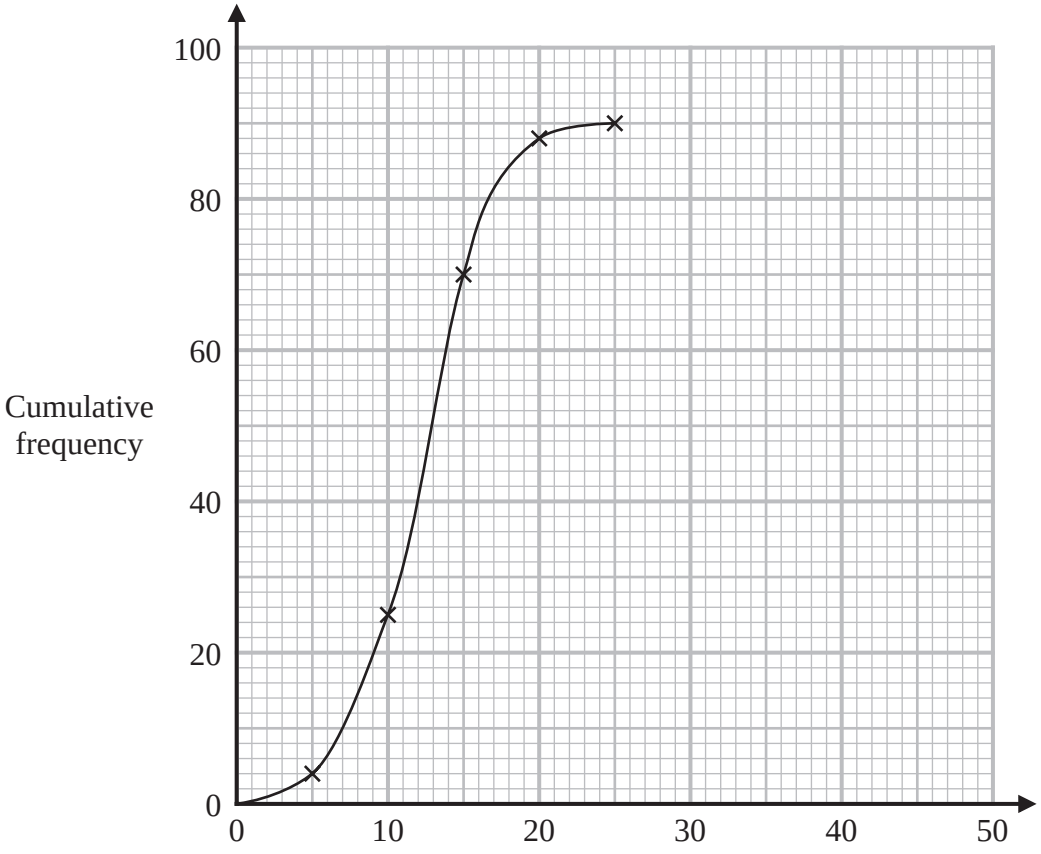


(Total for Question 11 is 3 marks)

13 Chen has this information about the time that it took an operator at a call centre to answer each of 90 calls.

Time (t seconds)	Cumulative frequency
$0 < t \leqslant 10$	4
$0 < t \leqslant 20$	25
$0 < t \leqslant 30$	70
$0 < t \leqslant 40$	88
$0 < t \leqslant 50$	90

Chen draws this cumulative frequency graph for the information in the table.



Write down two different things that are wrong with this graph.

1.....

.....

2.....

.....

(Total for Question 13 is 2 marks)

9 The cumulative frequency table gives information about the ages of 80 people working for a company.

Age (a years)	Cumulative frequency
$20 < a \leqslant 30$	20
$20 < a \leqslant 40$	48
$20 < a \leqslant 50$	64
$20 < a \leqslant 60$	75
$20 < a \leqslant 70$	80

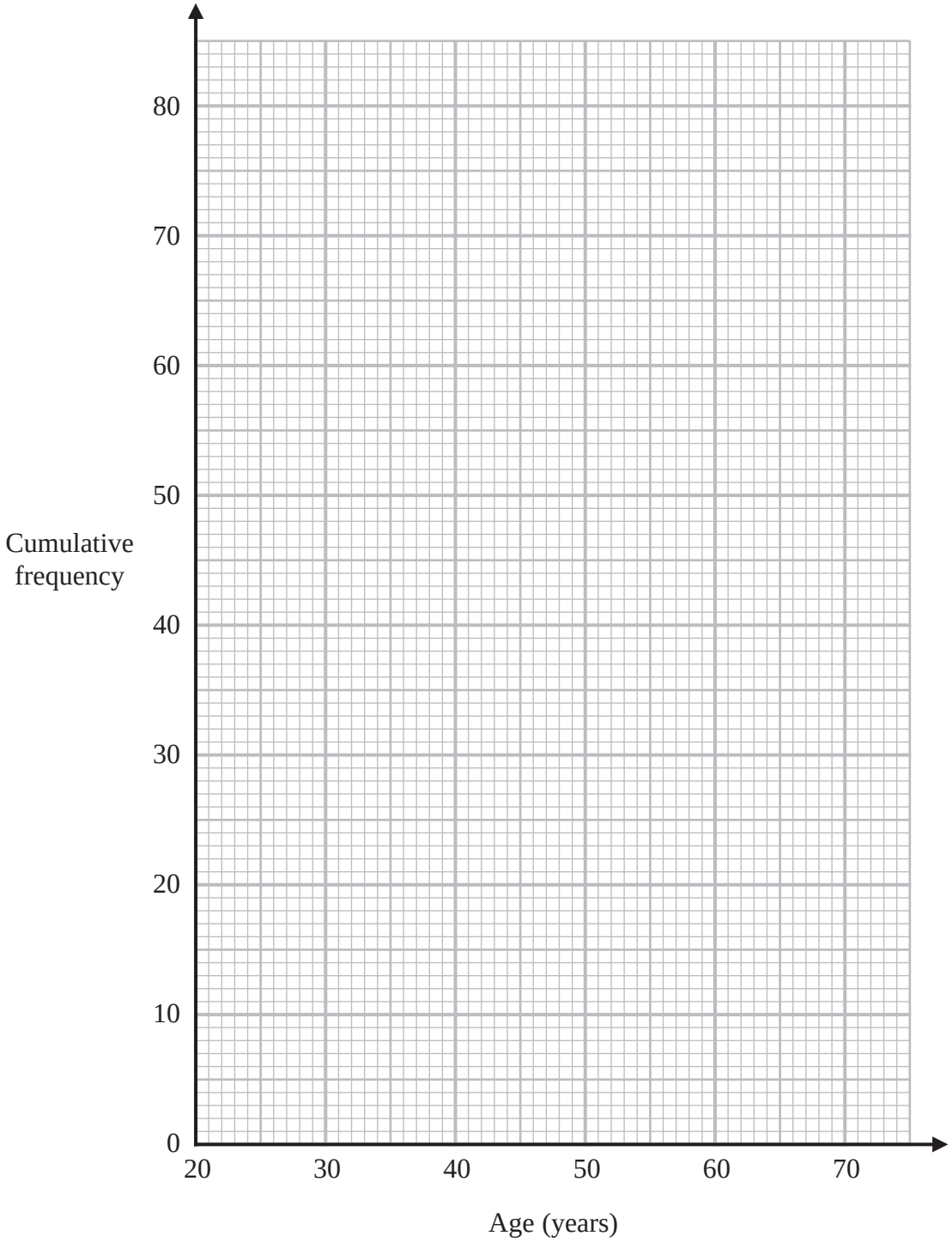
(a) On the grid opposite, draw a cumulative frequency graph for this information.

(2)

(b) Use your graph to find an estimate for the median age.

..... years

(1)

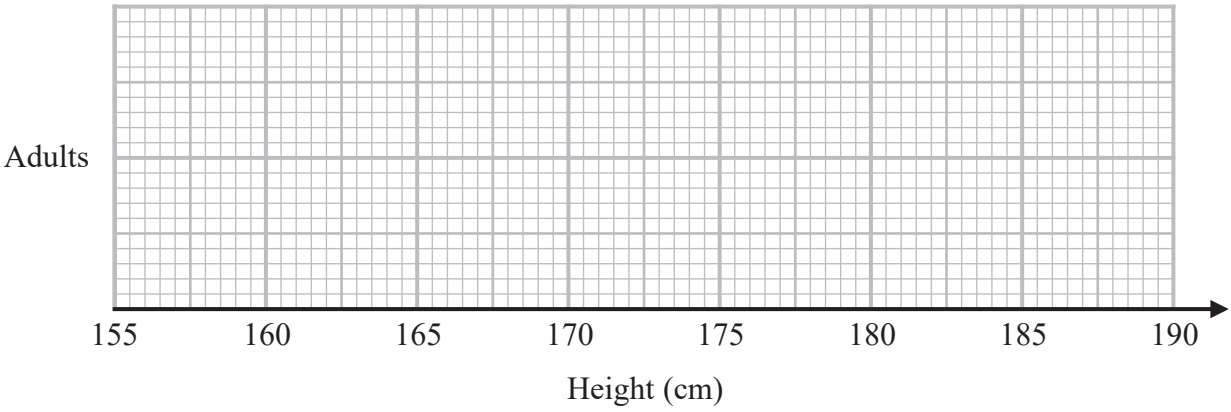


(Total for Question 9 is 3 marks)

11 The table shows some information about the heights of a group of adults.

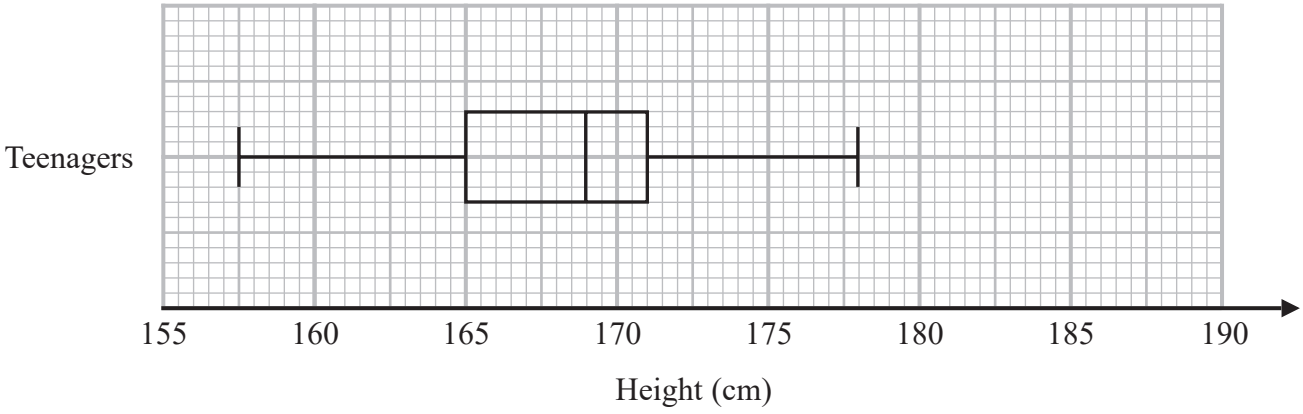
least height	169 cm
greatest height	186 cm
median	177 cm
lower quartile	174 cm
upper quartile	180 cm

(a) On the grid, draw a box plot for the information in the table.



(3)

The box plot below shows the distribution of the heights of a group of teenagers.



(b) Compare the distribution of the heights of the adults with the distribution of the heights of the teenagers.

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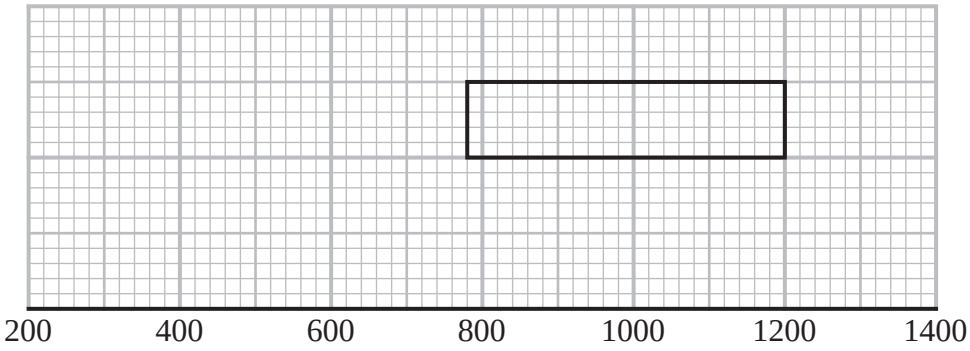
(2)

(Total for Question 11 is 5 marks)

11 Alice recorded the number of cars going into a village on each of 80 days.

The incomplete table and the incomplete box plot give information about her results.

	Number of cars
Least number	300
Lower quartile	
Median	900
Upper quartile	
Range	1000



(a) (i) Use the information in the table to complete the box plot.

(ii) Use the information in the box plot to complete the table.

(3)

On some of these 80 days Alice saw fewer than 1200 cars going into the village.

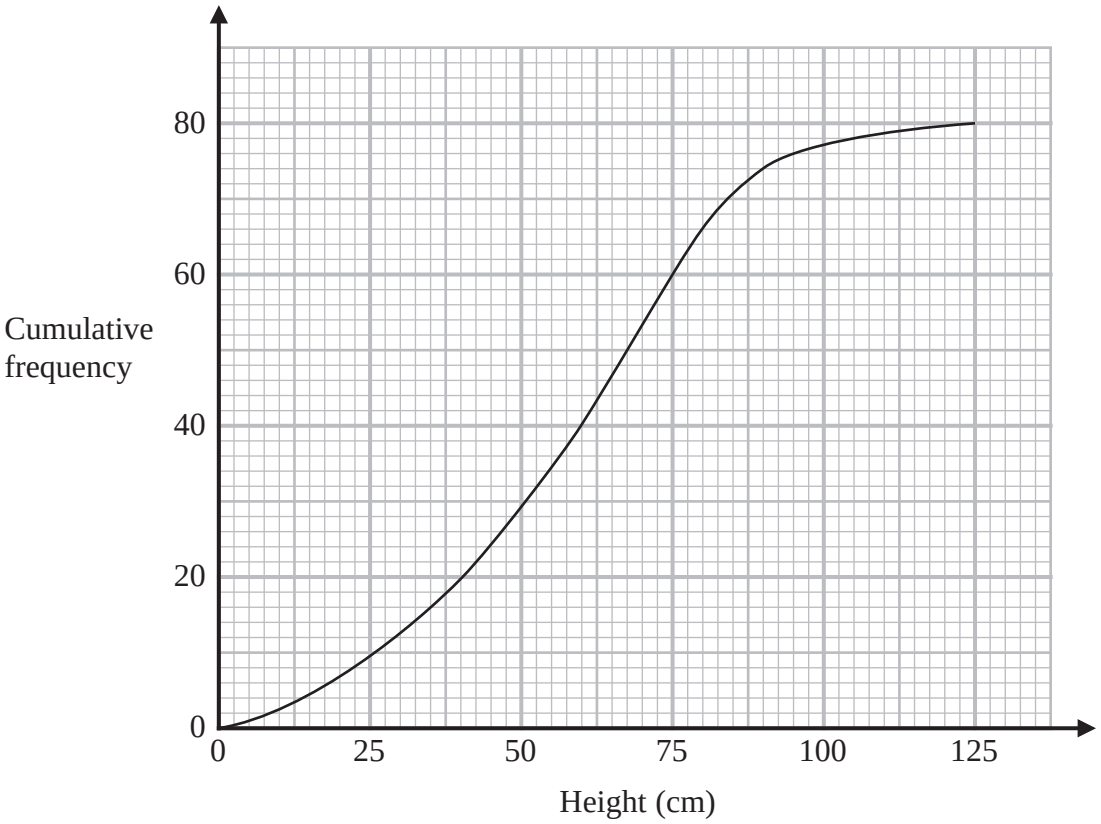
(b) Work out an estimate for the number of days Alice saw fewer than 1200 cars going into the village.

.....

(2)

(Total for Question 11 is 5 marks)

13 Alan grew 80 plants of the same type outside.
The cumulative frequency graph shows information about the heights, in cm, of these plants.



One of the plants is chosen at random.

(a) Find an estimate for the probability that this plant will have a height greater than 90 cm.

.....

(2)

(b) Use the graph to find an estimate for the median height.

..... cm

(1)

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

..... cm

(2)

Alan also grew plants of the same type inside.

The interquartile range of the heights of these plants is 30 cm.

(d) Give one comparison between the distribution of the heights of the plants grown inside with the distribution of the heights of the plants grown outside.

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(1)

(Total for Question 13 is 6 marks)

11 The frequency table gives information about the weights of 60 parcels.

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

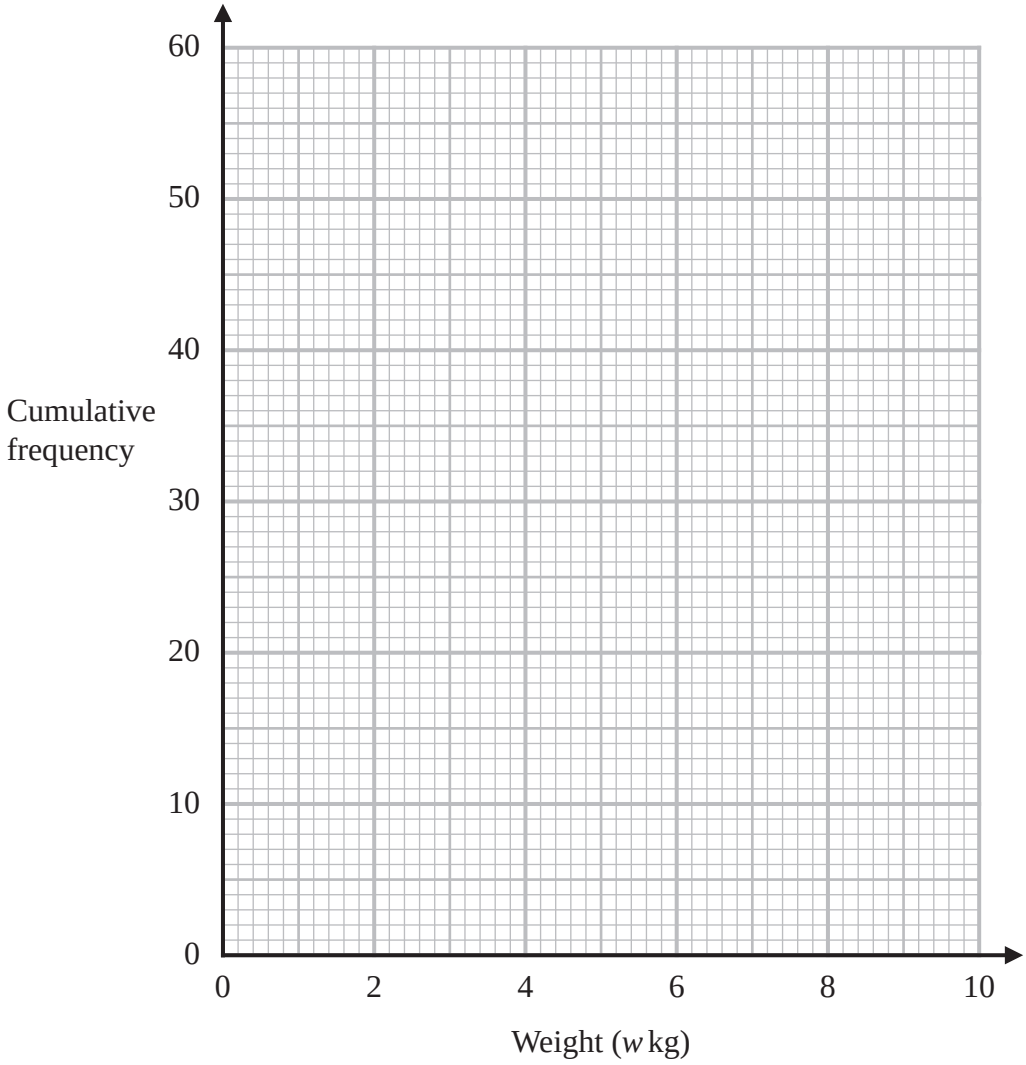
(a) Complete the cumulative frequency table.

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

(1)

(b) On the grid opposite, 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.

.....

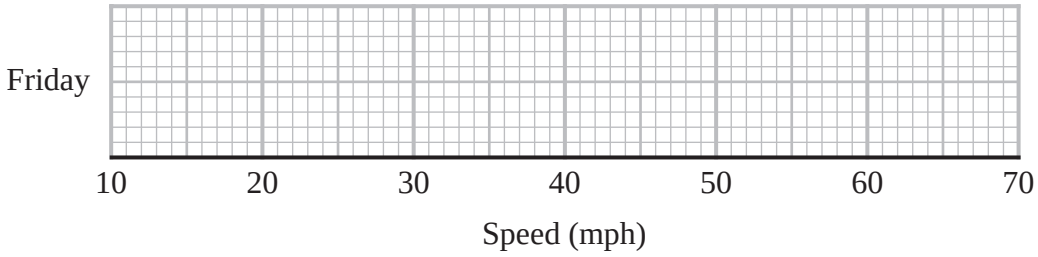
(2)

(Total for Question 11 is 7 marks)

11 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.

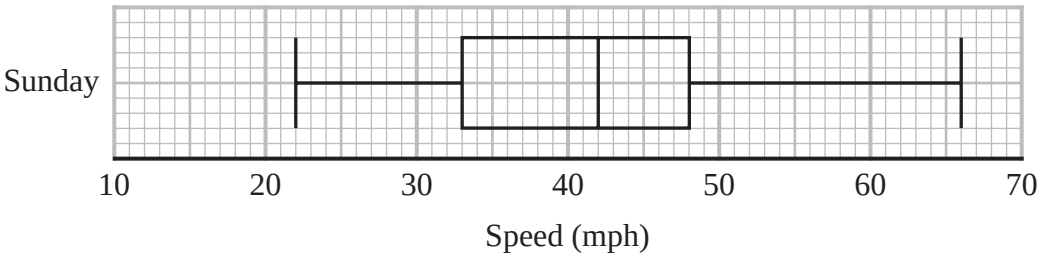
	Speed (mph)
Lowest speed	25
Lower quartile	35
Median	40
Interquartile range	12
Range	37

(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.

.....

.....

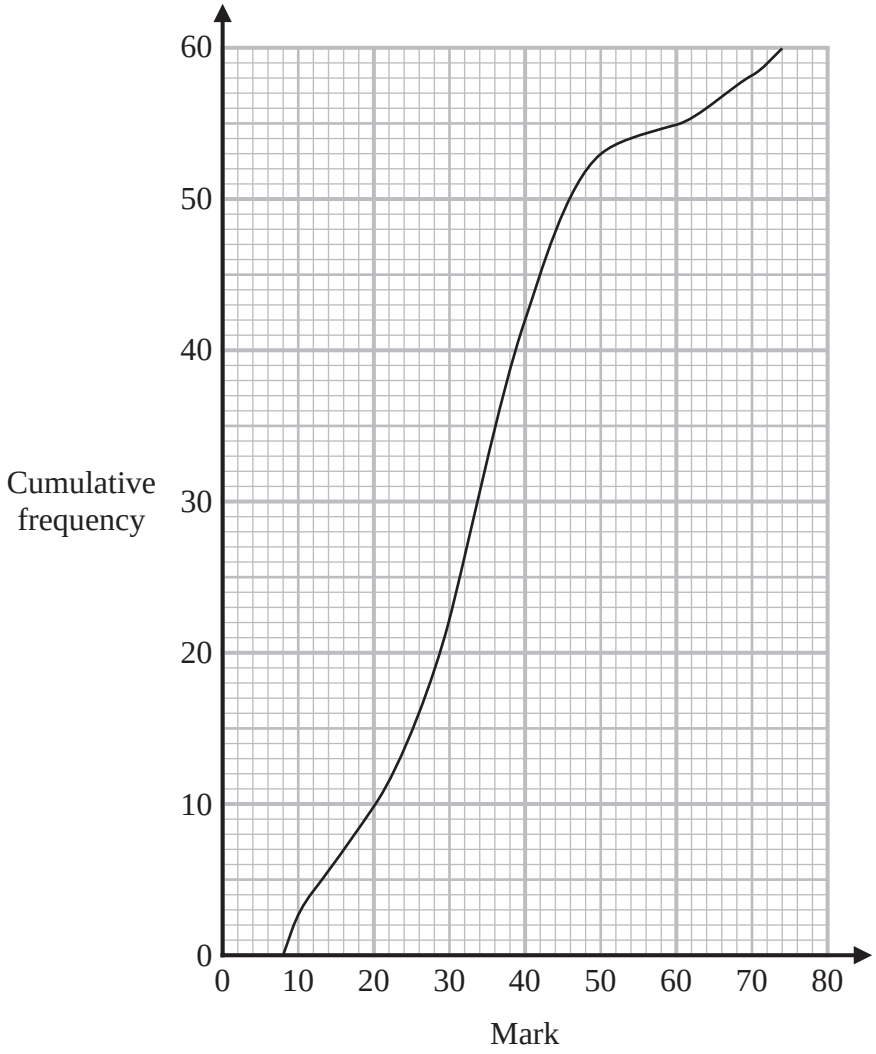
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(2)

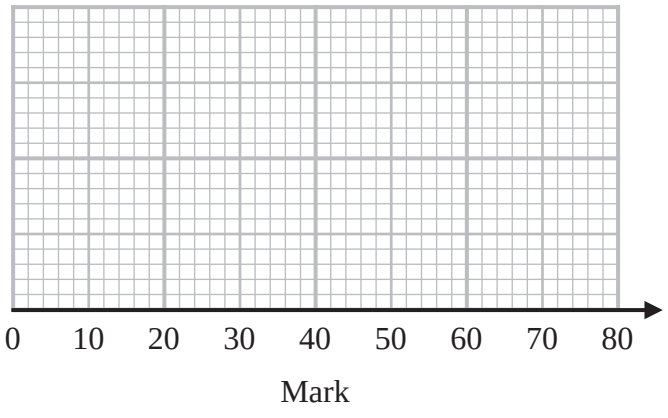
(Total for Question 11 is 5 marks)

9 The cumulative frequency graph gives information about the marks that 60 students got in a test.



For these 60 students
the highest mark was 74
the lowest mark was 8

(a) On the grid below, draw a box plot for the distribution of the marks.



(3)

The pass mark for the test was 40

Sian says,

"30% of the 60 students passed the test."

(b) Is Sian correct?
You must show how you get your answer.

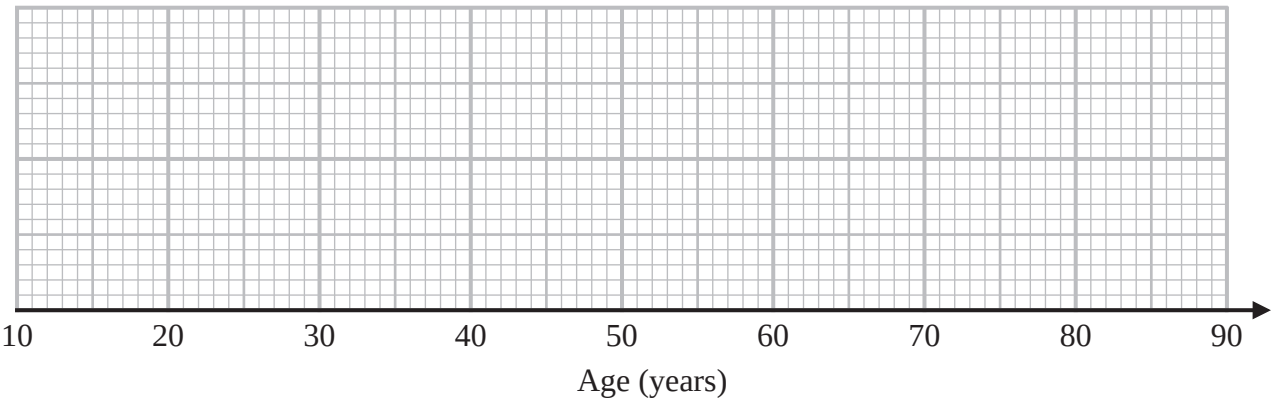
(3)

(Total for Question 9 is 6 marks)

12 The table gives some information about the ages, in years, of 32 actors.

Lowest age	21
Highest age	80
Lower quartile	31
Upper quartile	42
Median	35

(a) Draw a box plot to represent this information.



(3)

(b) Work out an estimate for the number of these actors with an age between 31 years and 42 years.

.....

(1)

Mary says,

"At least one of the actors is 35 years old because the median is 35"

(c) Is Mary correct?
Give a reason for your answer.

.....

.....

.....

(1)

(Total for Question 12 is 5 marks)