



Maths Questions By Topic:

Statistics

Edexcel GCSE (Higher)

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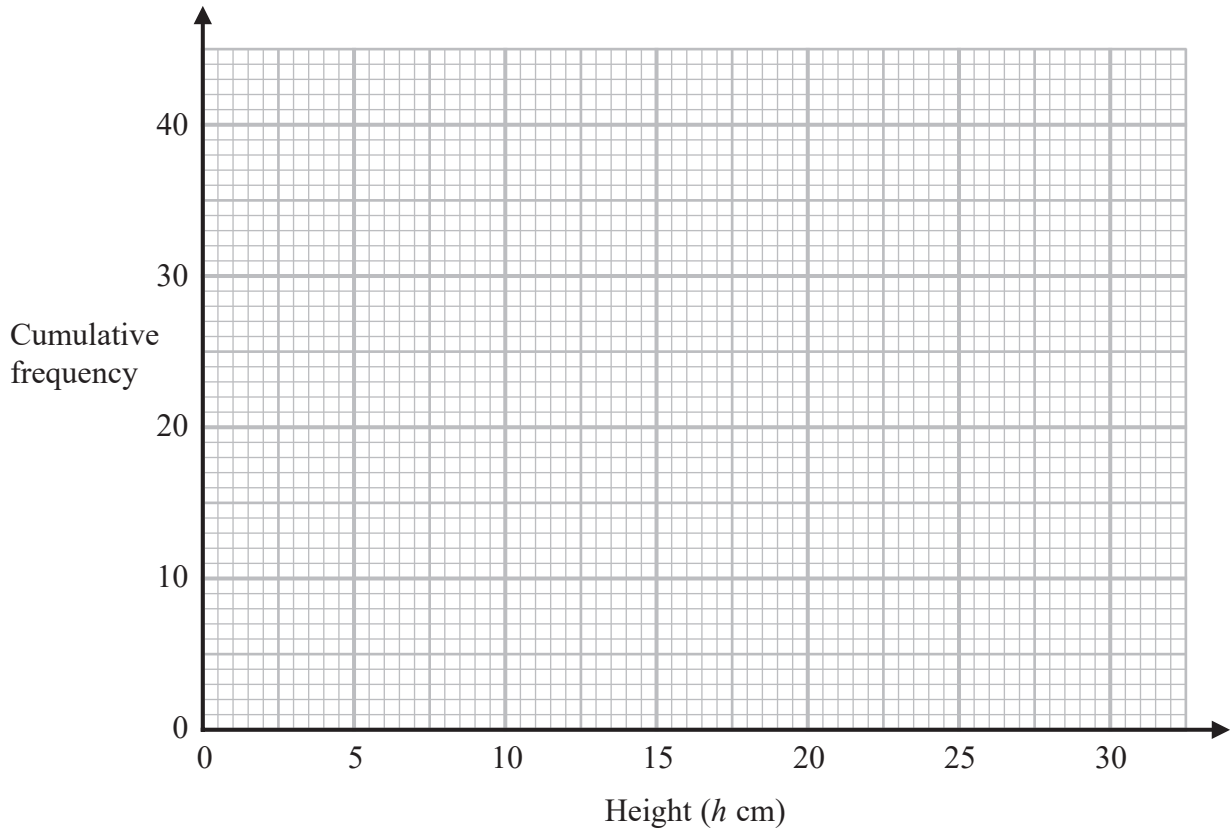
Old Spec A (Linear)

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

Height (h cm)	Cumulative Frequency
$0 < h \leq 5$	4
$0 < h \leq 10$	11
$0 < h \leq 15$	24
$0 < h \leq 20$	34
$0 < h \leq 25$	38
$0 < h \leq 30$	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 1 is 3 marks)

2 The table shows information about the heights, in cm, of a group of Year 9 girls.

least height	150 cm
median	165 cm
greatest height	170 cm

This stem and leaf diagram shows information about the heights, in cm, of a group of 15 Year 9 boys.

15	8 9 9
16	4 5 7 7 8
17	0 3 4 4 7
18	0 2

Key: 15 | 8 represents 158 cm

Compare the distribution of the heights of the girls with the distribution of the heights of the boys.

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.....

(Total for Question 2 is 3 marks)

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

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

(a) Complete the cumulative frequency table.

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

(1)

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

(2)

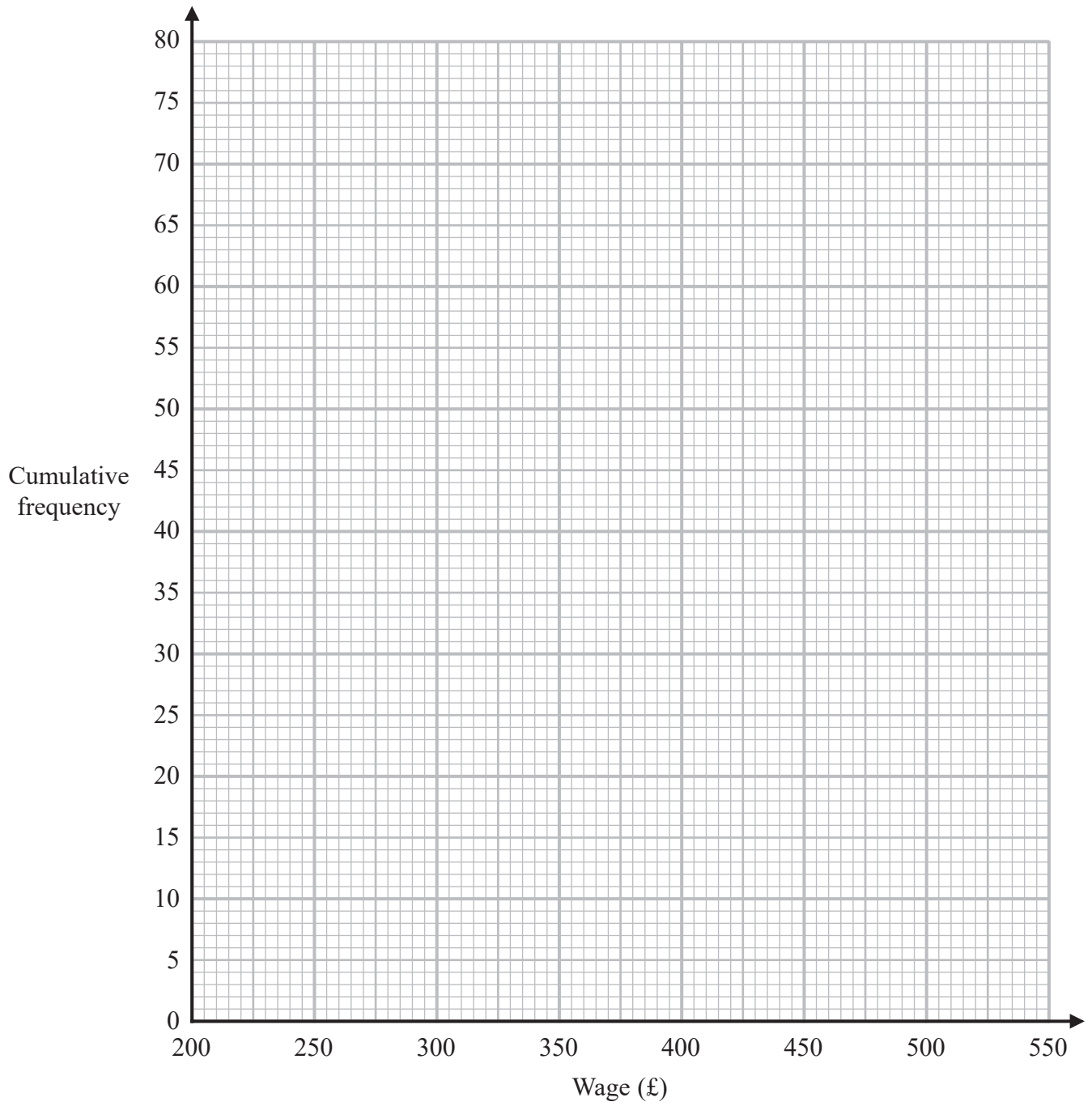
Juan says

“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 3 is 6 marks)

4 Shirley wants to find an estimate for the number of bees in her hive.

On Monday she catches 90 of the bees.
She puts a mark on each bee and returns them to her hive.

On Tuesday she catches 120 of the bees.
She finds that 20 of these bees have been marked.

(a) Work out an estimate for the total number of bees in her hive.

.....
(3)

Shirley assumes that none of the marks had rubbed off between Monday and Tuesday.

(b) If Shirley's assumption is wrong, explain what effect this would have on your answer to part (a).

.....
.....
.....
(1)

(Total for Question 4 is 4 marks)

- 5 4 red bricks have a mean weight of 5 kg.
5 blue bricks have a mean weight of 9 kg.
1 green brick has a weight of 6 kg.

Donna says,

“The mean weight of the 10 bricks is less than 7 kg.”

Is Donna correct?

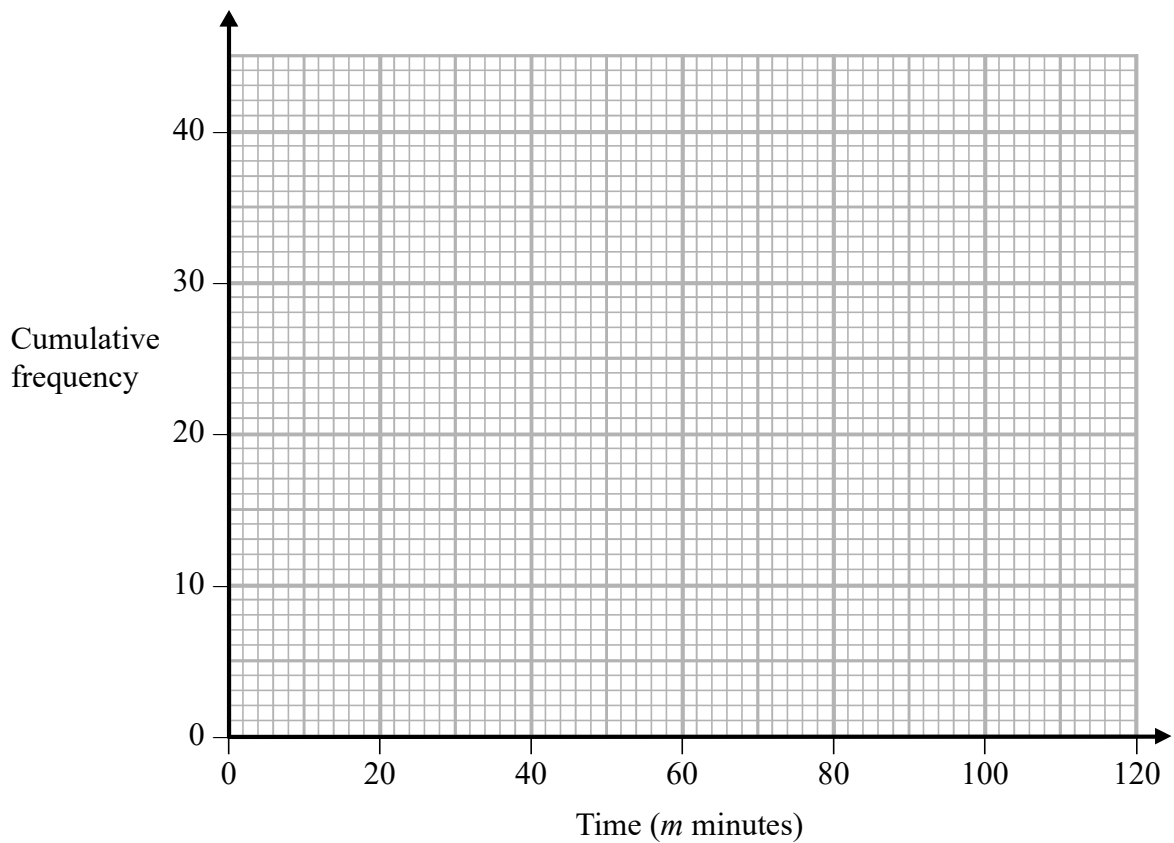
You must show how you get your answer.

(Total for Question 5 is 3 marks)

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

Time (m minutes)	Cumulative frequency
$20 < m \leq 40$	5
$20 < m \leq 60$	25
$20 < m \leq 80$	35
$20 < m \leq 100$	38
$20 < m \leq 120$	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 6 is 6 marks)

- 7 There are p counters in a bag.
12 of the counters are yellow.

Shafiq takes at random 30 counters from the bag.
5 of these 30 counters are yellow.

Work out an estimate for the value of p .

.....
(Total for Question 7 is 2 marks)

- 8 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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.....

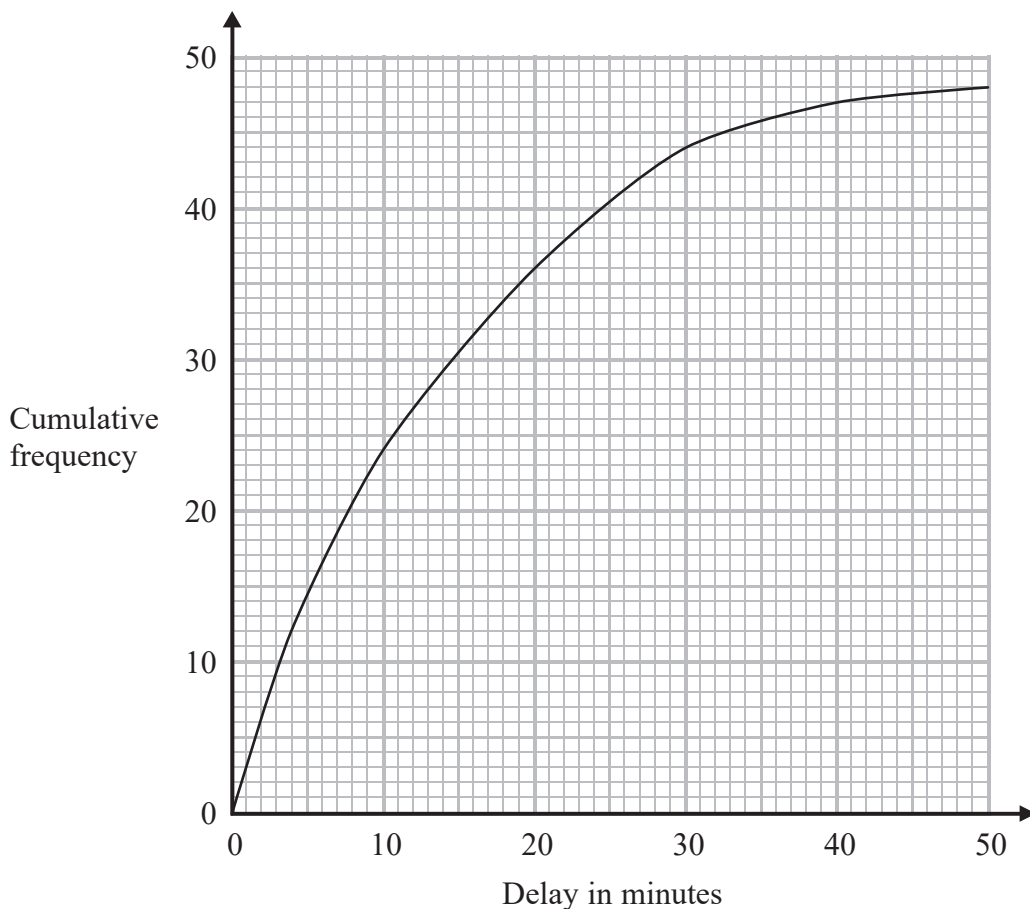
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(1)

(Total for Question 8 is 4 marks)

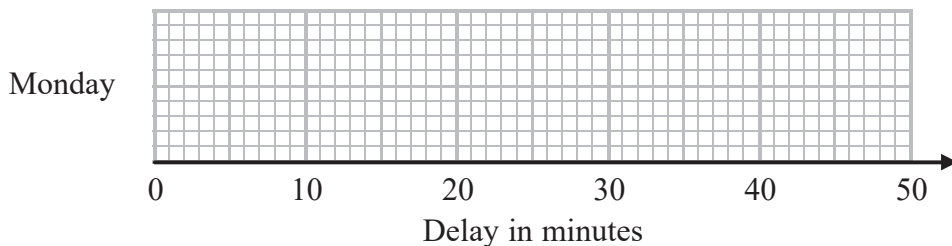
9 The times that 48 trains left a station on Monday were recorded.

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



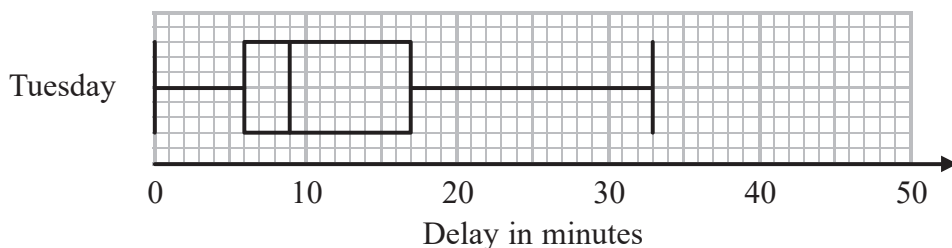
The shortest delay was 0 minutes.
The longest delay was 42 minutes.

(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.

.....

.....

.....

.....

(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.

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.....

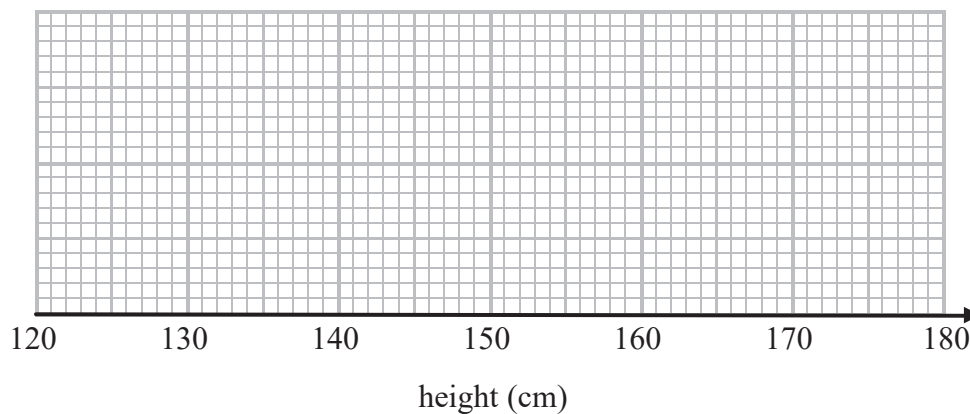
(1)

(Total for Question 9 is 6 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)

11 The table shows information about the weekly earnings of 20 people who work in a shop.

Weekly earnings (£ x)	Frequency
$150 < x \leq 250$	1
$250 < x \leq 350$	11
$350 < x \leq 450$	5
$450 < x \leq 550$	0
$550 < x \leq 650$	3

(a) Work out an estimate for the mean of the weekly earnings.

£.....
(3)

Nadiya says,

“The mean may **not** be the best average to use to represent this information.”

(b) Do you agree with Nadiya?
You must justify your answer.

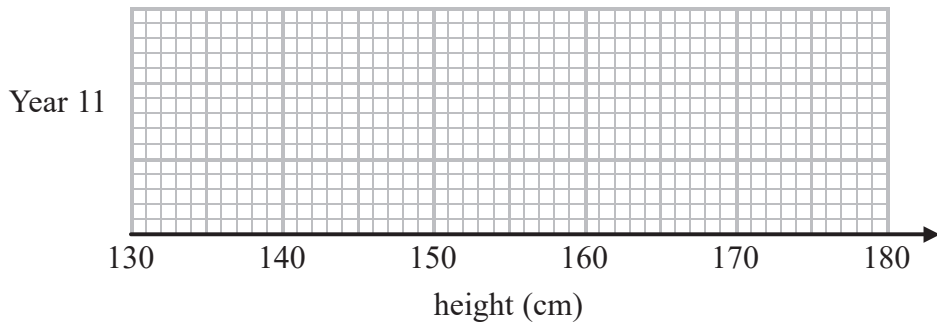
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(1)

(Total for Question 11 is 4 marks)

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

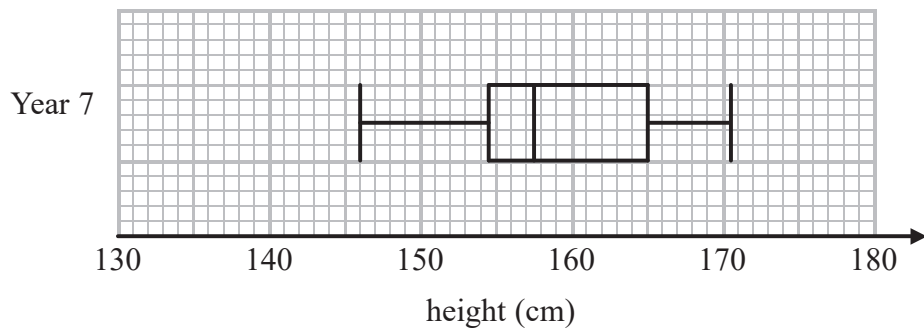
	height (cm)
least height	154
median	165
lower quartile	161
interquartile range	7
range	20

(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.

.....

.....

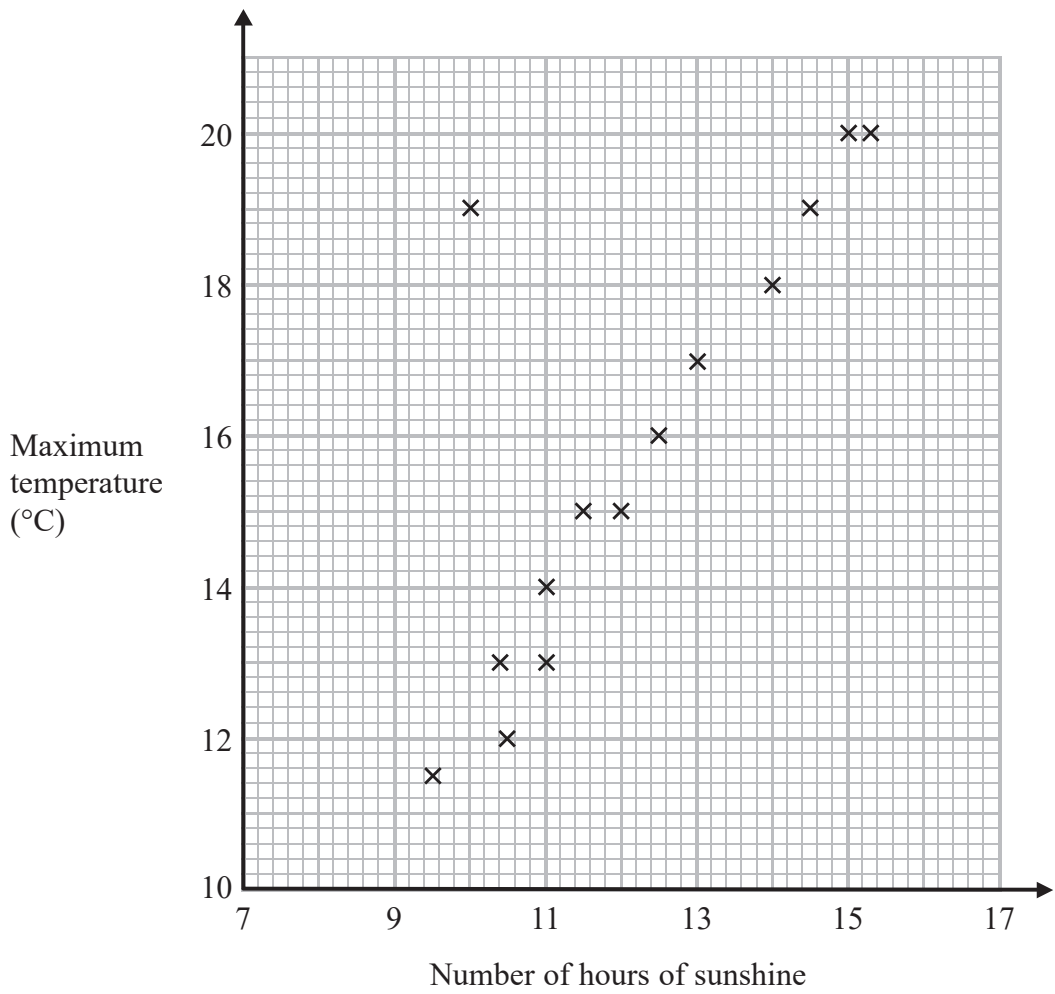
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.....

(2)

(Total for Question 12 is 5 marks)

13 The scatter graph shows the maximum temperature and the number of hours of sunshine in fourteen British towns on one day.



One of the points is an outlier.

(a) Write down the coordinates of this point.

(.....,)
(1)

(b) For all the other points write down the type of correlation.

.....
(1)

On the same day, in another British town, the maximum temperature was 16.4°C .

(c) Estimate the number of hours of sunshine in this town on this day.

..... hours
(2)

A weatherman says,

“Temperatures are higher on days when there is more sunshine.”

(d) Does the scatter graph support what the weatherman says?
Give a reason for your answer.

.....
.....
(1)

(Total for Question 13 is 5 marks)

14 There are 10 boys and 20 girls in a class.
The class has a test.

The mean mark for all the class is 60

The mean mark for the girls is 54

Work out the mean mark for the boys.

.....
(Total for Question 14 is 3 marks)

15 There are 1200 students at a school.

Kate is helping to organise a party.
She is going to order pizza.

Kate takes a sample of 60 of the students at the school.
She asks each student to tell her **one** type of pizza they want.

The table shows information about her results.

Pizza	Number of students
ham	20
salami	15
vegetarian	8
margarita	17

Work out how much ham pizza Kate should order.

Write down any assumption you make **and** explain how this could affect your answer.

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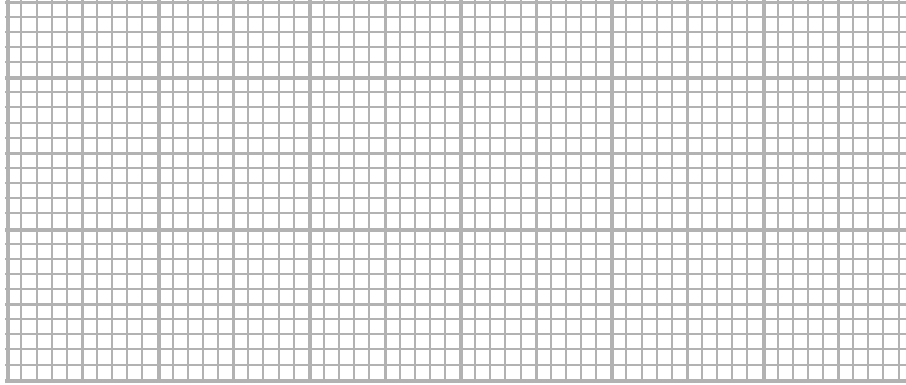
.....

(Total for Question 15 is 3 marks)

16 Ben played 15 games of basketball.
Here are the points he scored in each game.

17 18 18 18 19 20 20 22 23 23 23 26 27 28 28

(a) Draw a box plot for this information.



(3)

Sam plays in the same 15 games of basketball.

The median number of points Sam scored is 23

The interquartile range of these points is 12

The range of these points is 20

(b) Who is more consistent at scoring points, Sam or Ben?

You must give a reason for your answer.

(2)

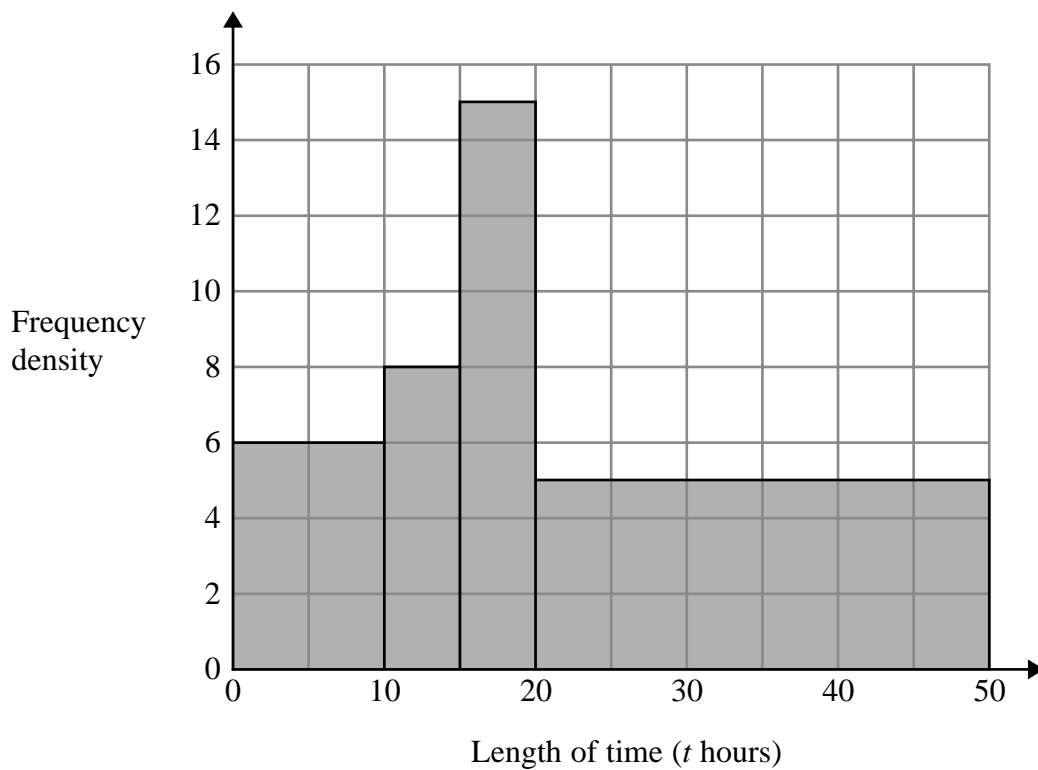
(Total for Question 16 is 5 marks)

17 Bhavna recorded the lengths of time, in hours, that some adults watched TV last week.

The table shows information about her results.

Length of time (t hours)	Frequency
$0 \leq t < 10$	6
$10 \leq t < 15$	8
$15 \leq t < 20$	15
$20 \leq t < 40$	5

Bhavna made some mistakes when she drew a histogram for this information.



Write down **two** mistakes Bhavna made.

- 1
-
- 2
-

(Total for Question 17 is 2 marks)

18 Walkden Reds is a basketball team.

At the end of 11 games, their mean score was 33 points per game.

At the end of 10 games, their mean score was 2 points higher.

Jordan says,

“Walkden Reds must have scored 13 points in their 11th game.”

Is Jordan right?

You must show how you get your answer.

.....
(Total for Question 18 is 3 marks)

19 Mr Brown gives his class a test.

The 10 girls in the class get a mean mark of 70%

The 15 boys in the class get a mean mark of 80%

Nick says that because the mean of 70 and 80 is 75 then the mean mark for the whole class in the test is 75%

Nick is not correct.

Is the correct mean mark less than or greater than 75%?

You must justify your answer.

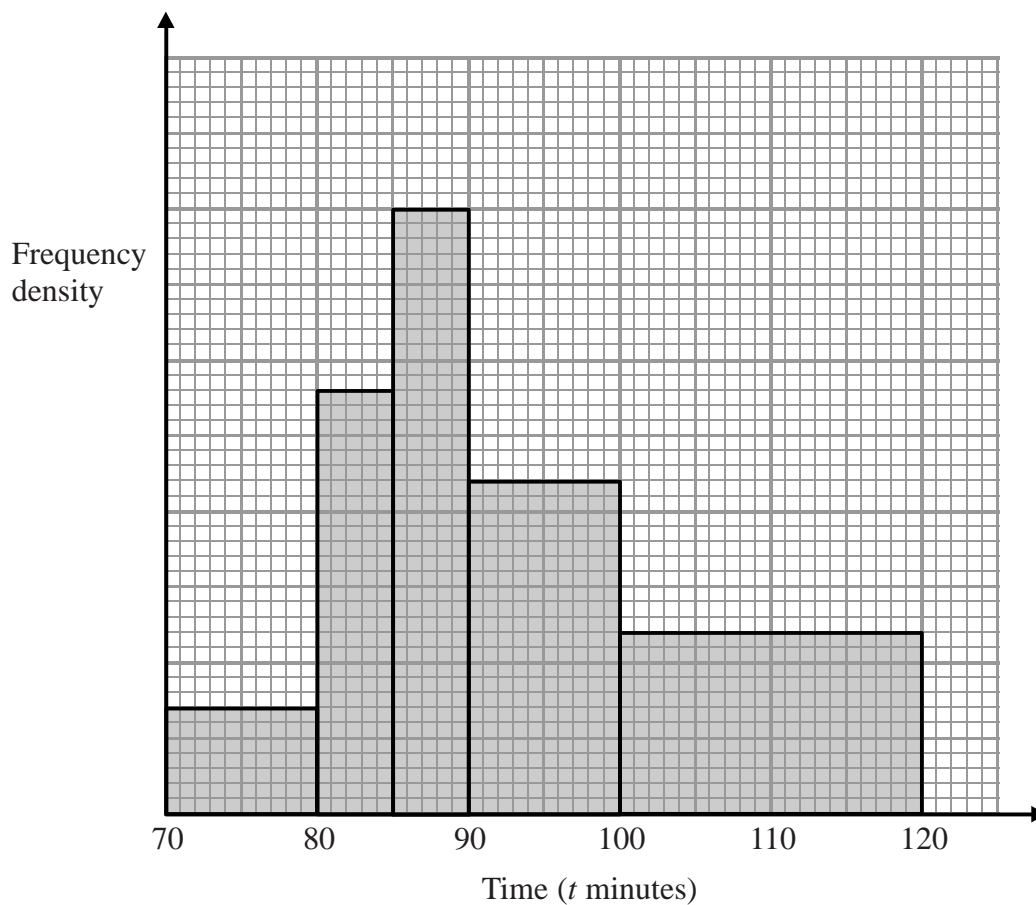
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(Total for Question 19 is 2 marks)

- 20 The histogram shows information about the time taken by cyclists to finish a cycle race.



7 cyclists took 80 minutes or less to finish the race.

- (i) Work out an estimate for the number of cyclists who took more than 105 minutes to finish the race.

- (ii) Explain why your answer to part (i) is only an estimate.

(Total for Question 20 is 4 marks)

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

Time (t minutes)	Frequency
$0 < t \leq 10$	5
$10 < t \leq 20$	8
$20 < t \leq 30$	12
$30 < t \leq 40$	15
$40 < t \leq 50$	7
$50 < t \leq 60$	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
$0 < t \leq 10$	5
$10 < t \leq 20$	13
$20 < t \leq 30$	25
$30 < t \leq 40$	40
$40 < t \leq 50$	47
$50 < t \leq 60$	50

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

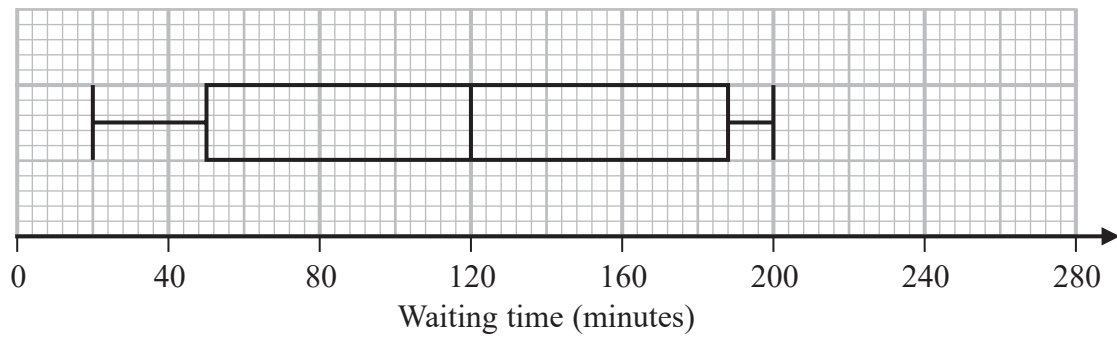
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(Total for Question 21 is 1 mark)

- 22 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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.....

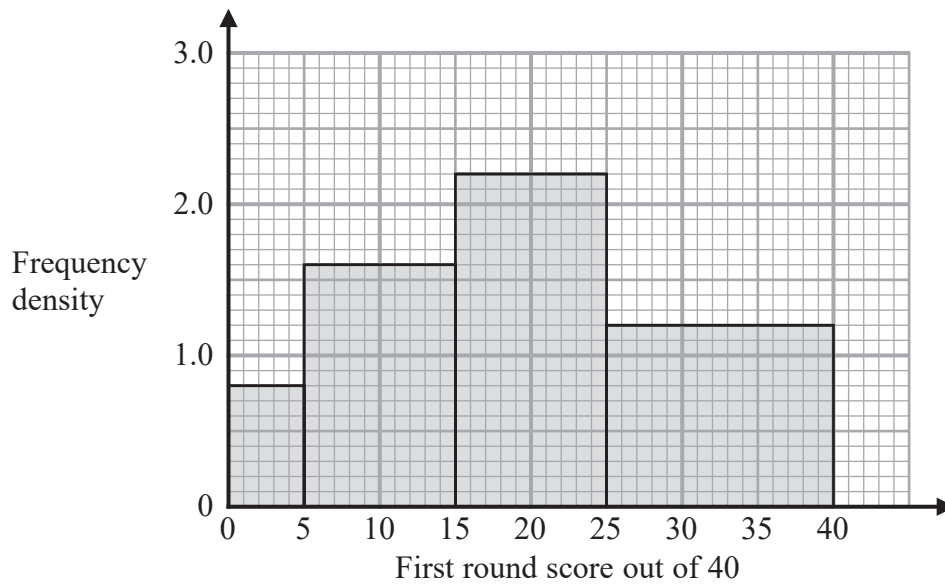
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(1)

(Total for Question 22 is 4 marks)

23 Some people took part in the first round of a competition.

The histogram gives information about the scores of these people in the first round.



20% of the people got a score high enough for them to qualify for the second round.

Work out an estimate for the score needed to qualify for the second round.

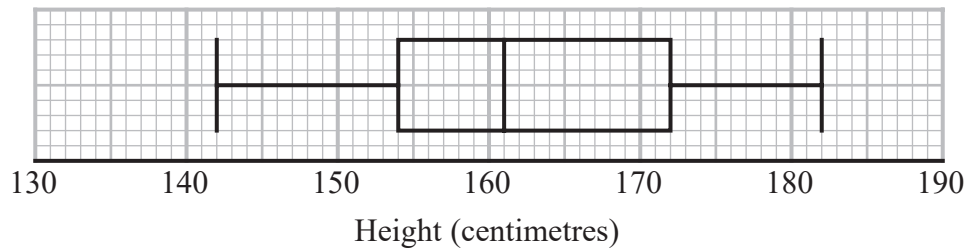
You must show all your working.

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

- 24 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.

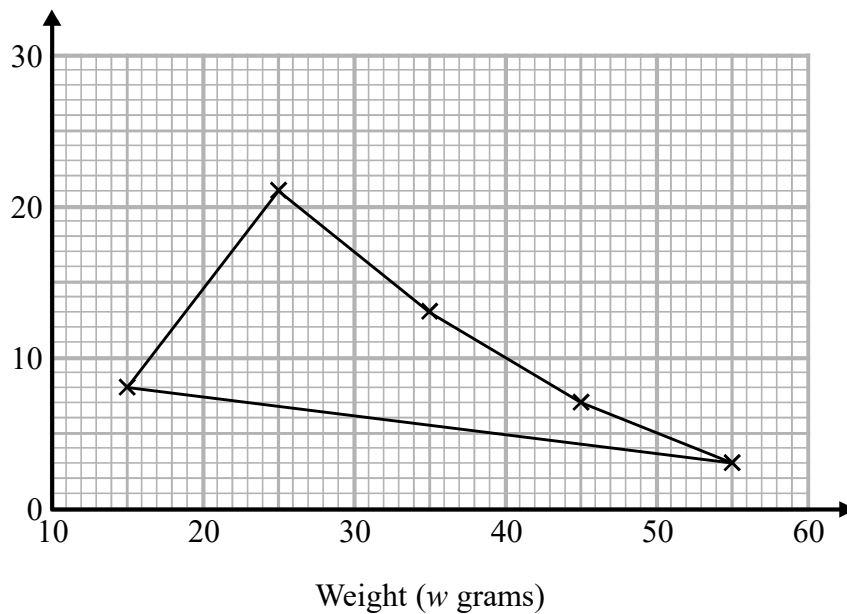
- 1.....
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- 2.....
.....
.....

(Total for Question 24 is 2 marks)

25 The table shows some information about the weights of 50 potatoes.

Weight (w grams)	Frequency
$10 < w \leq 20$	6
$20 < w \leq 30$	21
$30 < w \leq 40$	13
$40 < w \leq 50$	7
$50 < w \leq 60$	3

Iveta drew this frequency polygon for the information in the table. The frequency polygon is **not** fully correct.



Write down **two** things that are wrong with the frequency polygon.

1.
2.

(Total for Question 25 is 2 marks)

- 26 Each person in a fitness club is going to get a free gift.
Stan is going to order the gifts.

Stan takes a sample of 50 people in the fitness club.
He asks each person to tell him the gift they would like.

The table shows information about his results.

Gift	Number of people
sports bag	17
gym towel	7
headphones	11
voucher	15

There are 700 people in the fitness club.

- (i) Work out how many sports bags Stan should order.

.....
(2)

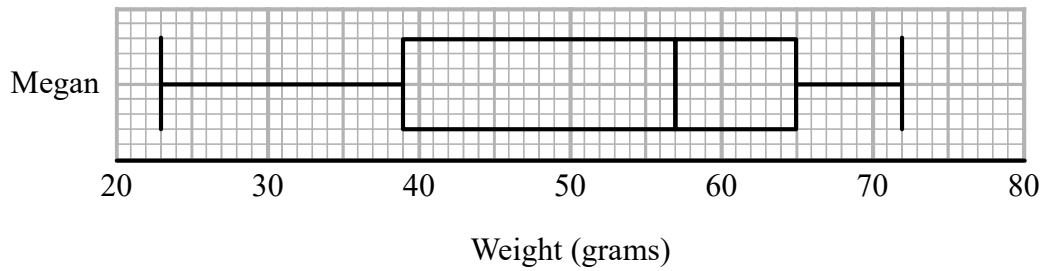
- (ii) Write down any assumption you made **and** explain how this could affect your answer.

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.....
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.....
(1)

(Total for Question 26 is 3 marks)

27 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.

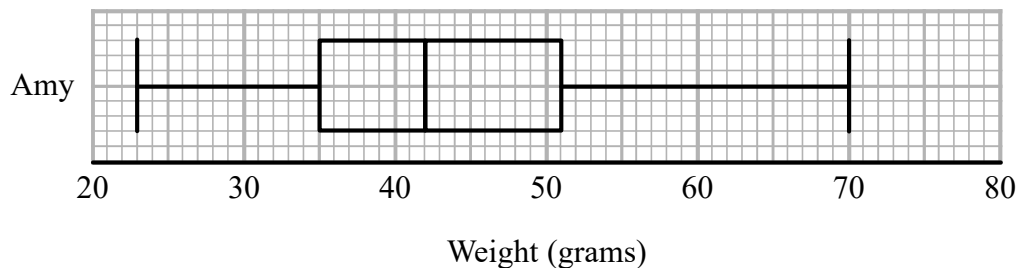
(a) Is Megan correct?

Give a reason for your answer.

(1)

Amy also grows potatoes.

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

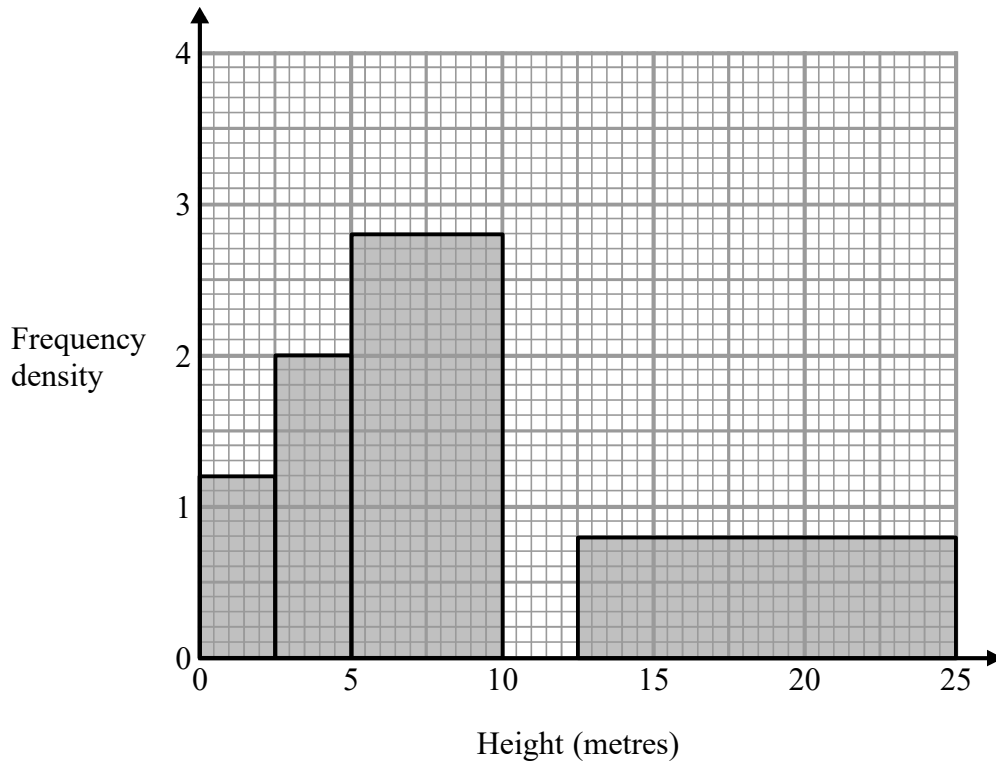


(b) Compare the distribution of the weights of Megan's potatoes with the distribution of the weights of Amy's potatoes.

(2)

(Total for Question 27 is 3 marks)

- 28 The histogram gives information about the heights, in metres, of the trees in a park. The histogram is incomplete.



20% of the trees in the park have a height between 10 metres and 12.5 metres. None of the trees in the park have a height greater than 25 metres.

Complete the histogram.

(Total for Question 28 is 3 marks)

29 Hannah is planning a day trip for 195 students.

She asks a sample of 30 students where they want to go.
Each student chooses one place.

The table shows information about her results.

Place	Number of students
Theme Park	10
Theatre	5
Sports Centre	8
Seaside	7

(i) Work out how many of the 195 students you think will want to go to the Theme Park.

.....
(2)

(ii) State any assumption you made **and** explain how this may affect your answer.

.....
.....
.....
(1)

(Total for Question 29 is 3 marks)

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

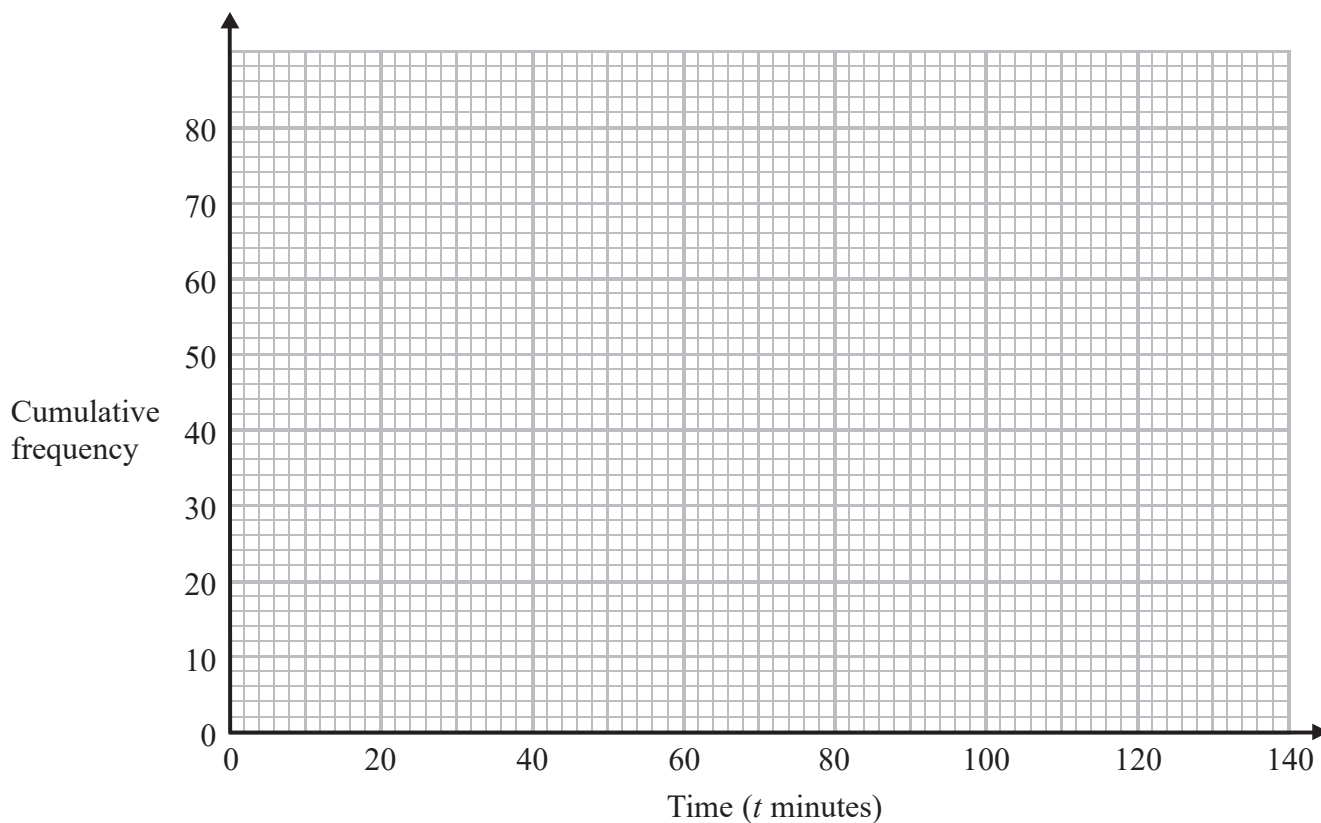
Time (t minutes)	Frequency
$0 < t \leq 20$	5
$20 < t \leq 40$	30
$40 < t \leq 60$	20
$60 < t \leq 80$	15
$80 < t \leq 100$	8
$100 < t \leq 120$	2

- (a) Complete the cumulative frequency table.

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

(1)

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



(2)

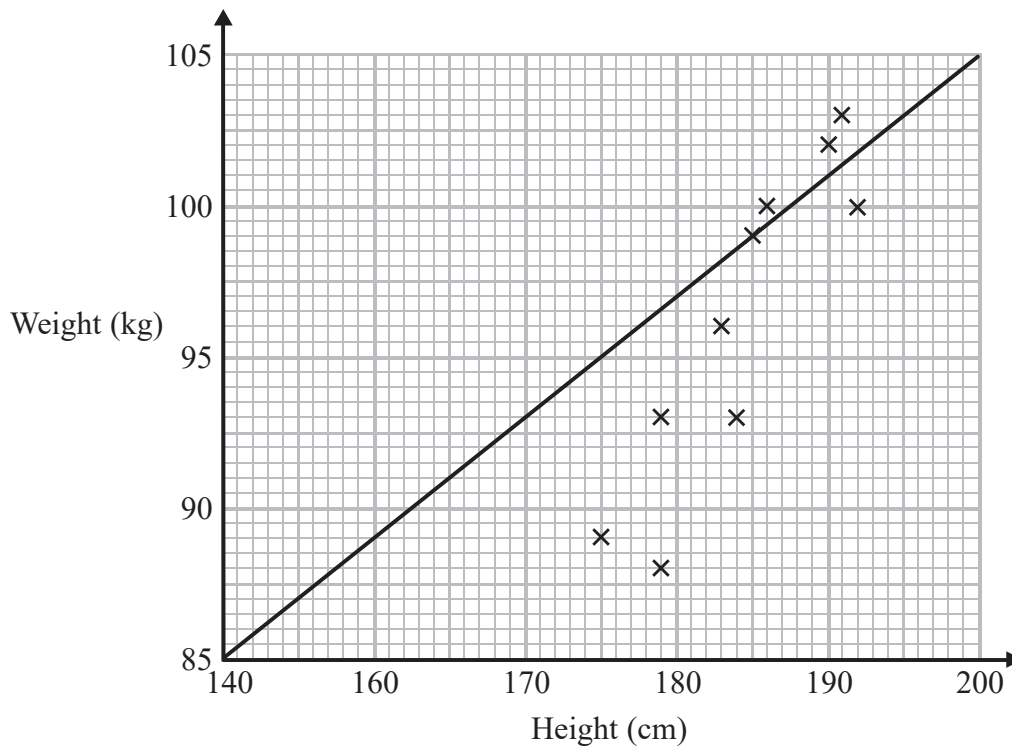
(c) Use your graph to find an estimate for the percentage of these office workers who take more than 90 minutes to get to work.

.....%

(3)

(Total for Question 30 is 6 marks)

31 Sean has information about the height, in cm, and the weight, in kg, of each of ten rugby players. He is asked to draw a scatter graph and a line of best fit for this information. Here is his answer.



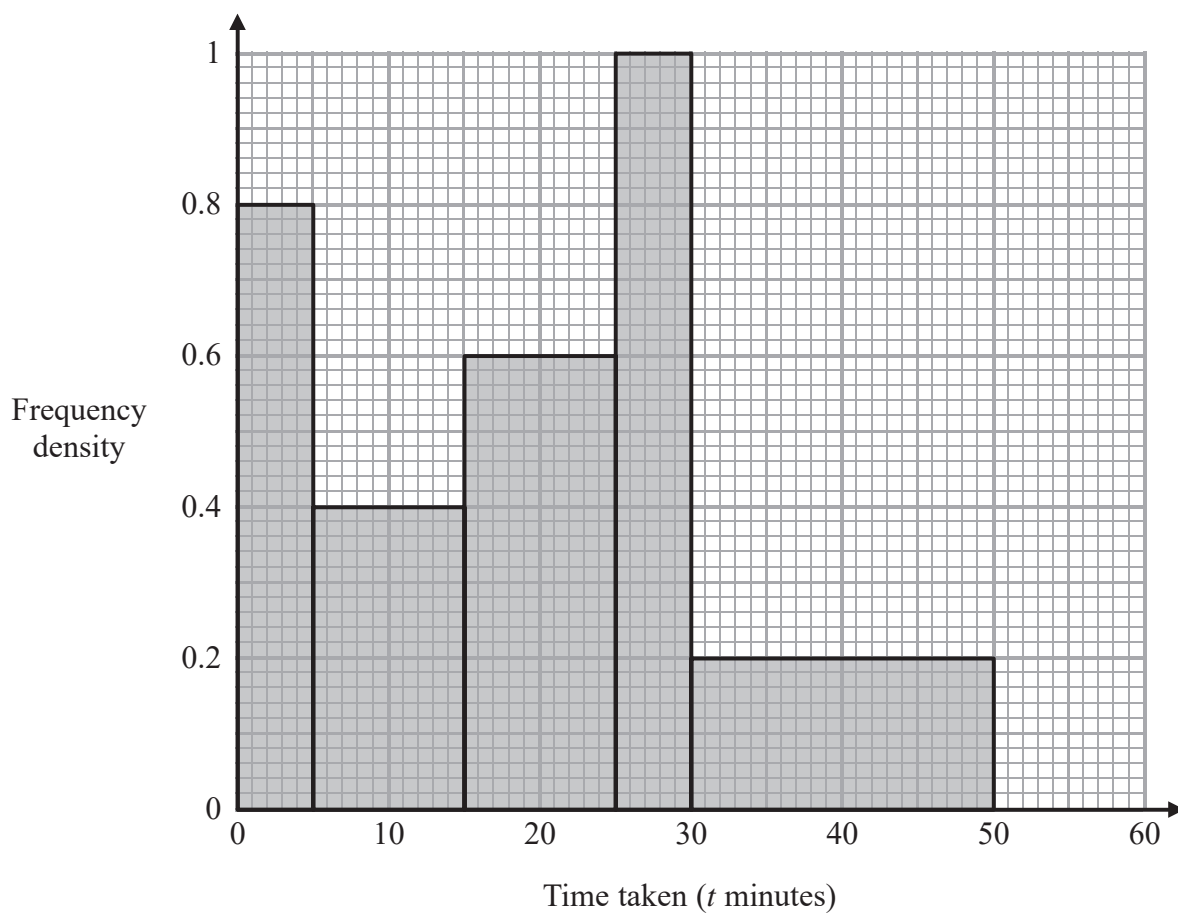
Sean has plotted the points accurately.

Write down two things that are wrong with his answer.

- 1
- 2

(Total for Question 31 is 2 marks)

32 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
$0 < t \leq 5$	4
$5 < t \leq 15$	
$15 < t \leq 25$	
$25 < t \leq 30$	
$30 < t \leq 50$	

(2)

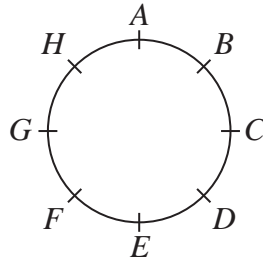
(b) Find an estimate for the lower quartile of the times taken to finish the puzzle.

..... minutes

(2)

(Total for Question 32 is 4 marks)

33 " Hasmeet walks once round a circle with diameter 80 metres.



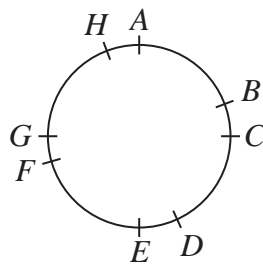
There are 8 points equally spaced on the circumference of the circle.

(a) Find the distance Hasmeet walks between one point and the next point.

.....m

(2)

Four of the points are moved, as shown in the diagram below.



Hasmeet walks once round the circle again.

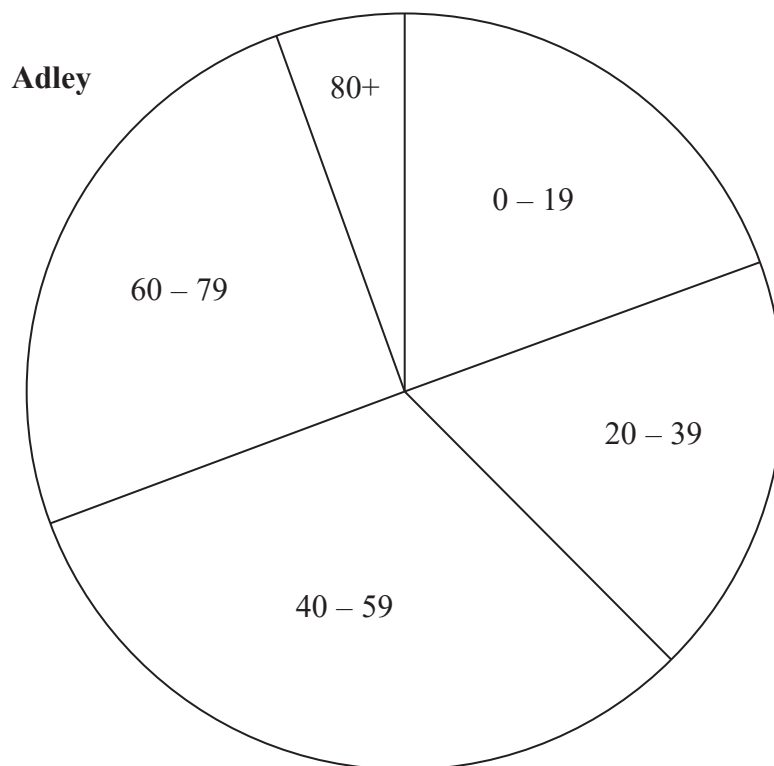
(b) Has the mean distance that Hasmeet walks between one point and the next point changed?
You must give a reason for your answer.

.....
.....

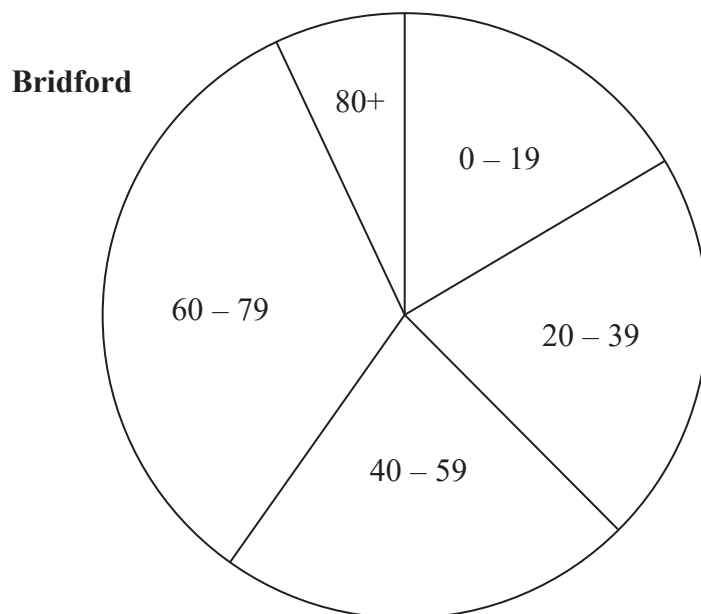
(1)

(Total for Question 33 is 3 marks)

34 "The pie charts give information about the ages, in years, of people living in two towns, Adley and Bridford.



Diagrams accurately drawn



The ratio of the number of people living in Adley to the number of people living in Bridford is given by the ratio of the areas of the pie charts.

What proportion of the total number of people living in these two towns live in Adley **and** are aged 0 – 19?

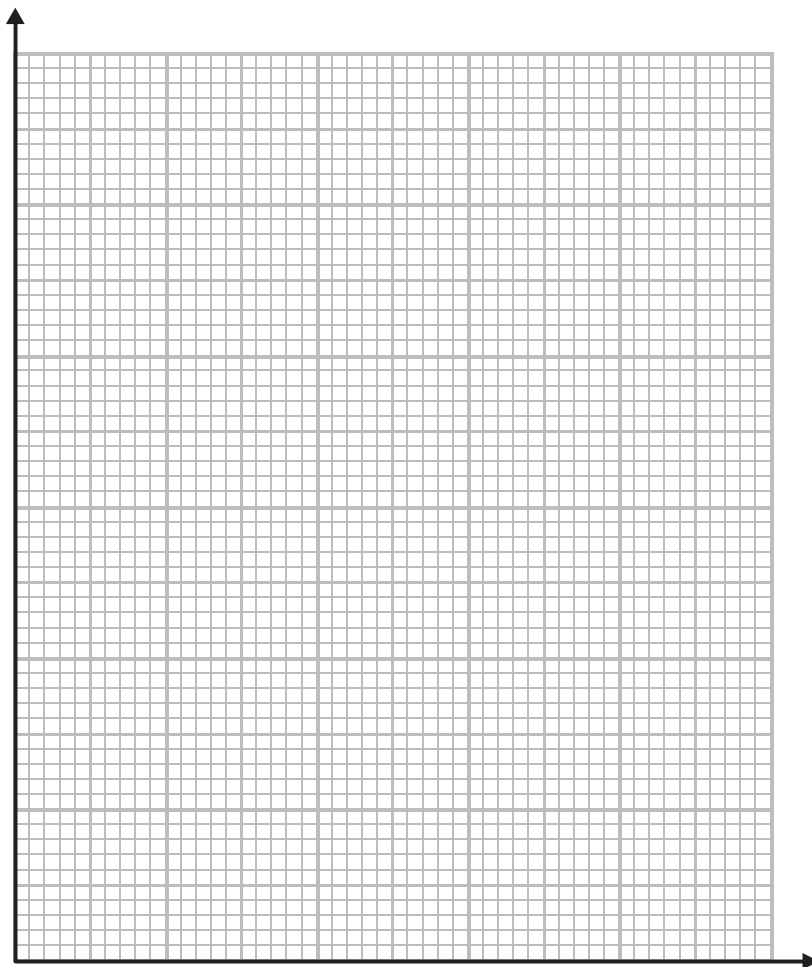
Give your answer correct to 3 significant figures.

.....
(Total for Question 34 is 3 marks)

35 The table gives information about the heights of 150 students.

Height (h cm)	Frequency
$140 < h \leq 150$	15
$150 < h \leq 155$	30
$155 < h \leq 160$	51
$160 < h \leq 165$	36
$165 < h \leq 180$	18

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



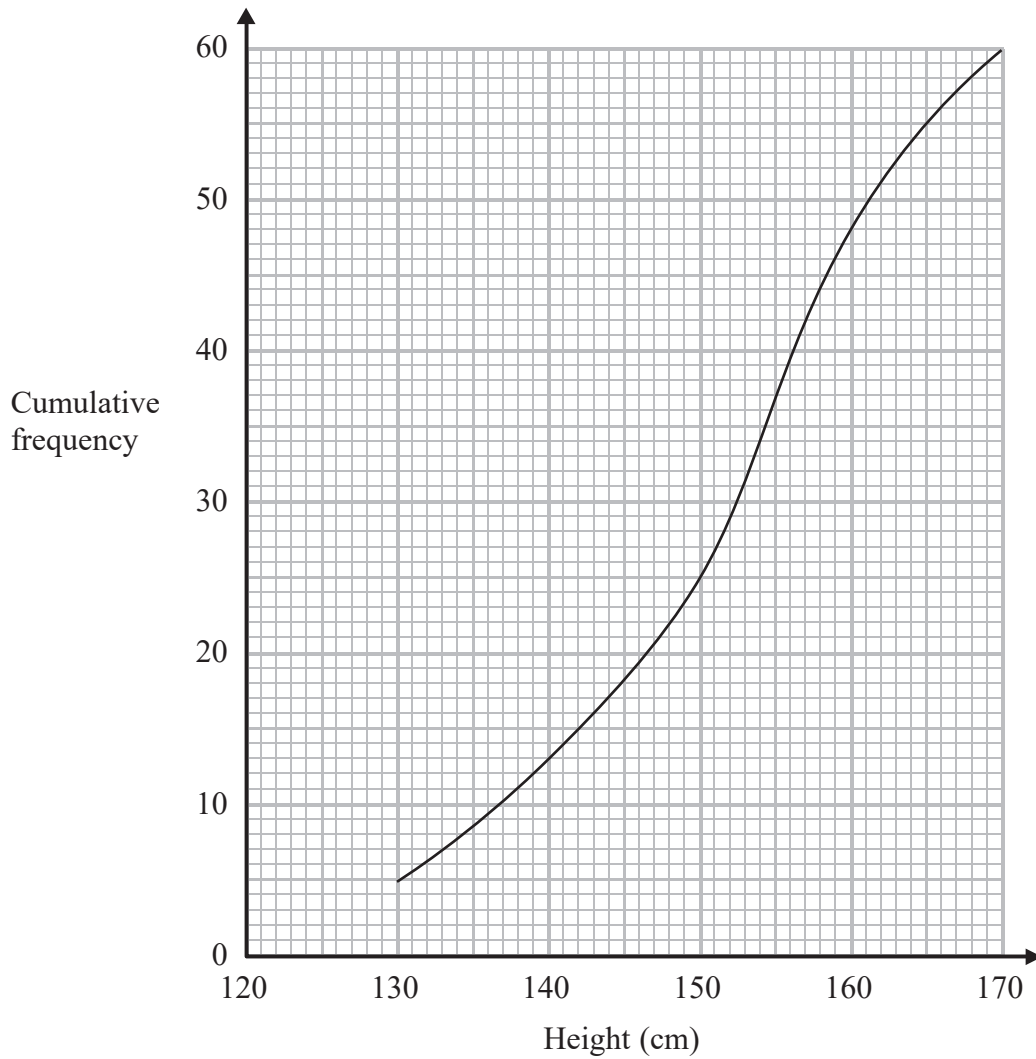
(3)

(b) Work out an estimate for the fraction of the students who have a height between 150 cm and 170 cm.

.....
(2)

(Total for Question 35 is 5 marks)

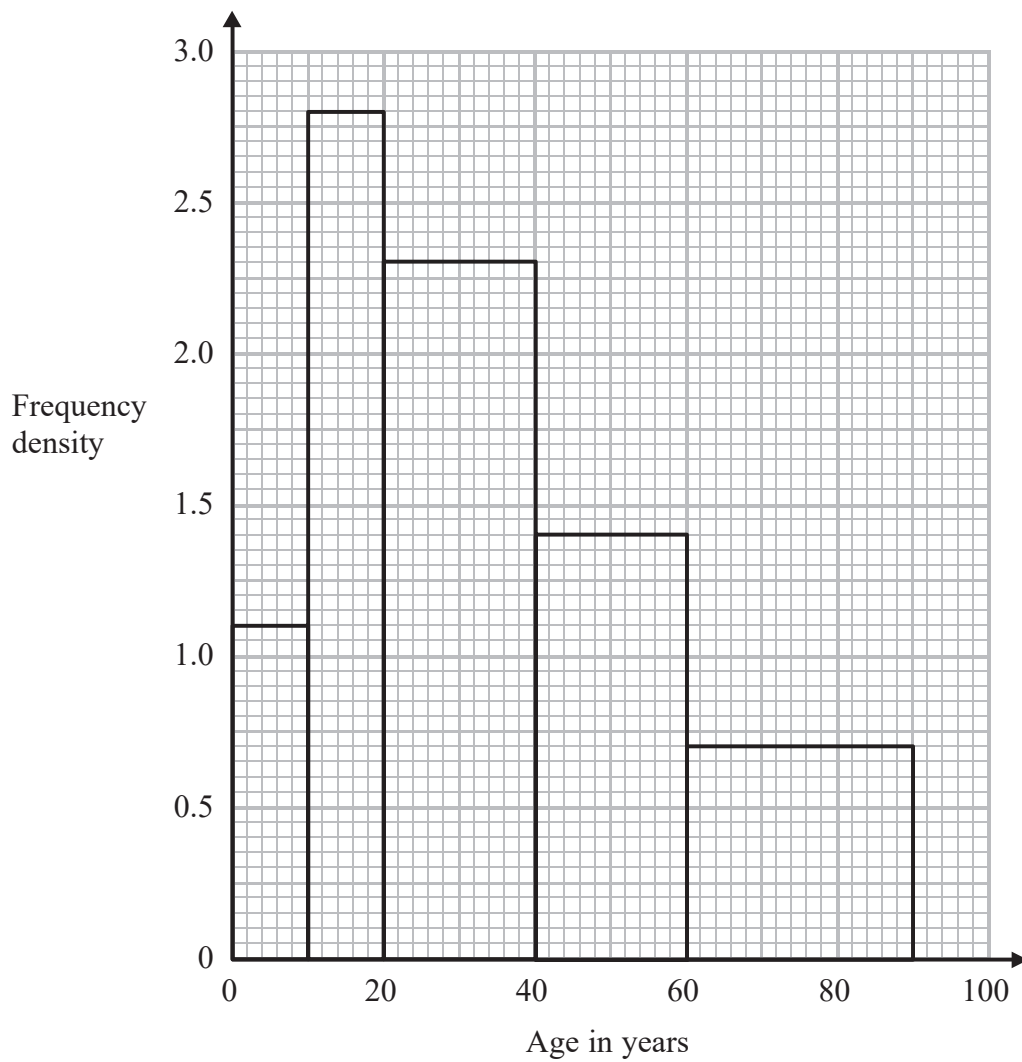
- 36 The cumulative frequency graph shows some information about the heights, in cm, of 60 students.



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

.....
(Total for Question 36 is 2 marks)

37 The histogram shows some information about the ages of the 134 members of a sports club.



20% of the members of the sports club who are over 50 years of age are female.

Work out an estimate for the number of female members who are over 50 years of age.

(Total for Question 37 is 3 marks)

38 The table shows some information about the foot lengths of 40 adults.

Foot length (f cm)	Number of adults
$16 \leq f < 18$	3
$18 \leq f < 20$	6
$20 \leq f < 22$	10
$22 \leq f < 24$	12
$24 \leq f < 26$	9

(a) Write down the modal class interval.

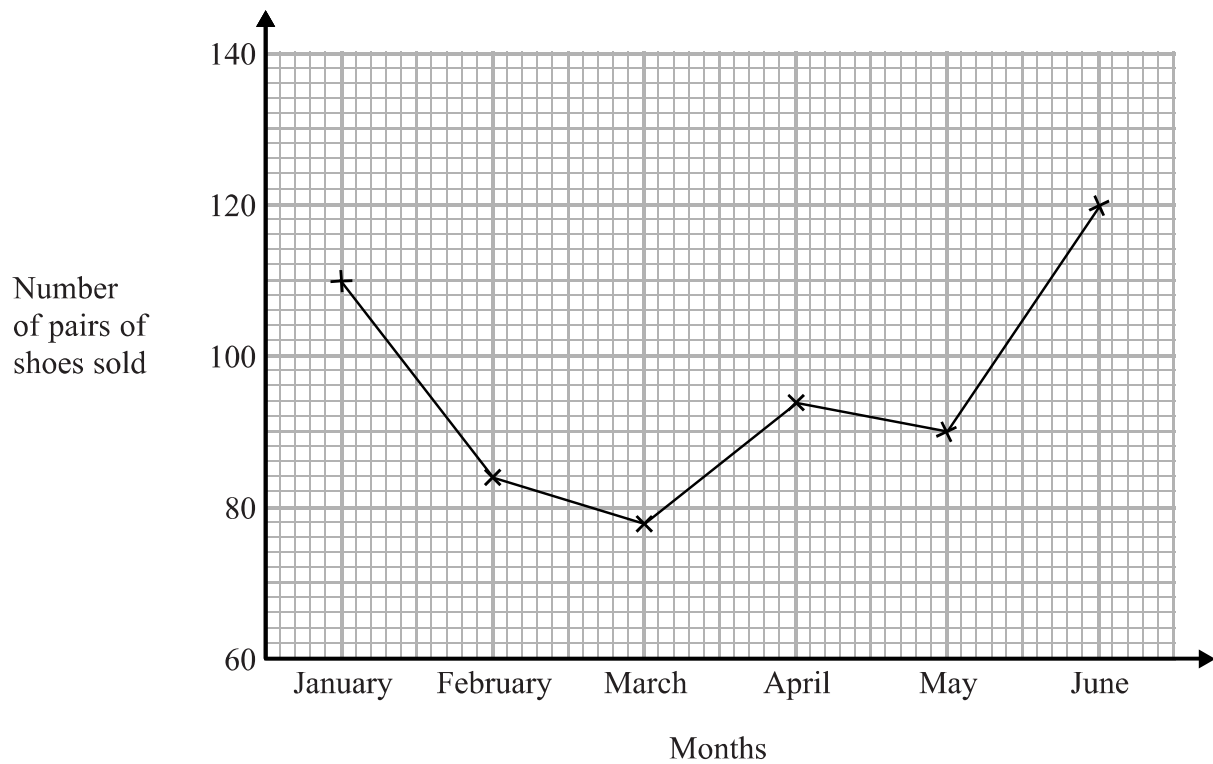
.....
(1)

(b) Calculate an estimate for the mean foot length.

..... cm
(3)

(Total for Question 38 is 4 marks)

- 39 The time-series graph gives some information about the number of pairs of shoes sold in a shoe shop in the first six months of 2014



The sales target for the first six months of 2014 was to sell a mean of 96 pairs of shoes per month.

Did the shoe shop meet this sales target?
You must show how you get your answer.

(Total for Question 39 is 3 marks)

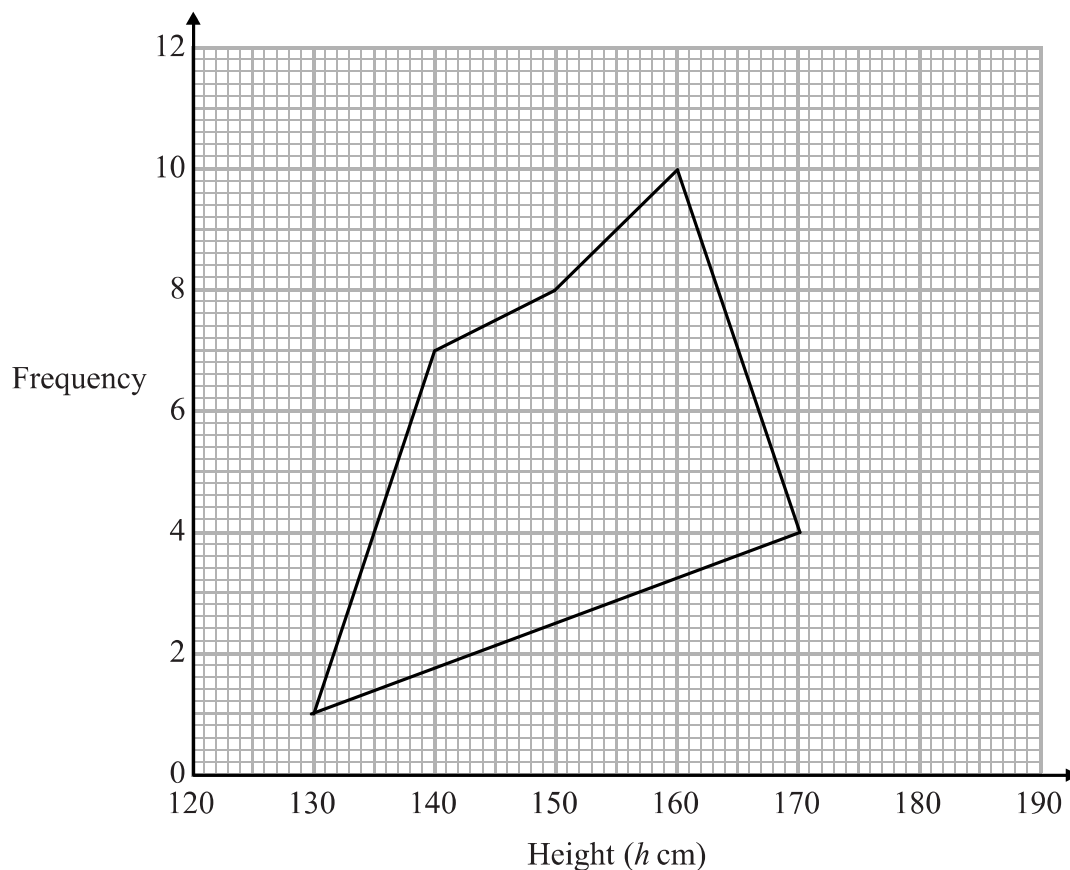
40 The grouped frequency table gives information about the heights of 30 students.

Height (h cm)	Frequency
$130 < h \leq 140$	1
$140 < h \leq 150$	7
$150 < h \leq 160$	8
$160 < h \leq 170$	10
$170 < h \leq 180$	4

(a) Write down the modal class interval.

.....
(1)

This incorrect frequency polygon has been drawn for the information in the table.



(b) Write down two things wrong with this incorrect frequency polygon.

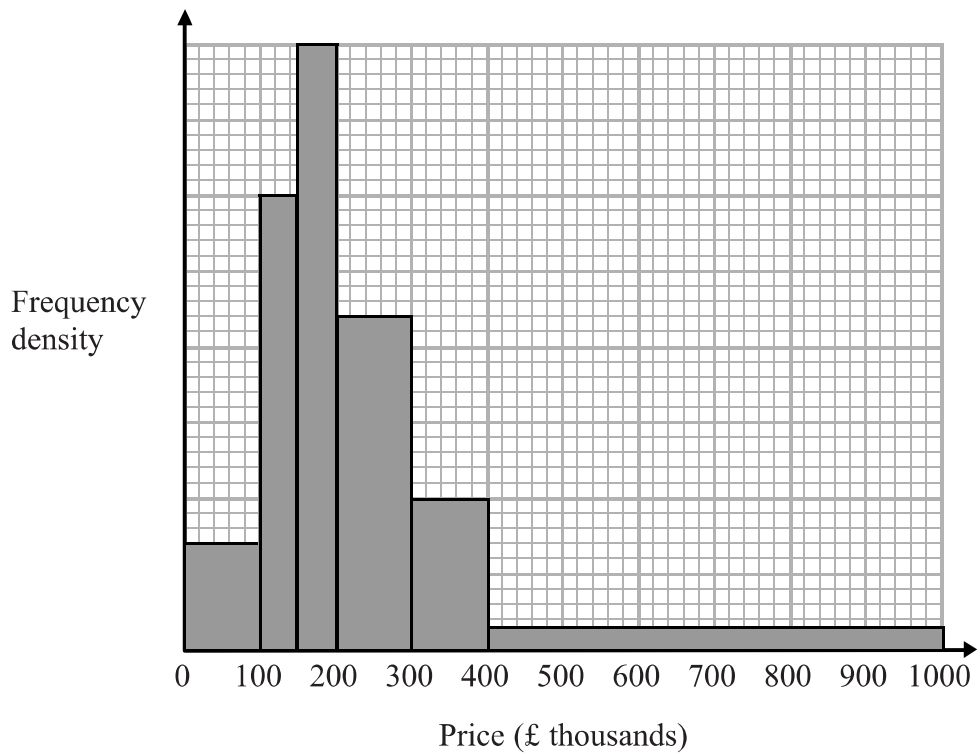
1

2

(2)

(Total for Question 40 is 3 marks)

41 The histogram gives information about house prices in a village in 2015

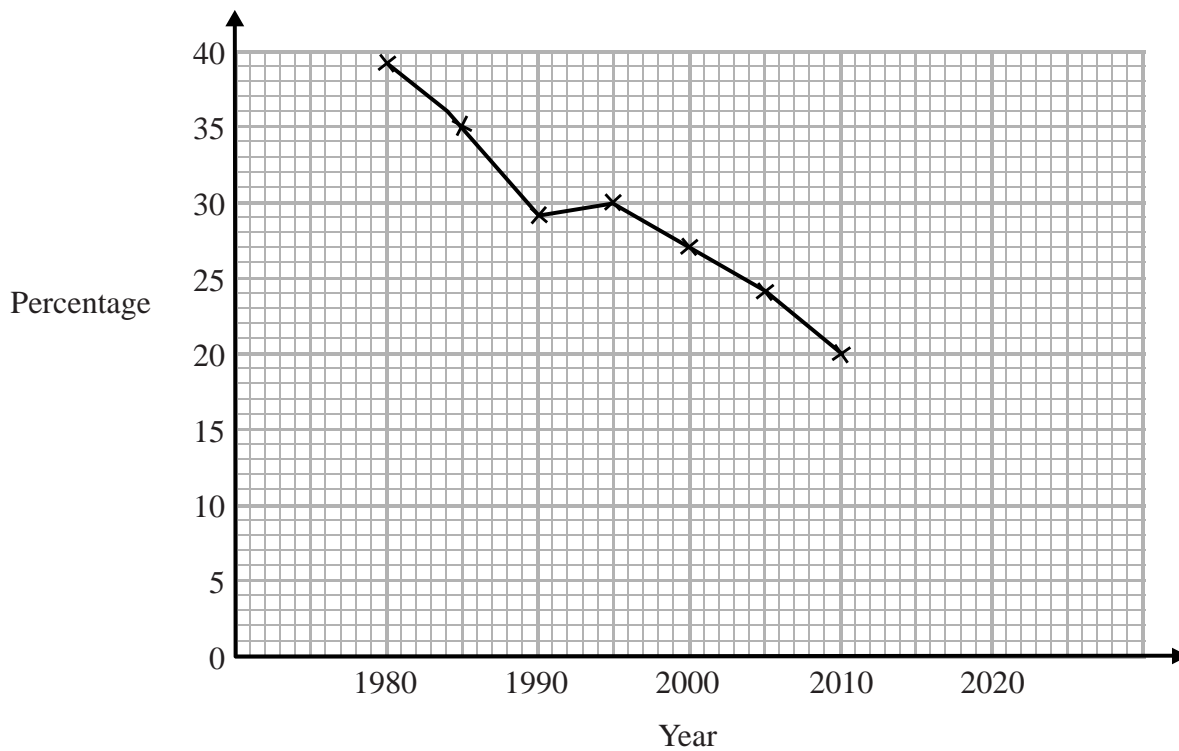


20 houses in the village have a price between £300 000 and £400 000

Work out the number of houses in the village with a price under £200 000

(Total for Question 41 is 3 marks)

- 42 The time series graph shows information about the percentages of the people in a village that used the village shop for the years between 1980 and 2010



- (a) Describe the trend in the percentage of the people in the village who used the shop for this period.

(1)

- (b) (i) Use the graph to predict the percentage of the people in the village likely to use the shop in the year 2020

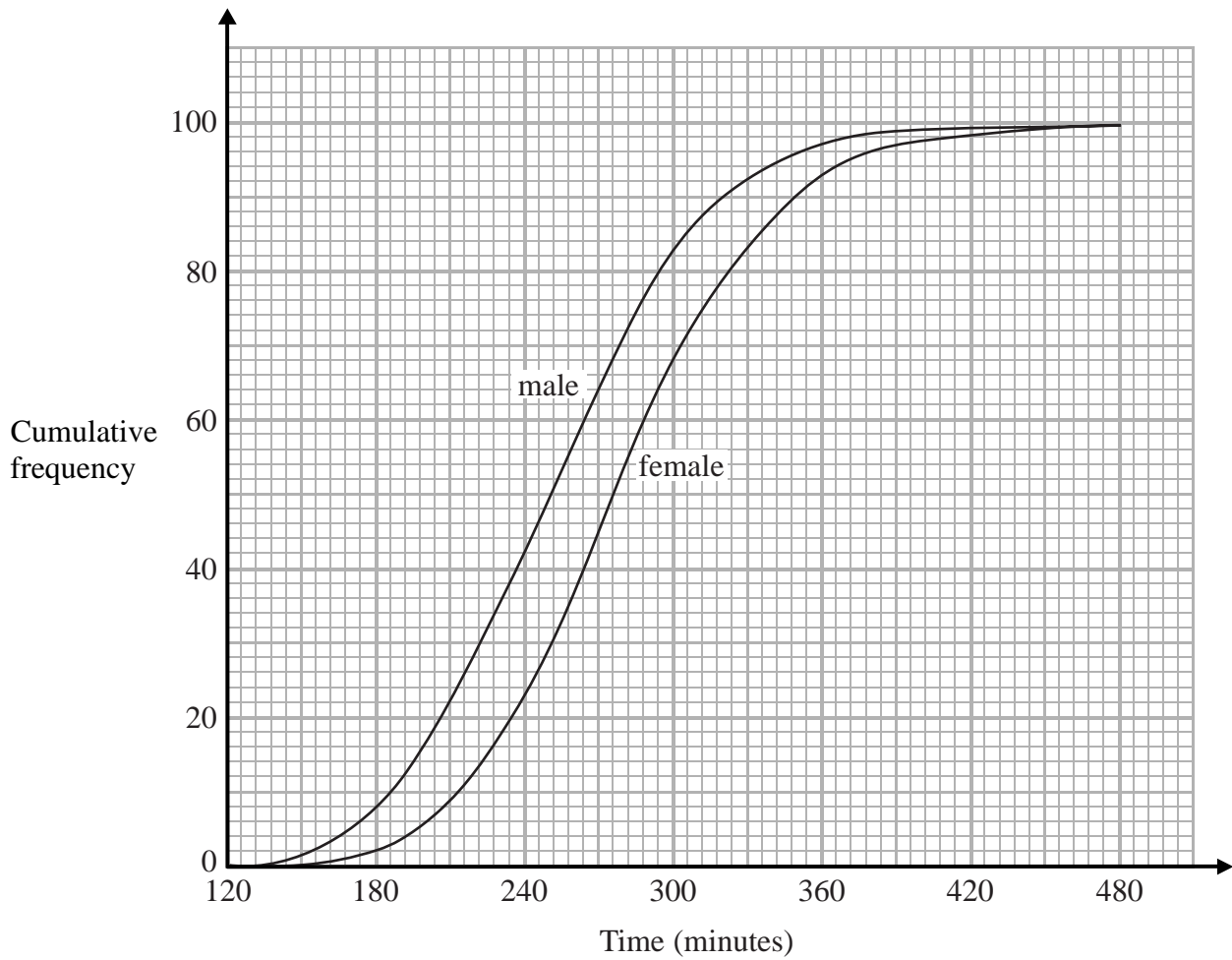
.....%

- (ii) Is your prediction reliable?
Explain your answer.

(3)

(Total for Question 42 is 4 marks)

- 43 The cumulative frequency graphs show information about the times taken by 100 male runners and by 100 female runners to finish the London marathon.



A male runner is chosen at random.

- (a) Find an estimate for the probability that this runner took less than 4 hours to finish the London marathon.

.....
(2)

(b) Use medians and interquartile ranges to compare the distribution of the times taken by the male runners with the distribution of the times taken by the female runners.

.....

.....

.....

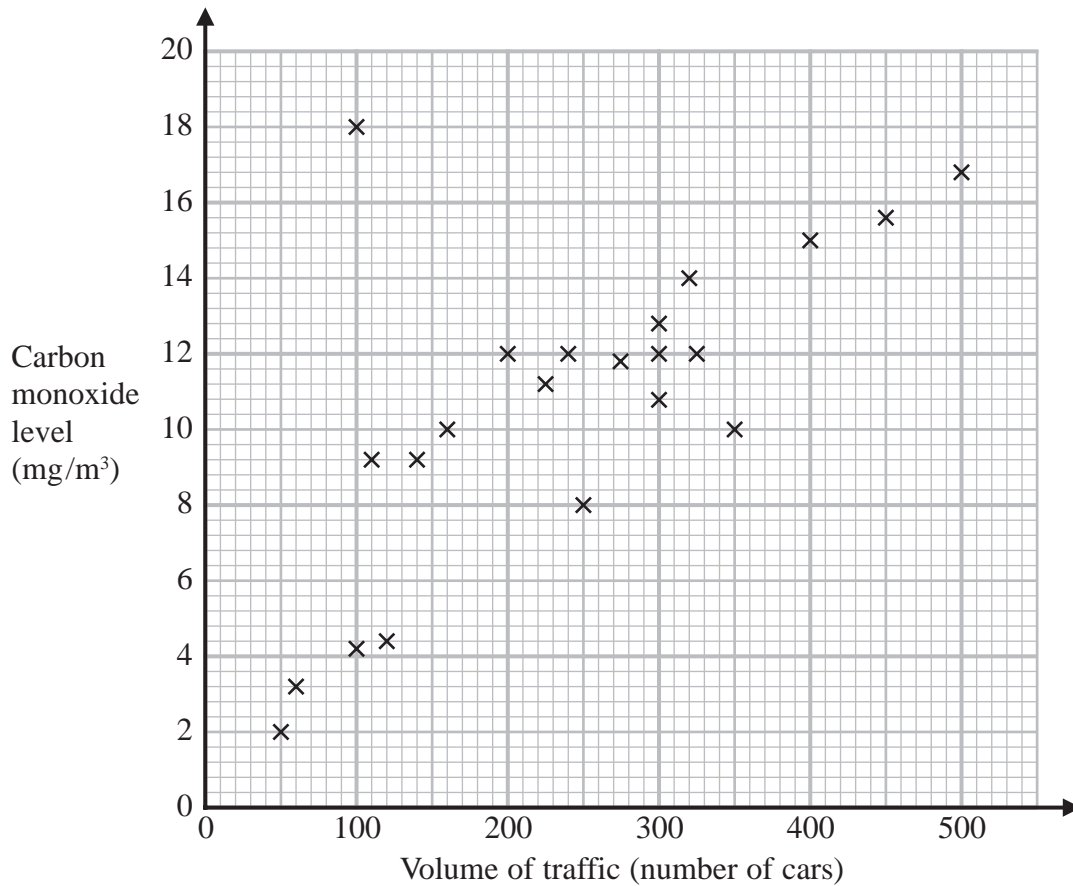
.....

.....

(4)

(Total for Question 43 is 6 marks)

- 44 The scatter graph shows information about the volume of traffic and the carbon monoxide level at a point on a road each day for 22 days.



One point is an outlier.

- (a) Write down the coordinates of this point.

(.....,)
(1)

For another day, 370 cars pass the point on the road.

- (b) Estimate the carbon monoxide level for this day.

..... mg/m³
(2)

Alfie says,

“Because there is an outlier, there is no correlation.”

(c) Is Alfie correct?

You must give a reason for your answer.

.....

.....

.....

(1)

(Total for Question 44 is 4 marks)

45 There is a total of 45 boys and girls in a choir.

"The mean age of the 18 boys is 16.2 years."

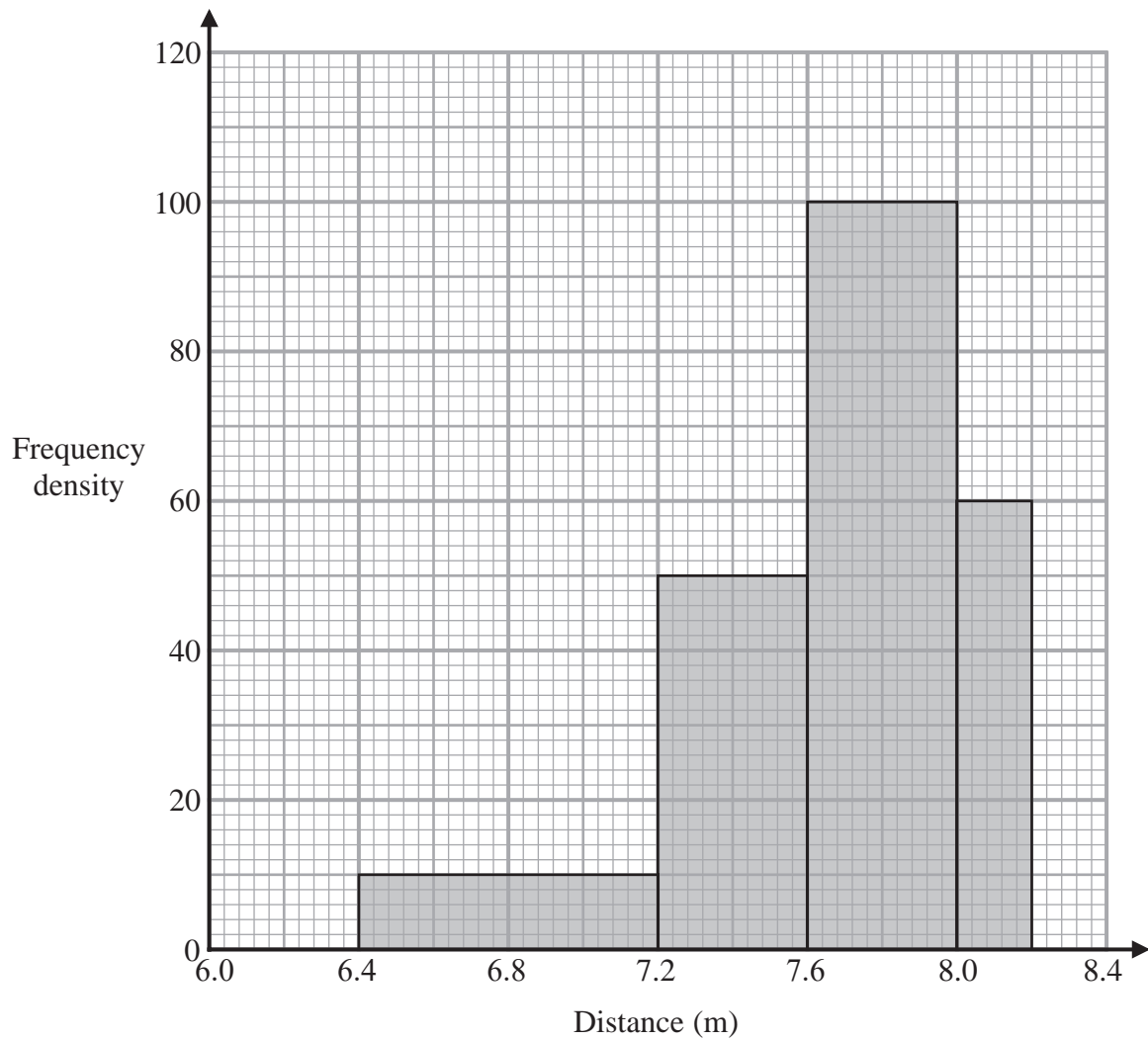
"The mean age of the 27 girls is 16.7 years."

Calculate the mean age of all 45 boys and girls.

..... years

(Total for Question 45 is 3 marks)

46 The histogram gives information about the distances 80 competitors jumped in a long jump competition.

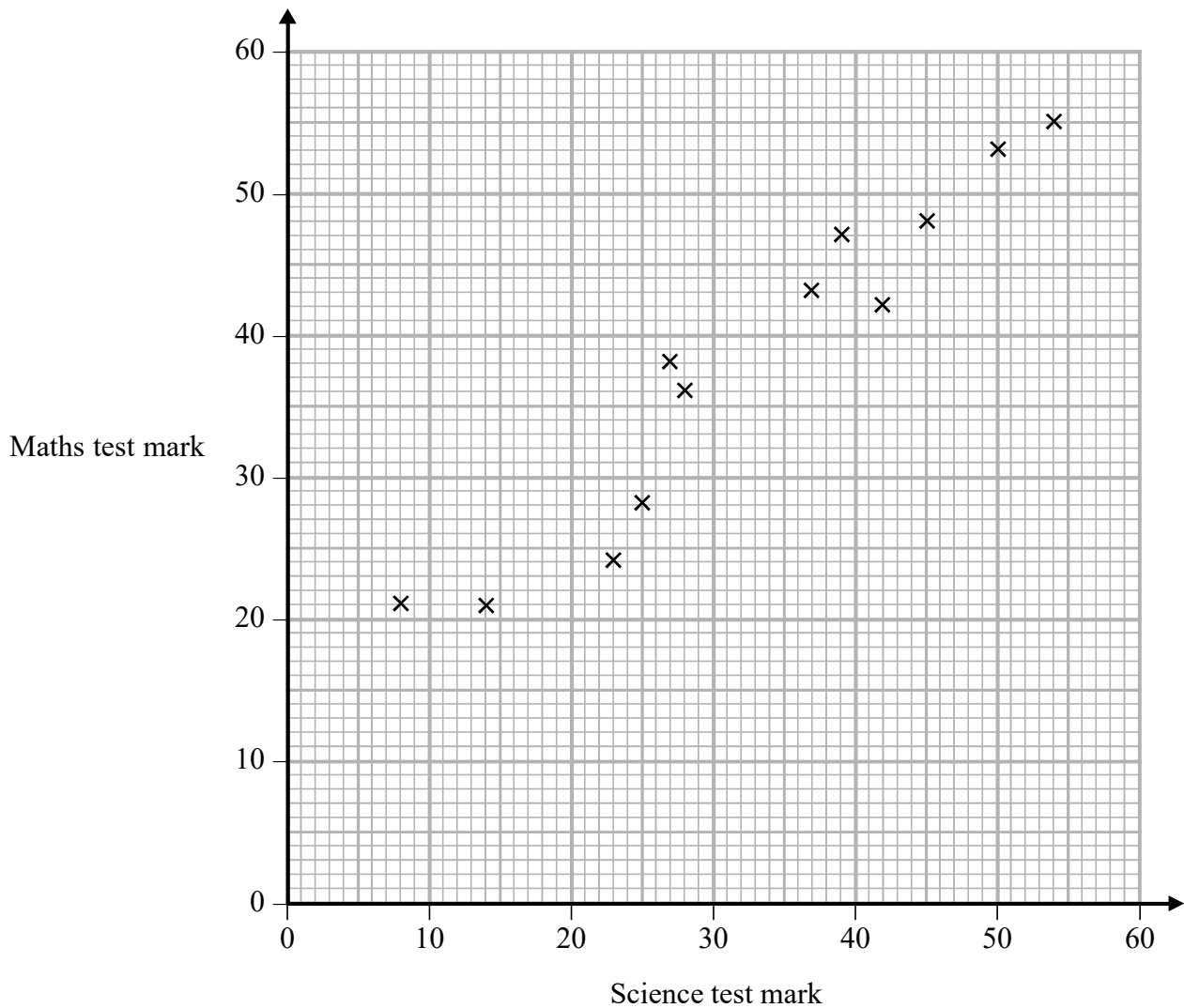


Calculate an estimate for the mean distance.

..... m

(Total for Question 46 is 4 marks)

- 47 The scatter graph shows information about the marks a group of students got in a Science test and in a Maths test.



Jamie got a mark of 34 in the Science test.

Using the scatter graph, find an estimate for Jamie's mark in the Maths test.

.....
(Total for Question 47 is 2 marks)

48 The table gives information about the times taken, in seconds, by 18 students to run a race.

Time (t seconds)	Frequency
$5 < t \leq 10$	1
$10 < t \leq 15$	2
$15 < t \leq 20$	7
$20 < t \leq 25$	8

Work out an estimate for the mean time.

Give your answer correct to 3 significant figures.

..... seconds

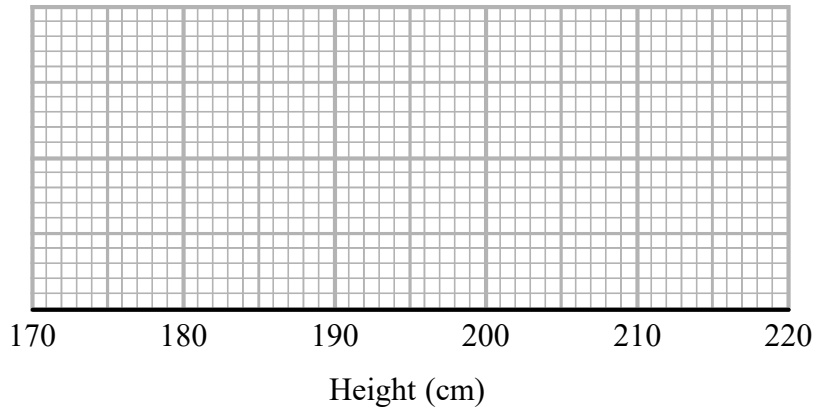
(Total for Question 48 is 3 marks)

49 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 49 is 3 marks)

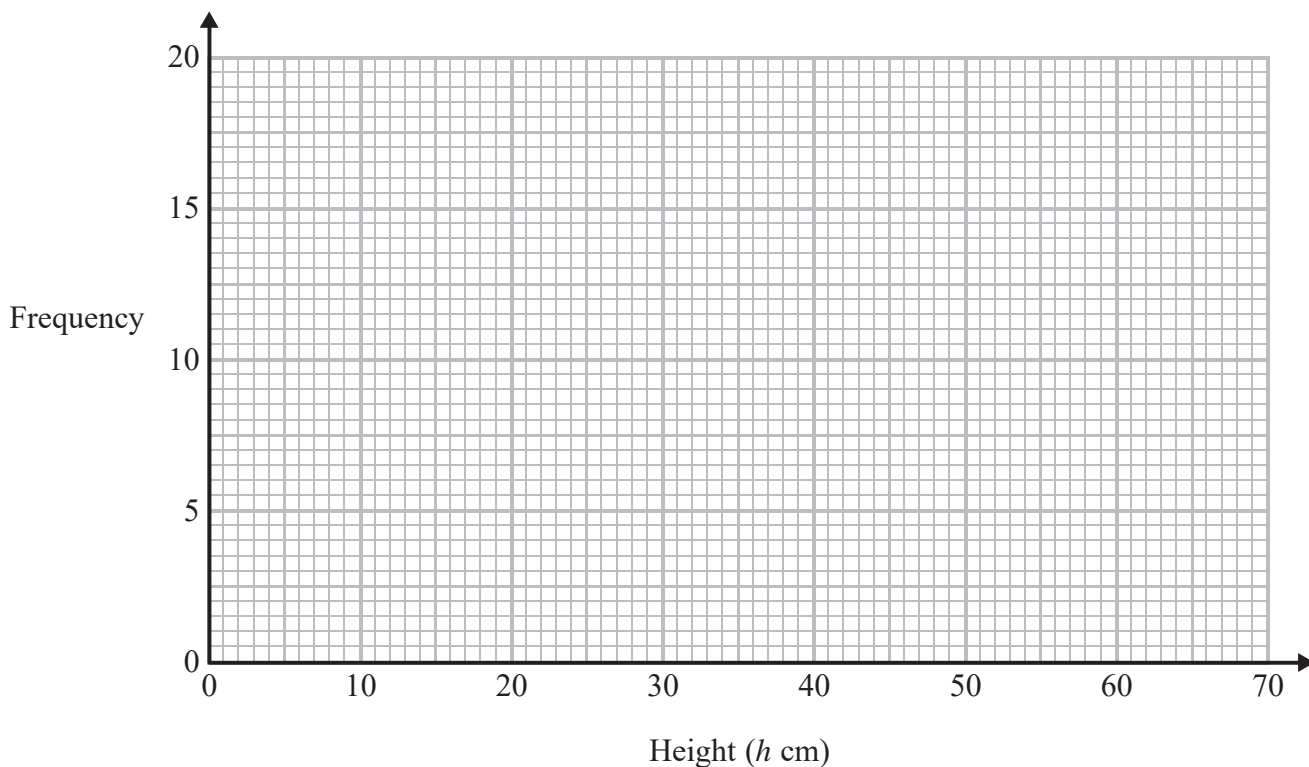
50 The table shows information about the heights of 80 plants.

Height (h cm)	Frequency
$10 < h \leq 20$	7
$20 < h \leq 30$	13
$30 < h \leq 40$	14
$40 < h \leq 50$	12
$50 < h \leq 60$	16
$60 < h \leq 70$	18

(a) Find the class interval that contains the median.

.....
(1)

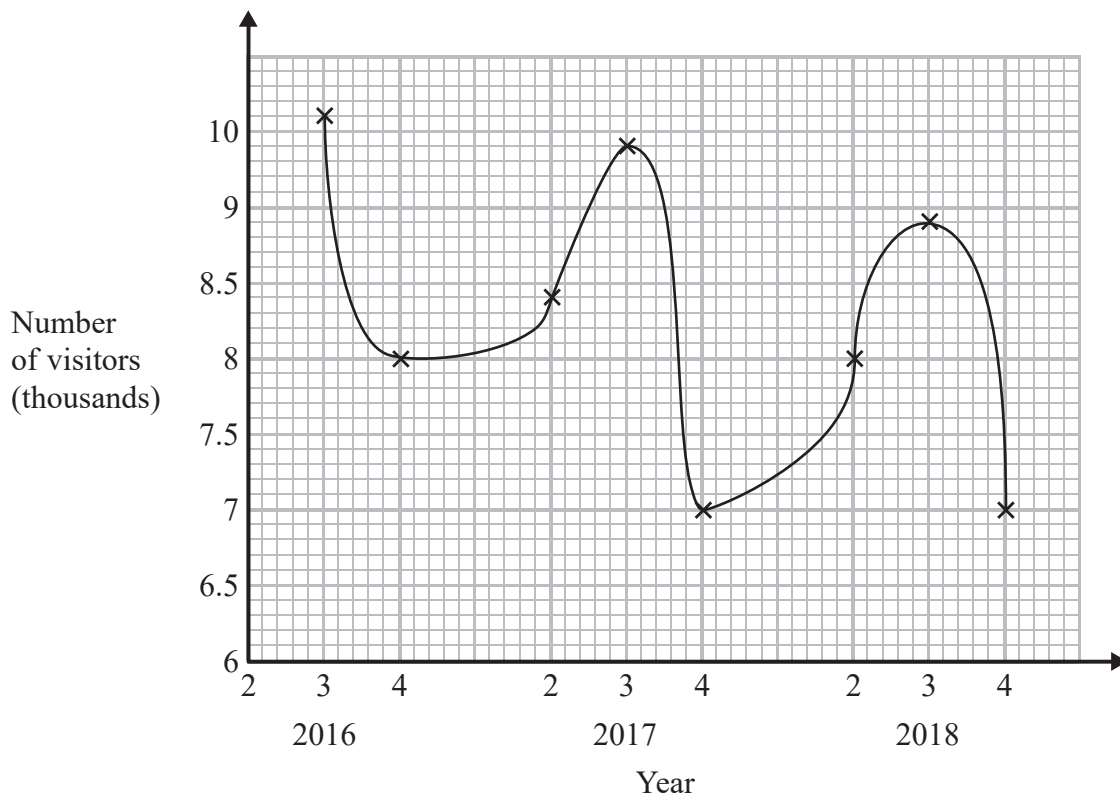
(b) On the grid, draw a frequency polygon for the information in the table.



(2)

(Total for Question 50 is 3 marks)

51 Sean has drawn a time series graph to show the numbers, in thousands, of visitors to a fun park.



Write down two things that are wrong or could be misleading with this graph.

1

.....

.....

.....

2

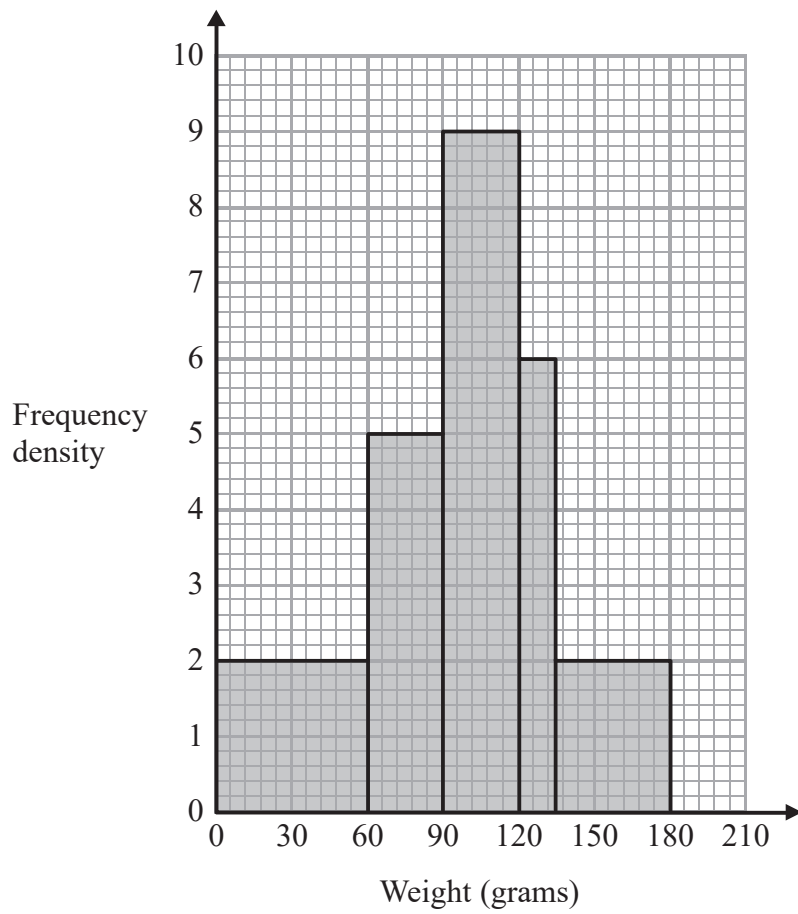
.....

.....

.....

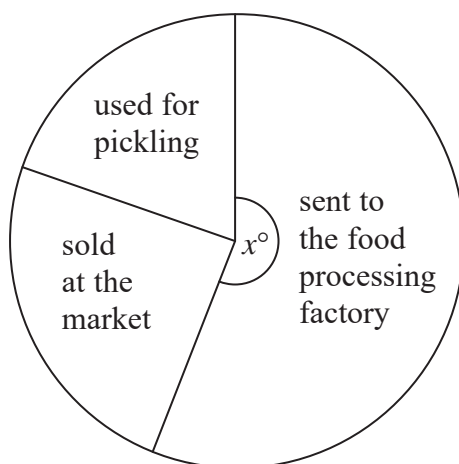
(Total for Question 51 is 2 marks)

52 The histogram gives information about the distribution of the weights of some onions grown by a farmer.



Onions less than 60 grams in weight are used for pickling.
Onions greater than 120 grams in weight are sold at the market.
The rest of the onions are sent to a food processing factory.

A pie chart is drawn using the information opposite to show what the farmer does with the onions he grows.



The angle of the sector for the onions sent to the food processing factory is x° .

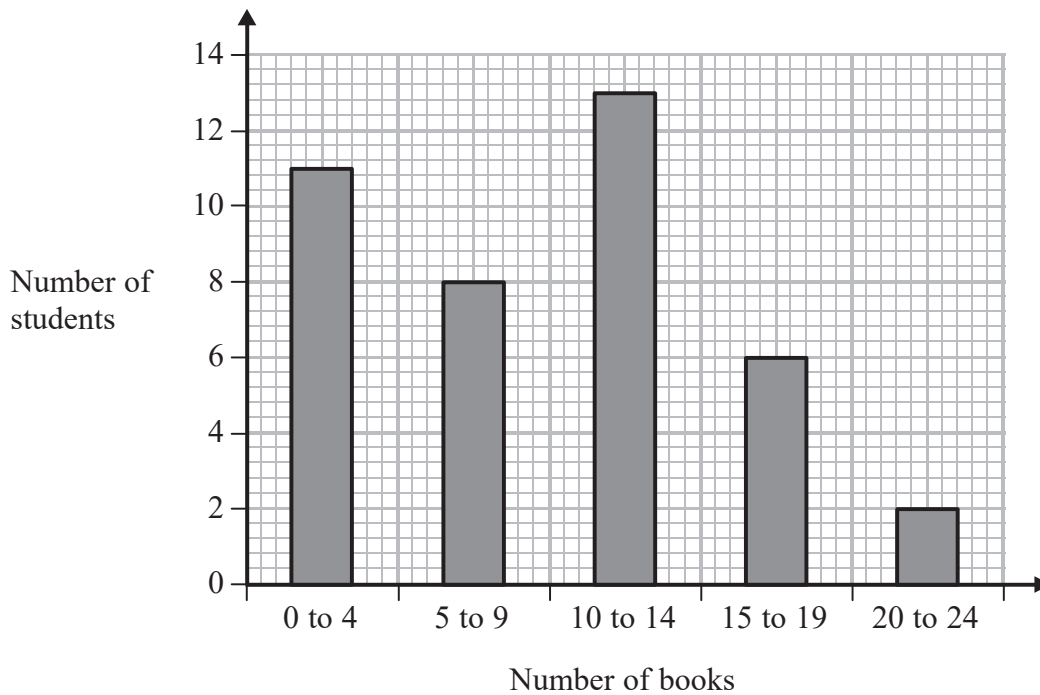
Work out the value of x .

$x = \dots\dots\dots$

(Total for Question 52 is 4 marks)

53 Fran asks each of 40 students how many books they bought last year.

The chart below shows information about the number of books bought by each of the 40 students.



(a) Work out the percentage of these students who bought 20 or more books.

.....%
(2)

(b) Show that an estimate for the mean number of books bought is 9.5
You must show all your working.

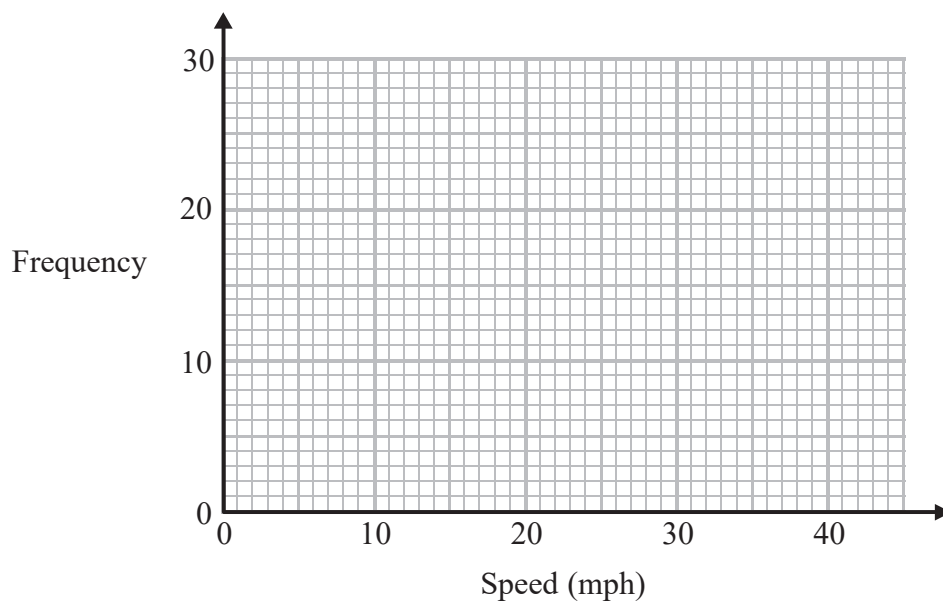
(4)

(Total for Question 53 is 6 marks)

54 The table gives information about the speeds of 70 cars.

Speed (s mph)	Frequency
$0 < s \leq 10$	14
$10 < s \leq 20$	18
$20 < s \leq 30$	26
$30 < s \leq 40$	12

Draw a frequency polygon for this information.

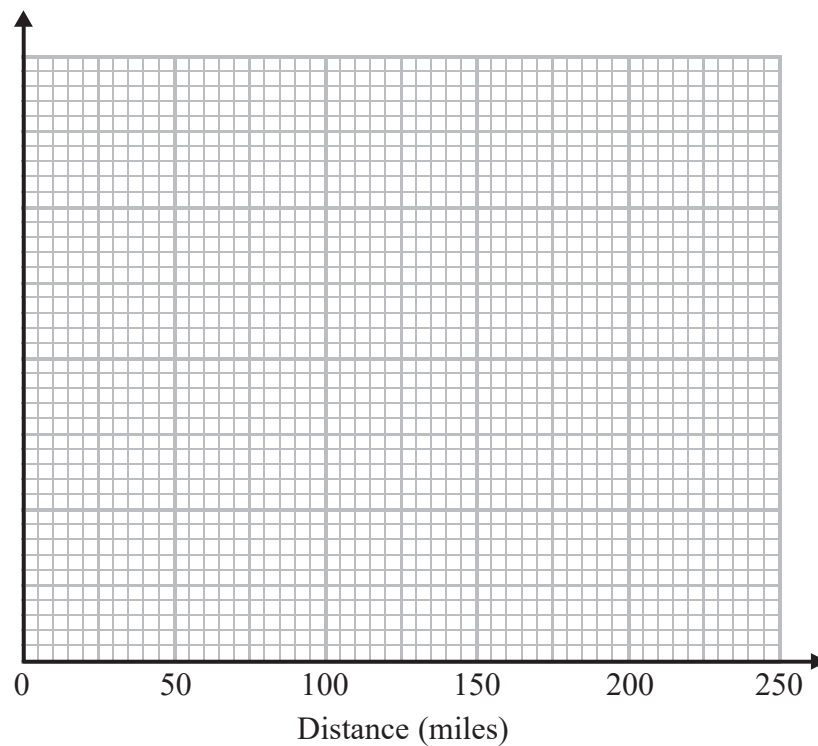


(Total for Question 54 is 2 marks)

55 The table shows information about the distances 570 students travelled to a university open day.

Distance (d miles)	Frequency
$0 < d \leq 20$	120
$20 < d \leq 50$	90
$50 < d \leq 80$	120
$80 < d \leq 150$	140
$150 < d \leq 200$	100

(a) Draw a histogram for the information in the table.



(3)

(b) Estimate the median distance.

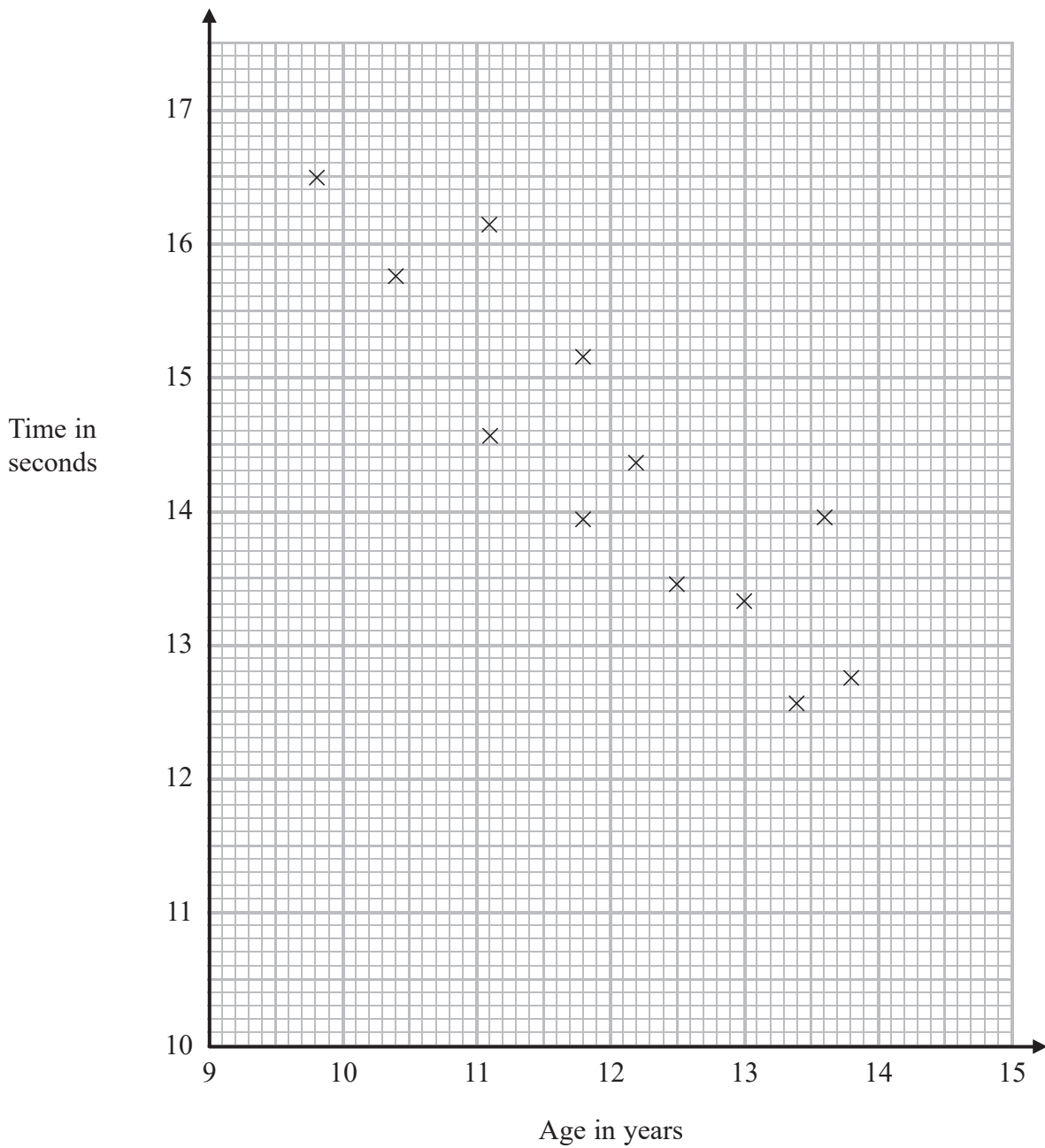
..... miles

(2)

(Total for Question 55 is 5 marks)

56 The scatter diagram shows information about 12 girls.

It shows the age of each girl and the best time she takes to run 100 metres.



(a) Write down the type of correlation.

.....
(1)

Kristina is 11 years old.
Her best time to run 100 metres is 12 seconds.

The point representing this information would be an outlier on the scatter diagram.

(b) Explain why.

.....
.....
(1)

Debbie is 15 years old.

Debbie says,

“The scatter diagram shows I should take less than 12 seconds to run 100 metres.”

(c) Comment on what Debbie says.

.....
.....
(1)

(Total for Question 56 is 3 marks)

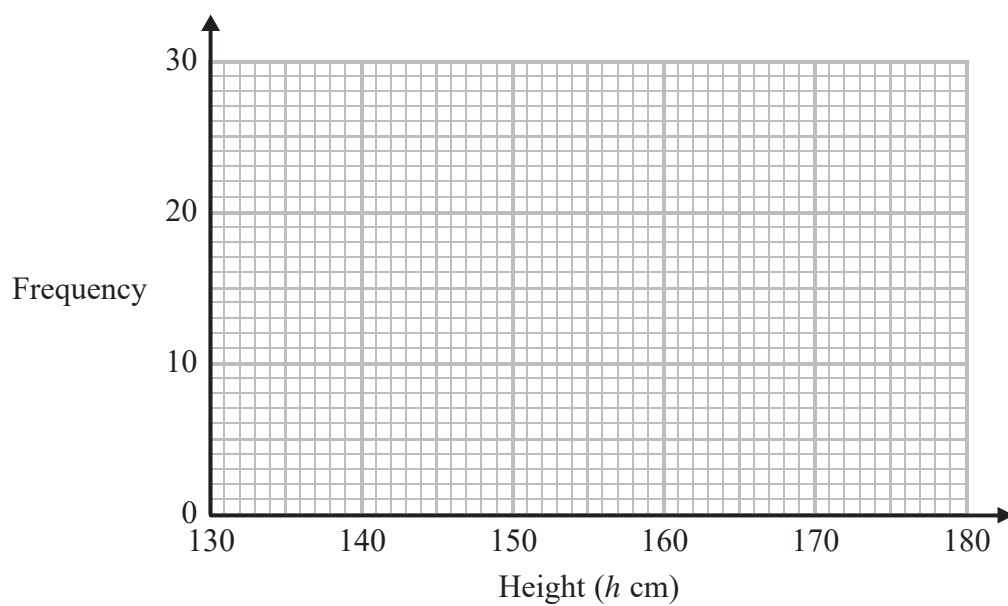
57 The table shows information about the heights of 80 children.

Height (h cm)	Frequency
$130 < h \leq 140$	4
$140 < h \leq 150$	11
$150 < h \leq 160$	24
$160 < h \leq 170$	22
$170 < h \leq 180$	19

(a) Find the class interval that contains the median.

.....
(1)

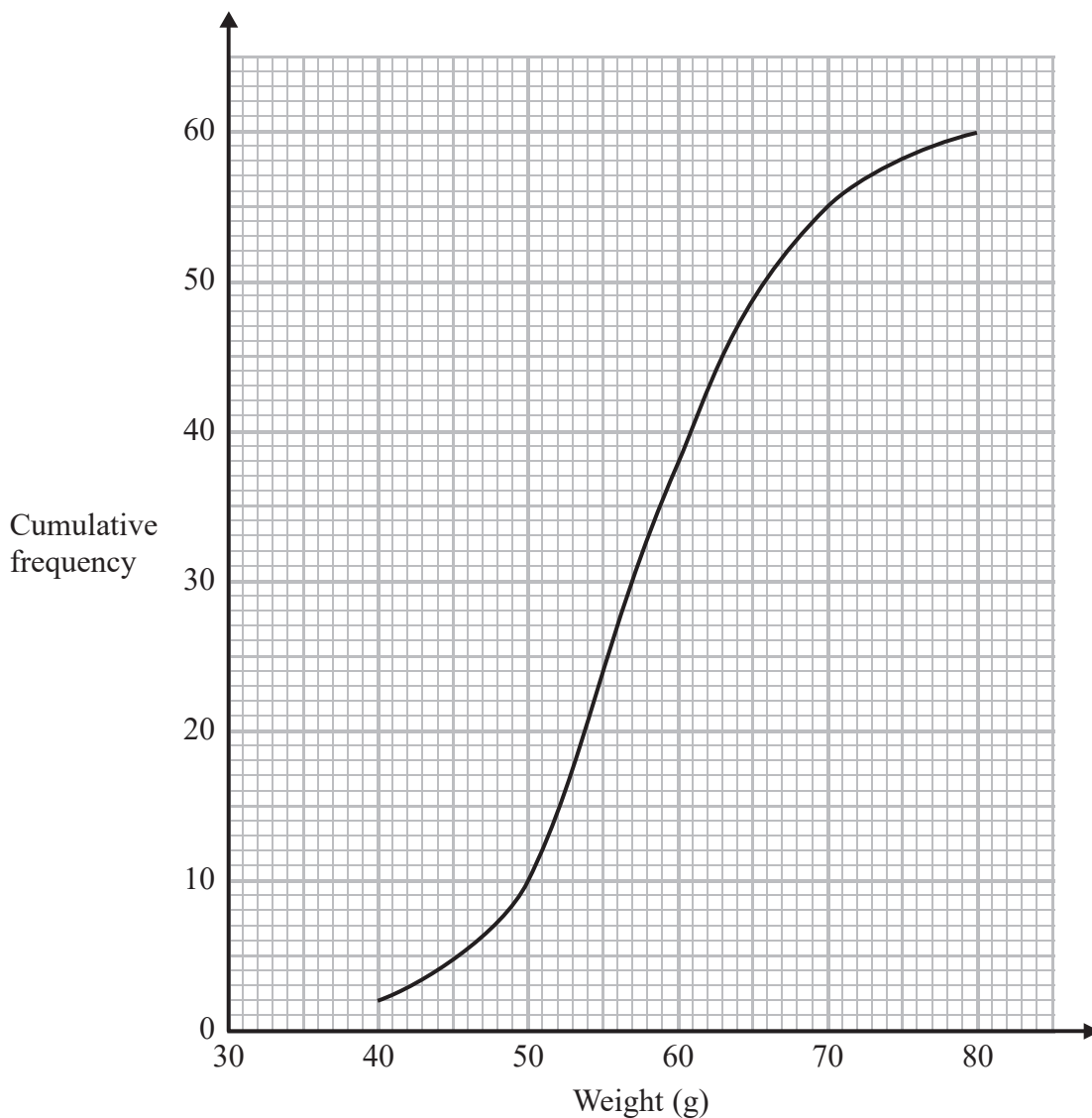
(b) Draw a frequency polygon for the information in the table.



(2)

(Total for Question 57 is 3 marks)

58 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 58 is 4 marks)

59 The table shows some information about the dress sizes of 25 women.

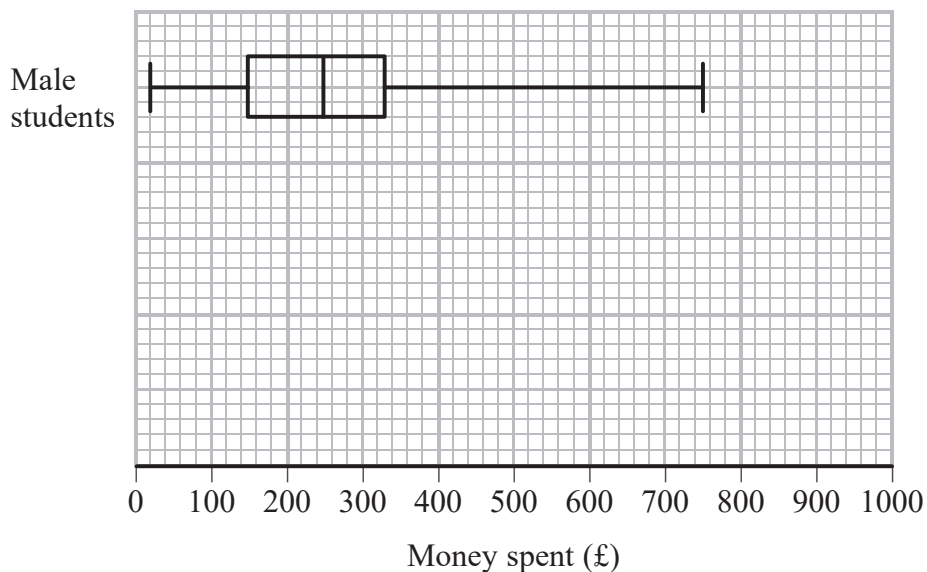
Dress size	Number of women
8	2
10	9
12	8
14	6

(a) Find the median dress size.

.....
(1)

(Total for Question 59 is 2 marks)

- 60 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.

.....

.....

.....

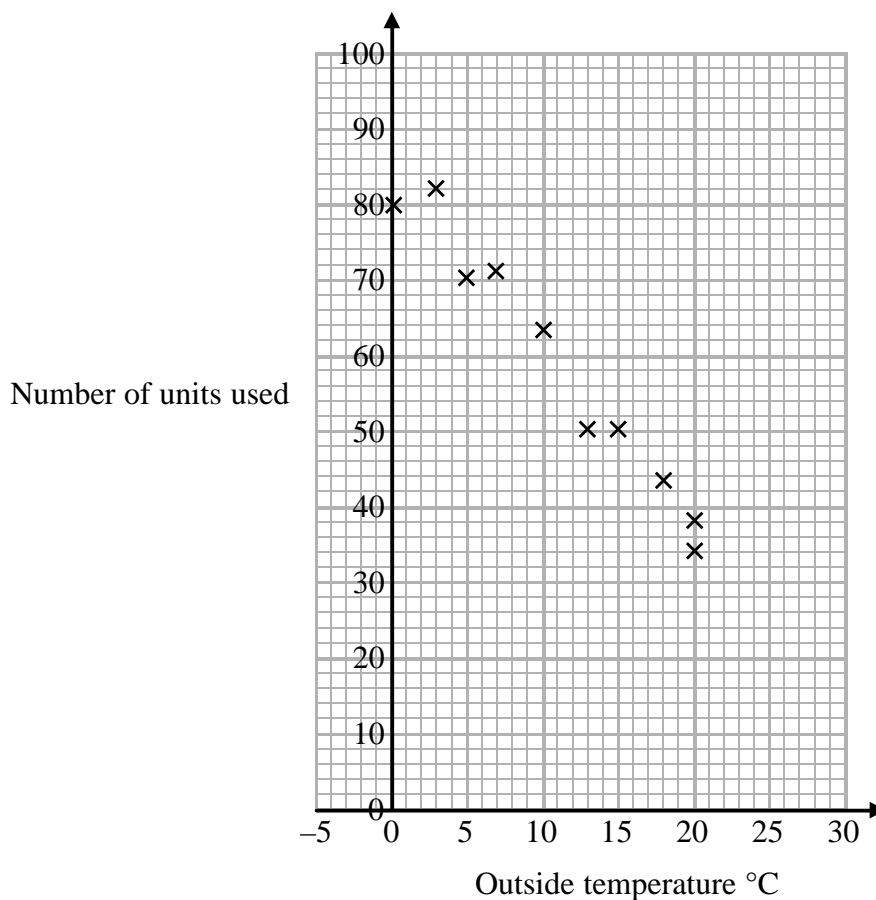
.....

(1)

(Total for Question 60 is 5 marks)

- 61 In a survey, the outside temperature and the number of units of electricity used for heating were recorded for ten homes.

The scatter diagram shows this information.



Molly says,

“On average the number of units of electricity used for heating decreases by 4 units for each °C increase in outside temperature.”

- (a) Is Molly right?

Show how you get your answer.

(3)

- (b) You should **not** use a line of best fit to predict the number of units of electricity used for heating when the outside temperature is 30 °C.

Give one reason why.

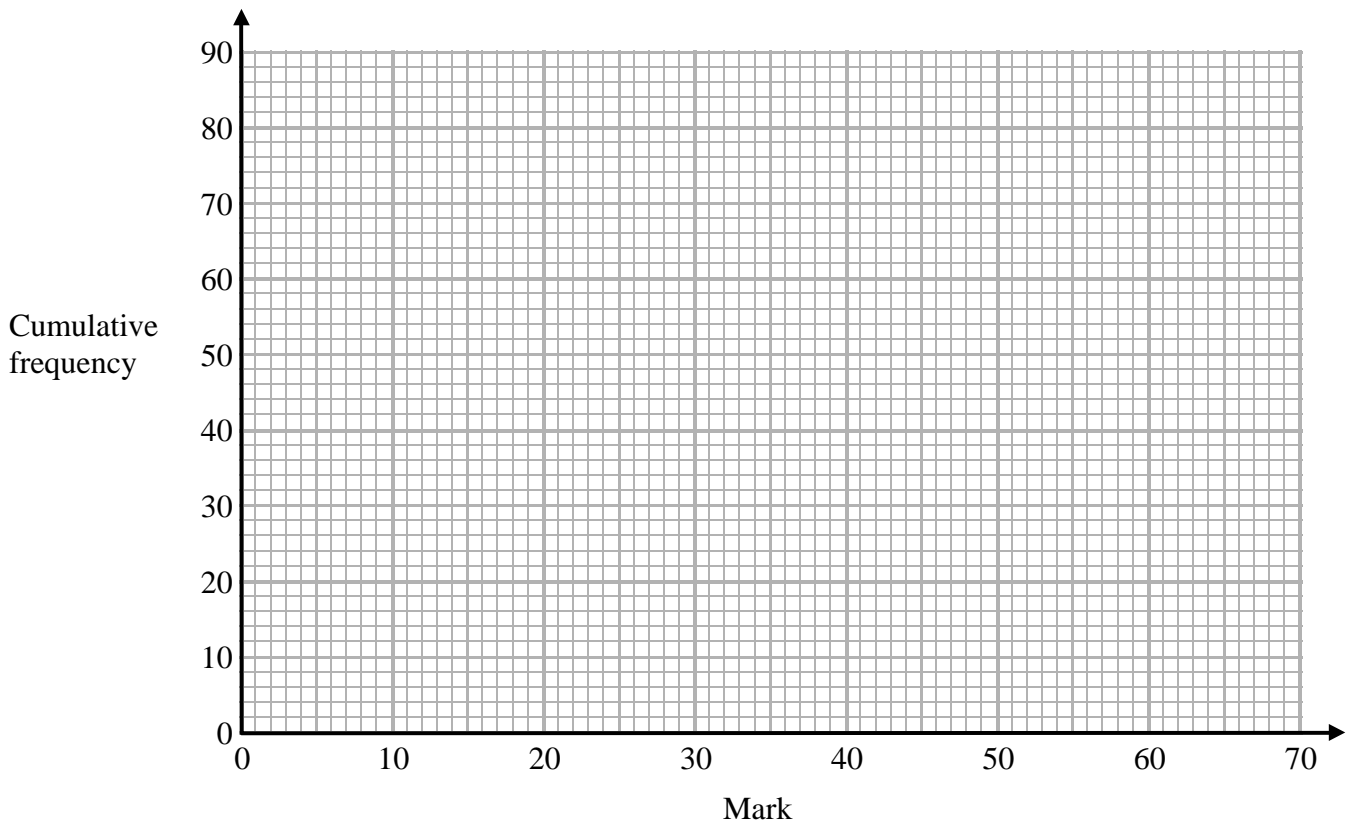
(1)

(Total for Question 61 is 4 marks)

62 The cumulative frequency table shows the marks some students got in a test.

Mark (m)	Cumulative frequency
$0 < m \leq 10$	8
$0 < m \leq 20$	23
$0 < m \leq 30$	48
$0 < m \leq 40$	65
$0 < m \leq 50$	74
$0 < m \leq 60$	80

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



(2)

(b) Find the median mark.

(1)

Students either pass the test or fail the test.

The pass mark is set so that 3 times as many students fail the test as pass the test.

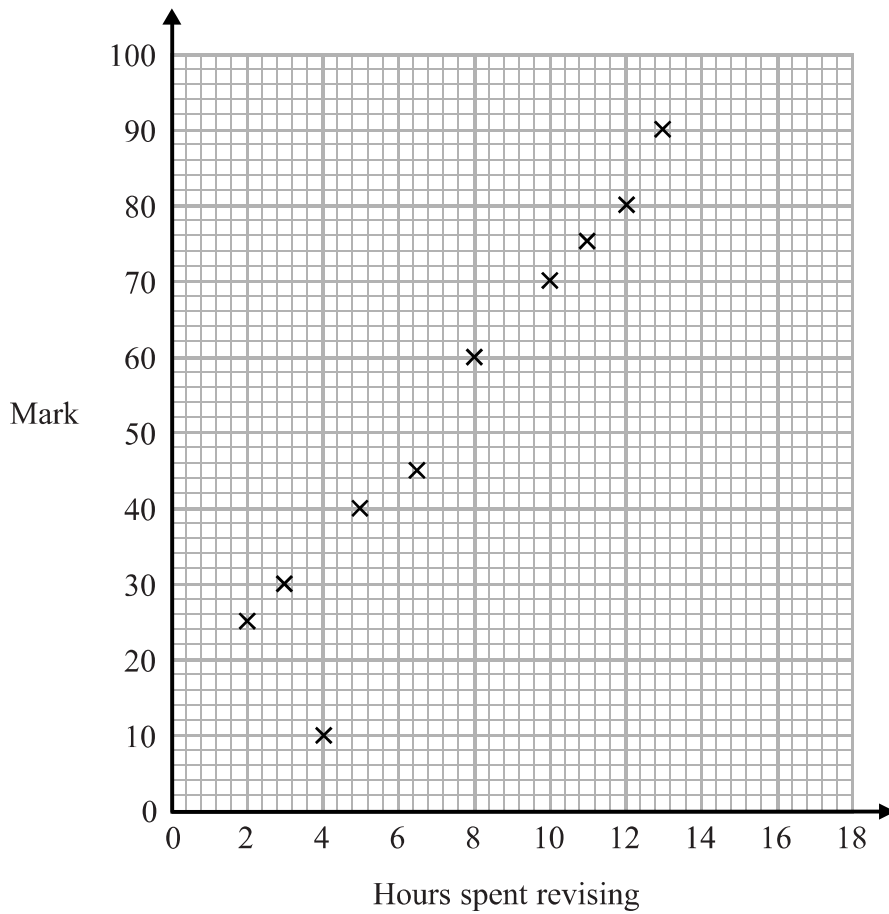
(c) Find an estimate for the lowest possible pass mark.

.....
(3)

(Total for Question 62 is 6 marks)

63 The scatter diagram shows information about 10 students.

For each student, it shows the number of hours spent revising and the mark the student achieved in the Spanish test.



One of the points is an outlier.

(a) Write down the coordinates of the outlier.

.....
(1)

For all the **other** points

- (b) (i) draw the line of best fit,
- (ii) describe the correlation.

.....
.....
(2)

A different student studies for 9 hours.

- (c) Estimate the mark gained by this student.

.....
(1)

The Spanish test was marked out of 100

Lucia says,

“I can see from the graph that had I revised for 18 hours I would have got full marks.”

- (d) Comment on what Lucia says.

.....
.....
(1)

(Total for Question 63 is 5 marks)

64 Jenny works in a shop that sells belts.

The table shows information about the waist sizes of 50 customers who bought belts from the shop in May.

Belt size	Waist (w inches)	Frequency
Small	$28 < w \leq 32$	24
Medium	$32 < w \leq 36$	12
Large	$36 < w \leq 40$	8
Extra Large	$40 < w \leq 44$	6

(a) Calculate an estimate for the mean waist size.

.....inches
(3)

Belts are made in sizes Small, Medium, Large and Extra Large.

Jenny needs to order more belts in June.

The modal size of belts sold is Small.

Jenny is going to order $\frac{3}{4}$ of the belts in size Small.

The manager of the shop tells Jenny she should **not** order so many Small belts.

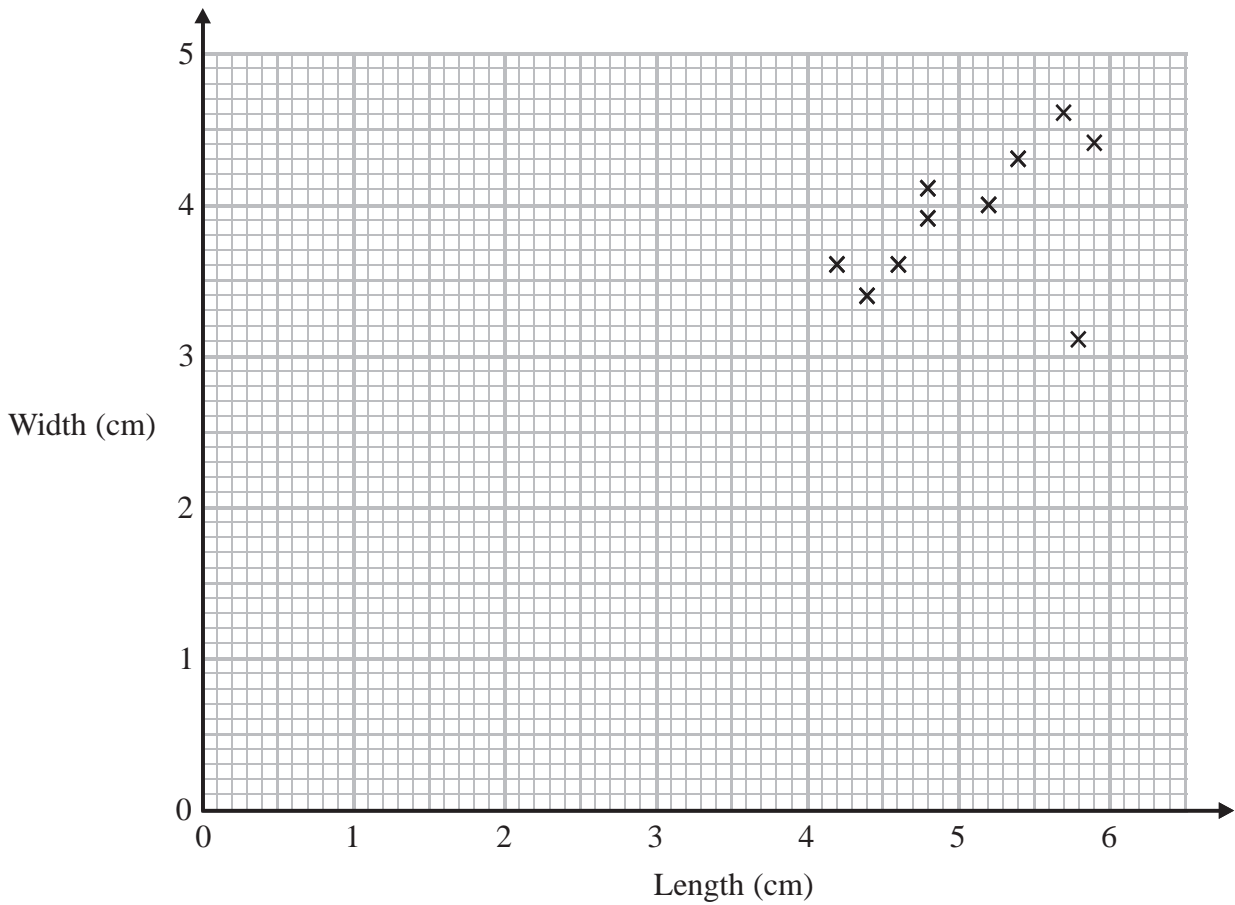
(b) Who is correct, Jenny or the manager?

You must give a reason for your answer.

.....
.....
(2)

(Total for Question 64 is 5 marks)

65 Katie measured the length and the width of each of 10 pine cones from the same tree. She used her results to draw this scatter graph.



(a) Describe one improvement Katie can make to her scatter graph.

.....

.....

(1)

The point representing the results for one of the pine cones is an outlier.

(b) Explain how the results for this pine cone differ from the results for the other pine cones.

.....

.....

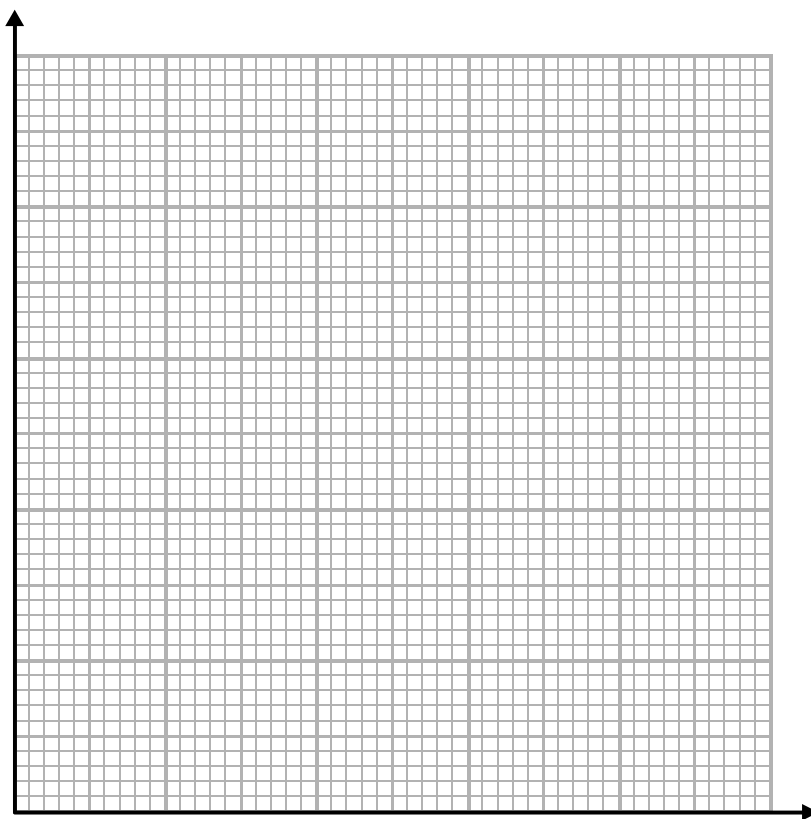
(1)

(Total for Question 65 is 2 marks)

66 The table gives information about the speeds, in km/h, of 81 cars.

Speed (s km/h)	Frequency
$90 < s \leq 100$	13
$100 < s \leq 105$	16
$105 < s \leq 110$	18
$110 < s \leq 120$	22
$120 < s \leq 140$	12

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



(3)

(b) Find an estimate for the median.

..... km/h

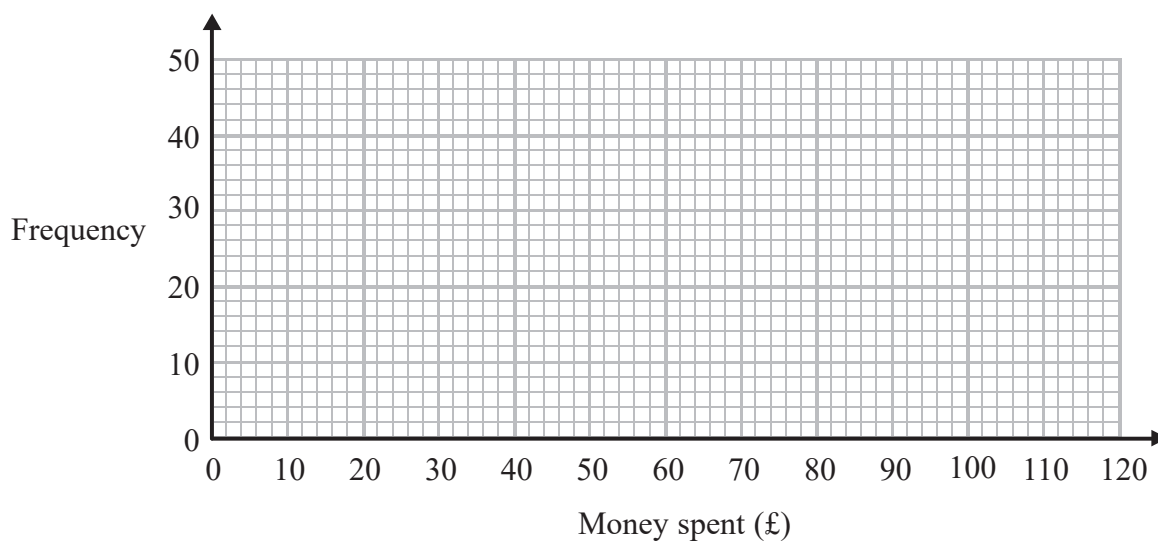
(2)

(Total for Question 66 is 5 marks)

67 The table gives information about the money, £ A , some people spent on an internet site one day.

Money spent (£ A)	Frequency
$0 < A \leq 20$	10
$20 < A \leq 40$	15
$40 < A \leq 60$	25
$60 < A \leq 80$	40
$80 < A \leq 100$	6

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



(2)

(b) Write down the modal class interval.

.....
(1)

(Total for Question 67 is 3 marks)

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

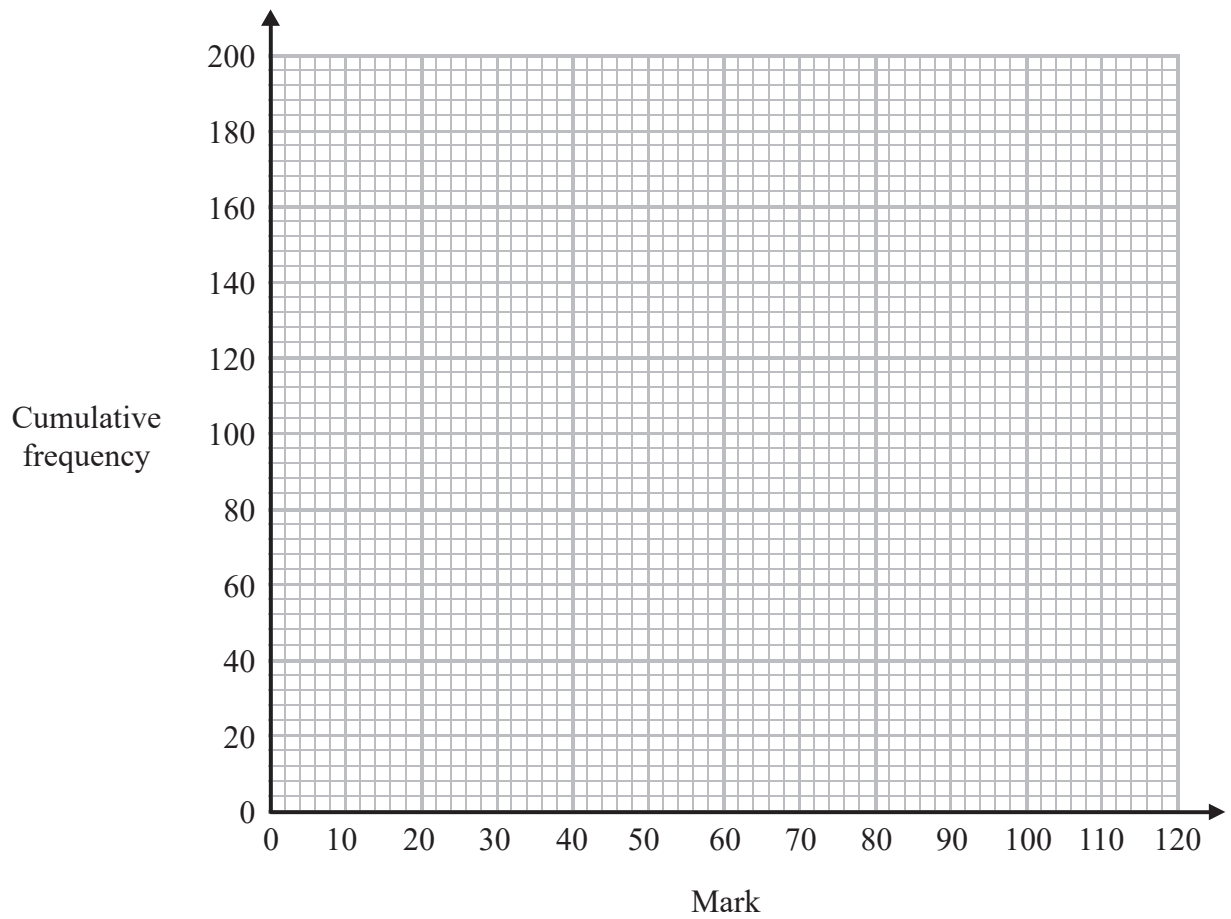
Mark (m)	Frequency
$0 < m \leq 20$	40
$20 < m \leq 40$	70
$40 < m \leq 60$	60
$60 < m \leq 80$	15
$80 < m \leq 100$	10
$100 < m \leq 120$	5

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

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

(1)

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



(2)

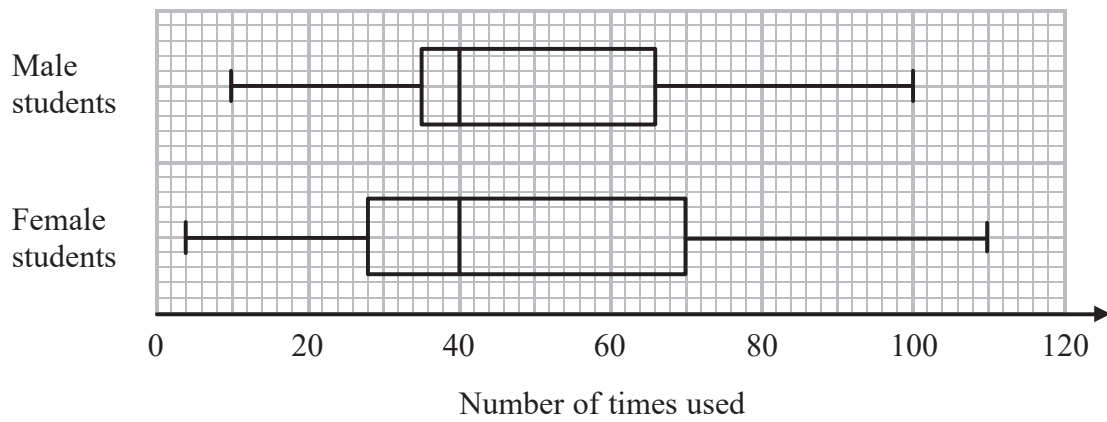
(c) Use your graph to find an estimate for the number of students who gained a mark of more than 54

.....
(2)

(Total for Question 68 is 5 marks)

*69 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.

.....

.....

.....

.....

(Total for Question 69 is 3 marks)

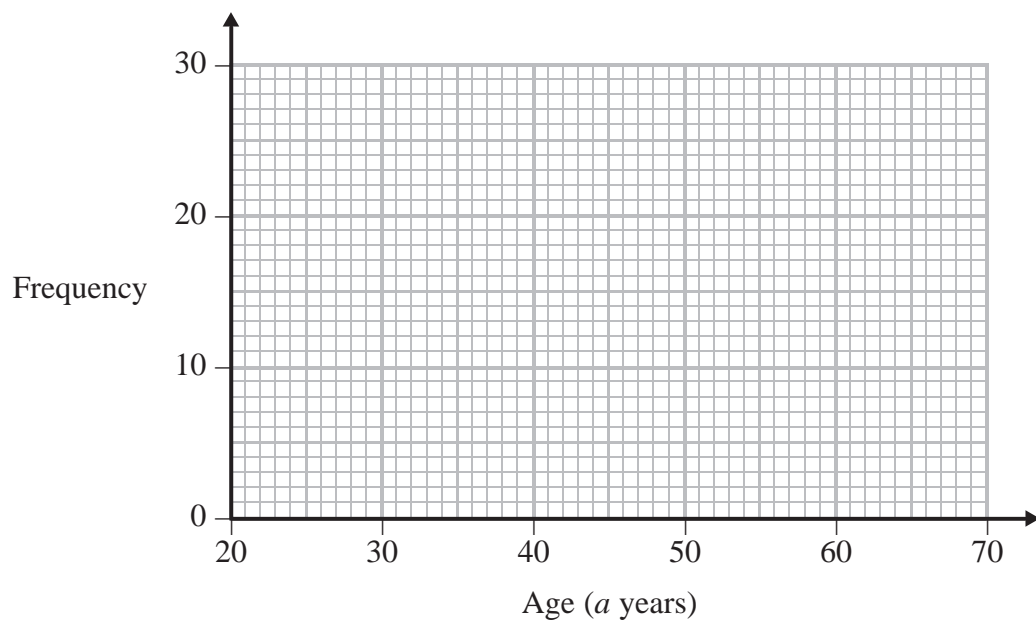
70 The table shows some information about the ages of 60 teachers.

Age (a years)	Frequency
$20 < a \leq 30$	6
$30 < a \leq 40$	16
$40 < a \leq 50$	14
$50 < a \leq 60$	22
$60 < a \leq 70$	2

(a) Write down the modal class interval.

.....
(1)

(b) Draw a frequency polygon for the information in the table.



(2)

(Total for Question 70 is 3 marks)

71 There are 15 children at a birthday party.
The mean age of the 15 children is 7 years.

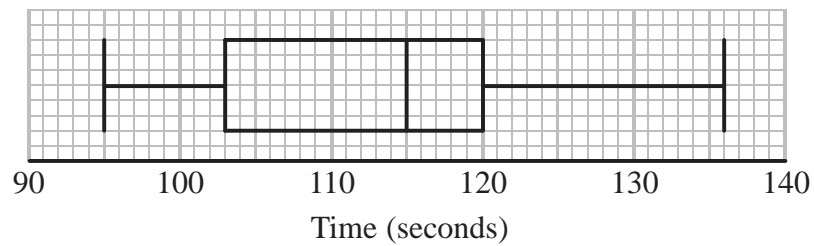
9 of the 15 children are boys.
The mean age of the boys is 5 years.

Work out the mean age of the girls.

..... years

(Total for Question 71 is 3 marks)

*72 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.

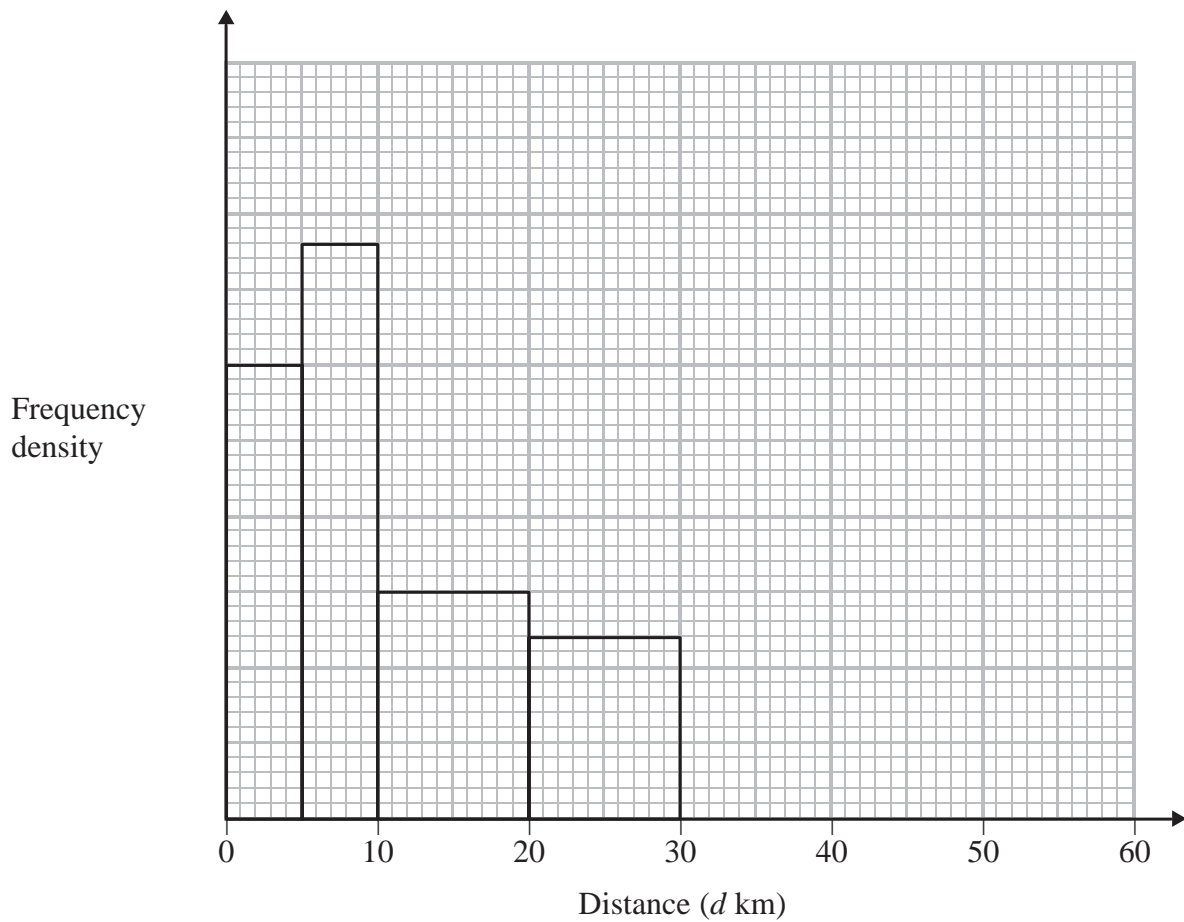
Here are the times, in seconds, for the girls.

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 72 is 4 marks)

73 The incomplete histogram and table give some information about the distances some people travel to work.



(i) Use the information in the histogram to complete the frequency table.

Distance (d km)	Frequency
$0 < d \leq 5$	30
$5 < d \leq 10$	
$10 < d \leq 20$	
$20 < d \leq 30$	24
$30 < d \leq 50$	16

(ii) Use the information in the table to complete the histogram.

(Total for Question 73 is 3 marks)

74 Carol spins a spinner 80 times.

The table shows information about her results.

Outcome	Frequency
J	39
K	25
L	16

Dan spins this spinner 300 times.

Work out an estimate for the number of times that Dan will get an L.

.....
(Total for Question 74 is 3 marks)

75 66 people went on a day trip.
Each person did only one activity on the trip.

Each person went skating or went to an art gallery or went bowling.

43 of the people are female.

4 of the 10 people who went skating are male.

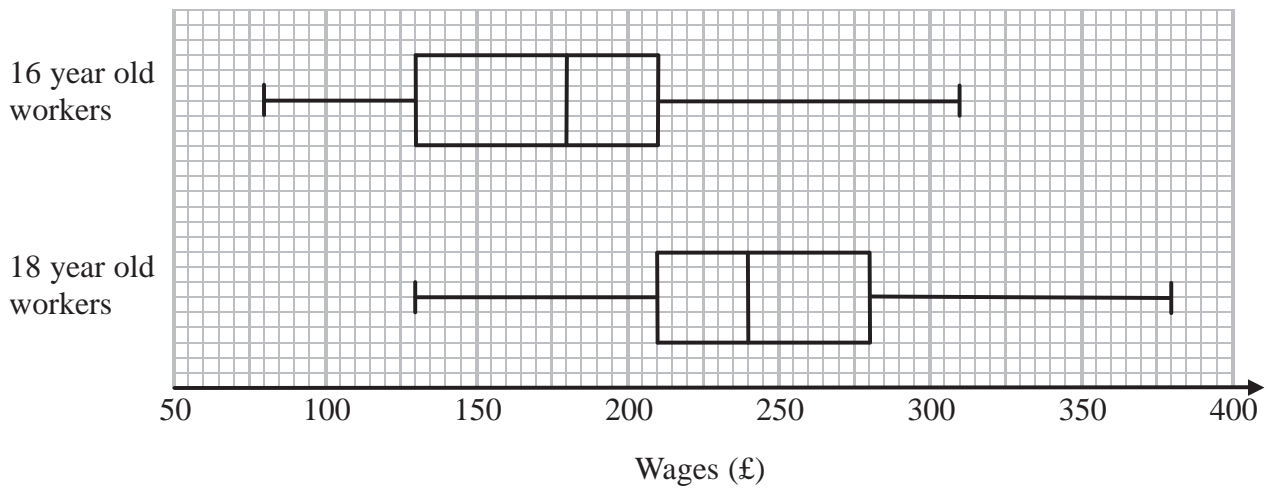
20 of the people went to the art gallery.

10 males went bowling.

Work out the number of females who went to the art gallery.

.....
(Total for Question 75 is 4 marks)

76 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 76 is 5 marks)

77 There are 18 packets of sweets and 12 boxes of sweets in a carton.

The mean number of sweets in all the 30 packets and boxes is 14

The mean number of sweets in the 18 packets is 10

Work out the mean number of sweets in the boxes.

.....
(Total for Question 77 is 3 marks)

78 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
$0 < w \leq 1$	19
$1 < w \leq 2$	17
$2 < w \leq 3$	15
$3 < w \leq 4$	12
$4 < w \leq 5$	10
$5 < w \leq 6$	7

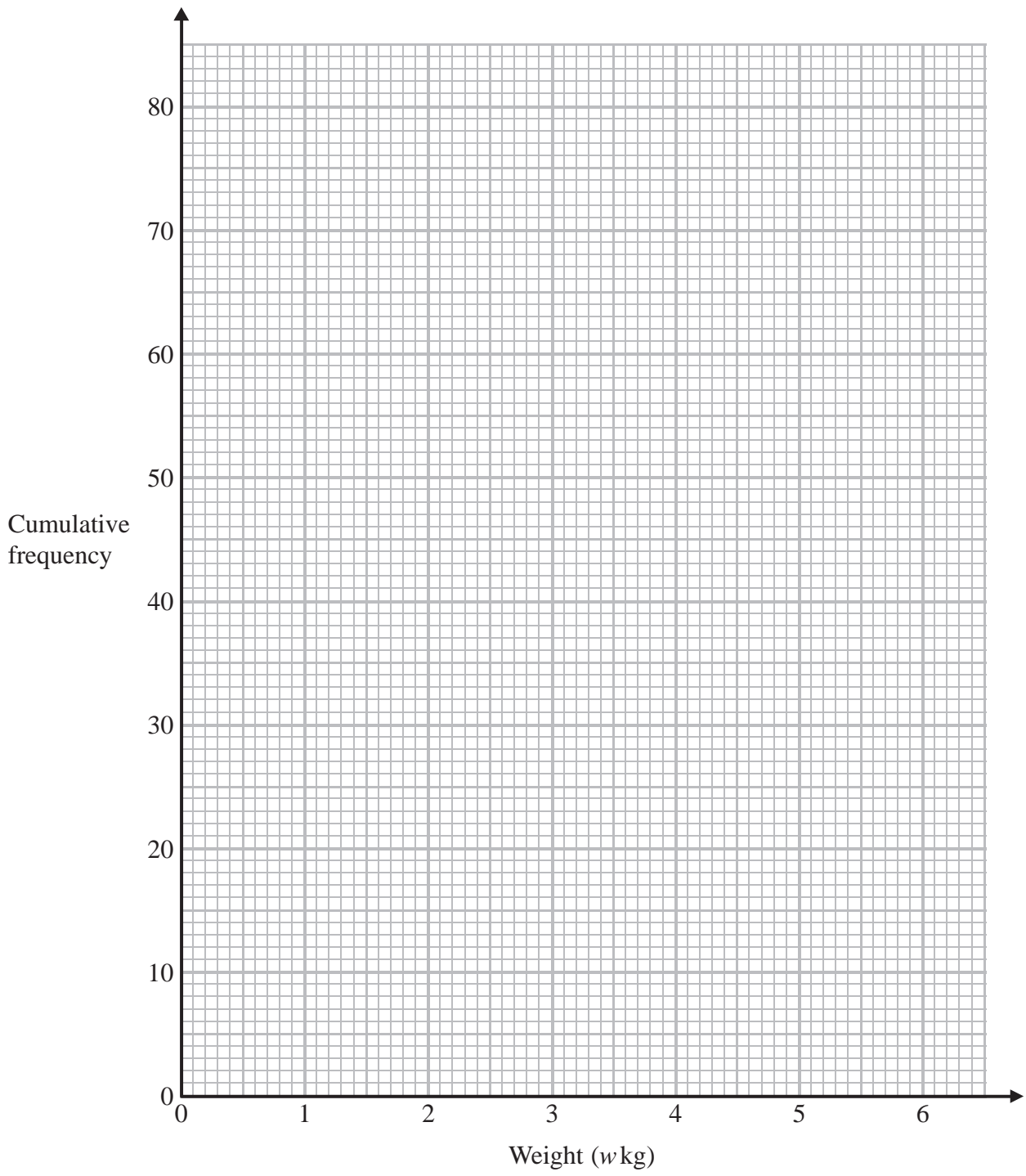
(a) Complete the cumulative frequency table.

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

(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 78 is 6 marks)

79 Here are the heights in centimetres of 20 men.

165 164 176 179 188 178 183 172 180 190

167 159 156 176 173 168 169 182 167 192

(a) Show this information in an ordered stem and leaf diagram.

(3)

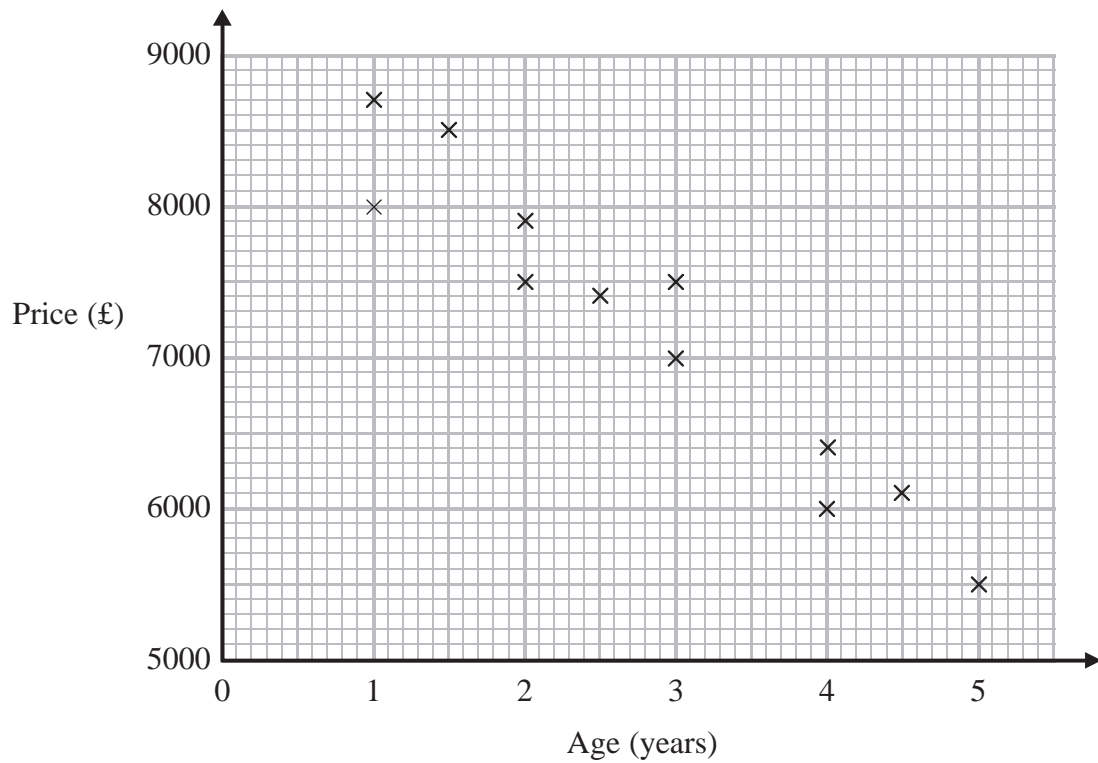
(b) Work out the percentage of these men with a height greater than 184 cm.

..... %

(2)

(Total for Question 79 is 5 marks)

- 80 The scatter graph shows information about the age and the price of each of 12 cars of the same model.



- (a) Describe the relationship between the age of a car and its price.

(1)

A different car of the same model is $3\frac{1}{2}$ years old.

- (b) Estimate the price of this car.

£.....

(2)

(Total for Question 80 is 3 marks)

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

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

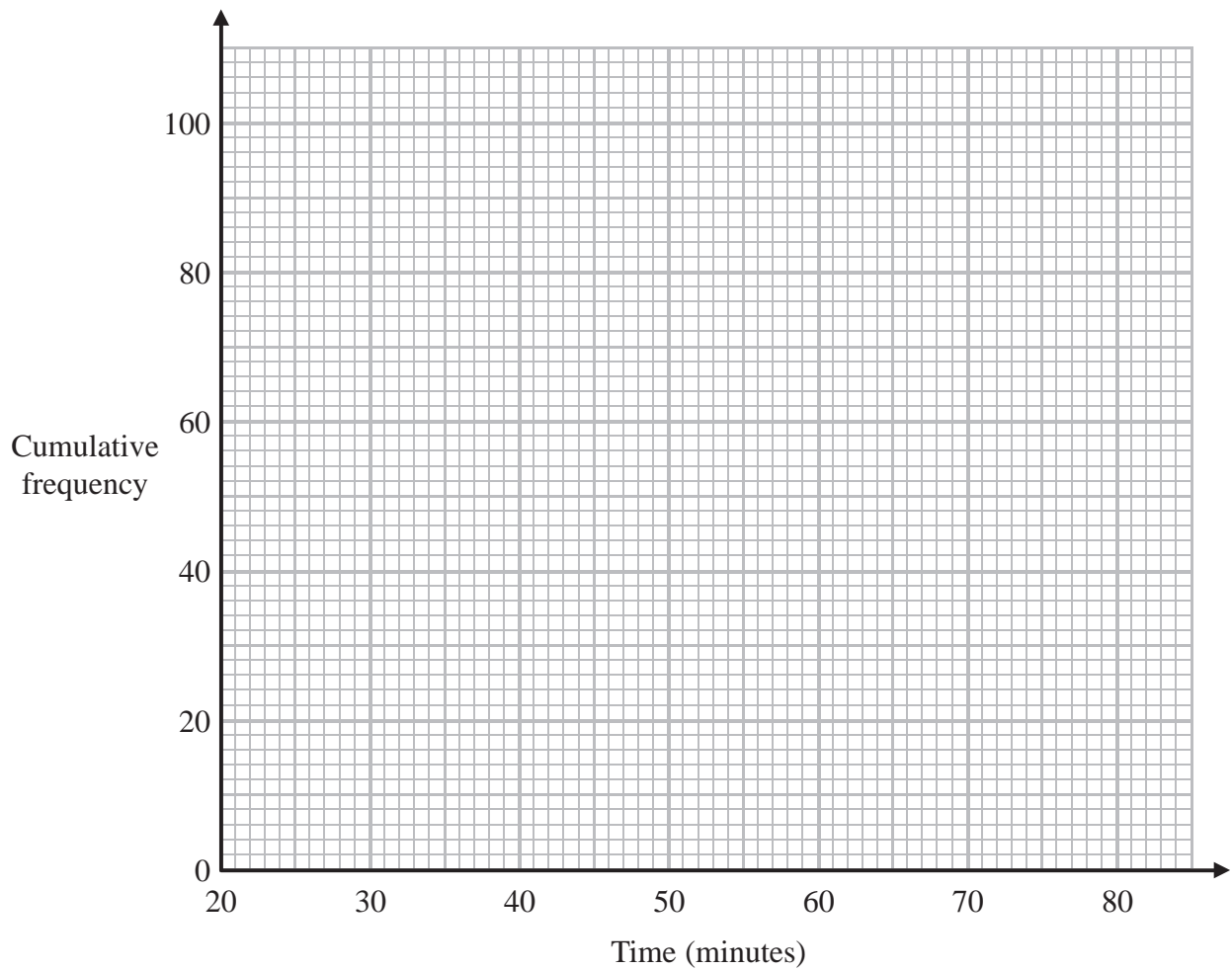
(a) Complete the cumulative frequency table for this information.

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

(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.

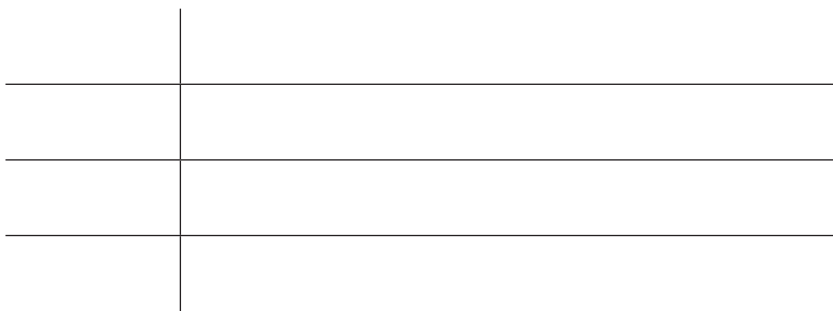
.....
(2)

(Total for Question 81 is 6 marks)

82 Here are the heights, in cm, of 18 children.

98	90	84	102	115	91
88	91	108	110	97	93
90	89	103	95	92	106

Show this information in an ordered stem and leaf diagram.



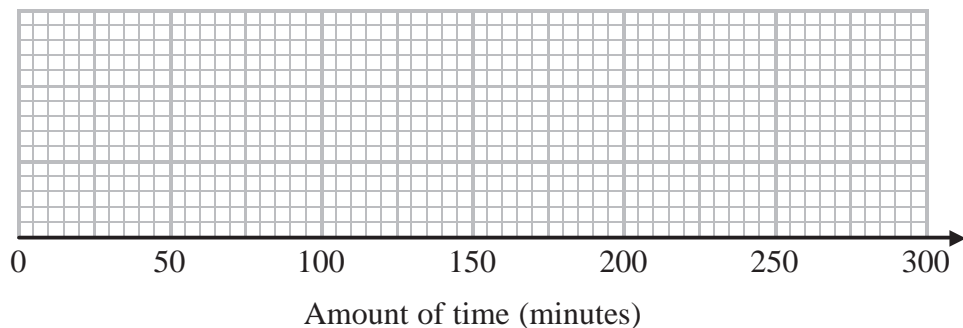
(Total for Question 82 is 3 marks)

83 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.

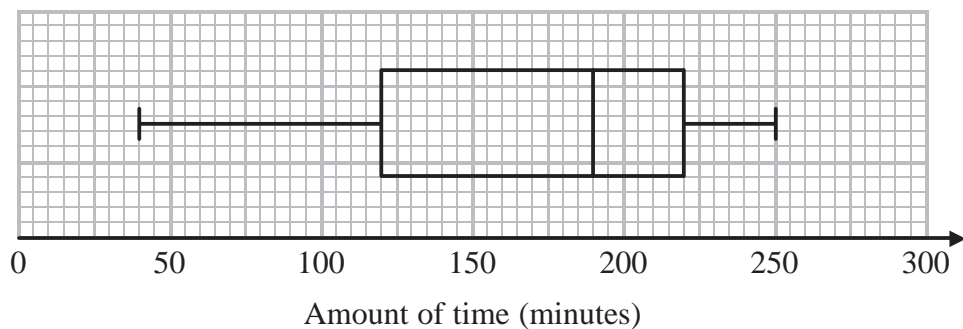
	Minutes
Least amount of time	60
Range	230
Median	170
Lower quartile	100
Upper quartile	220

(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 83 is 4 marks)

84 There are 200 workers at a factory.

The cumulative frequency table gives information about their ages.

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

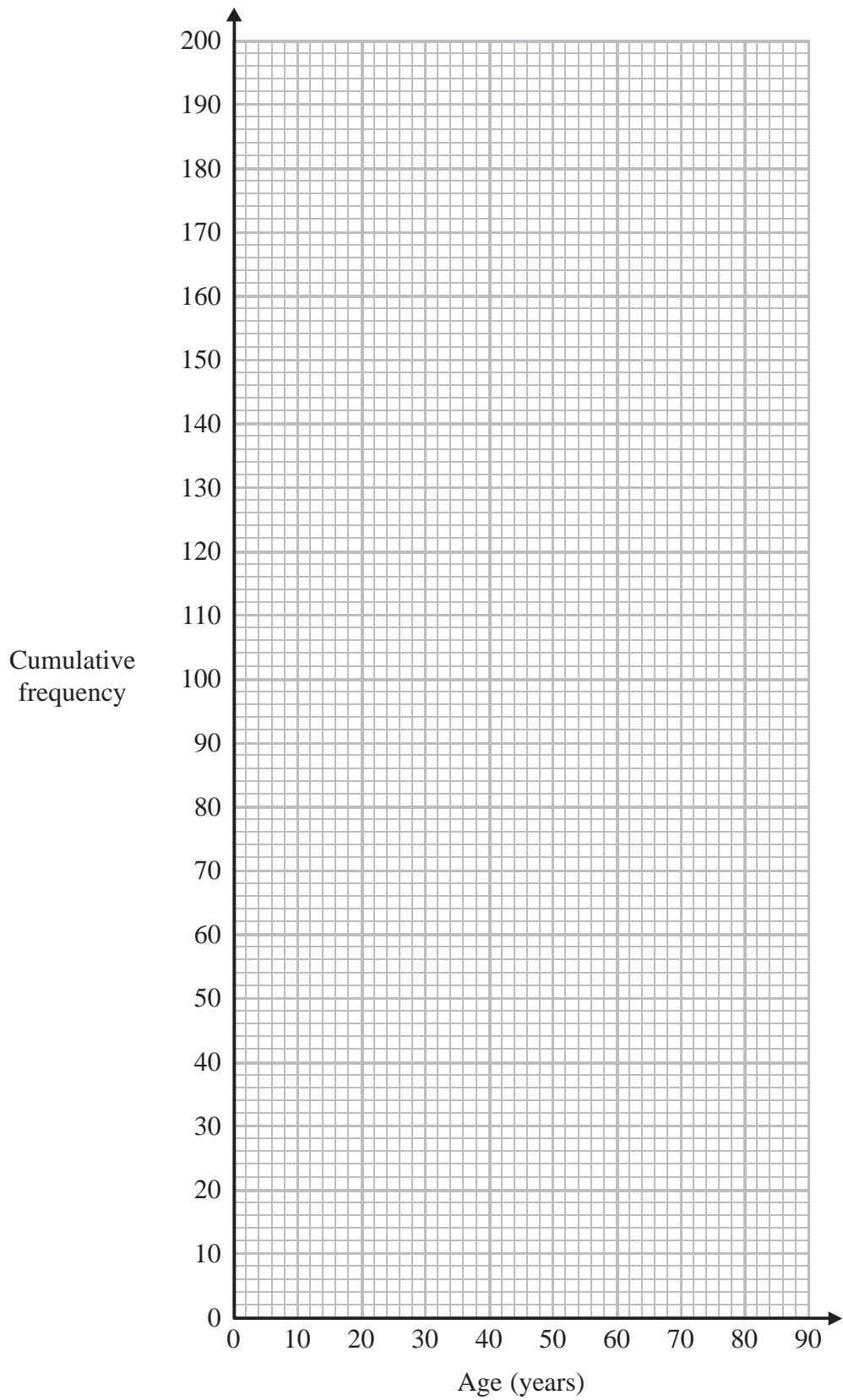
.....

.....

.....

.....

(2)

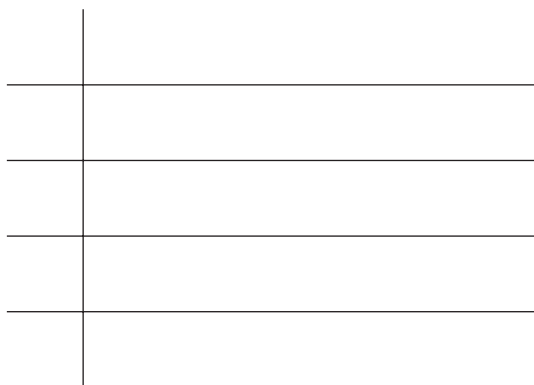


(Total for Question 84 is 4 marks)

85 Here are the times, in minutes, that 20 children took to walk to school.

13 21 19 27 31 5 23 29 18 25
34 15 28 23 22 40 16 19 32 9

Draw an ordered stem and leaf diagram for these times.



Key:

(Total for Question 85 is 3 marks)

86 50 people each did one activity at a sports centre.

Some of the people went swimming.

Some of the people played squash.

The rest of the people used the gym.

21 of the people were female.

6 of the 8 people who played squash were male.

18 of the people used the gym.

9 males went swimming.

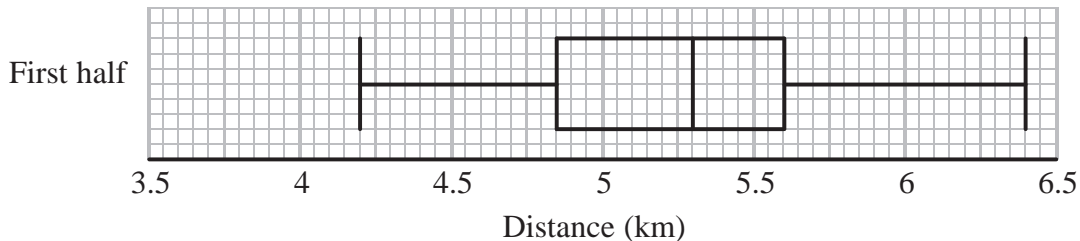
Work out the number of females who used the gym.

.....
(Total for Question 86 is 4 marks)

87 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)

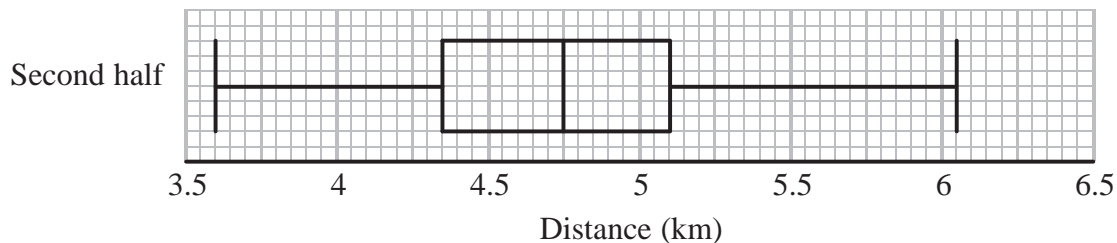
There were 80 players in Colin's sample.

(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.

.....

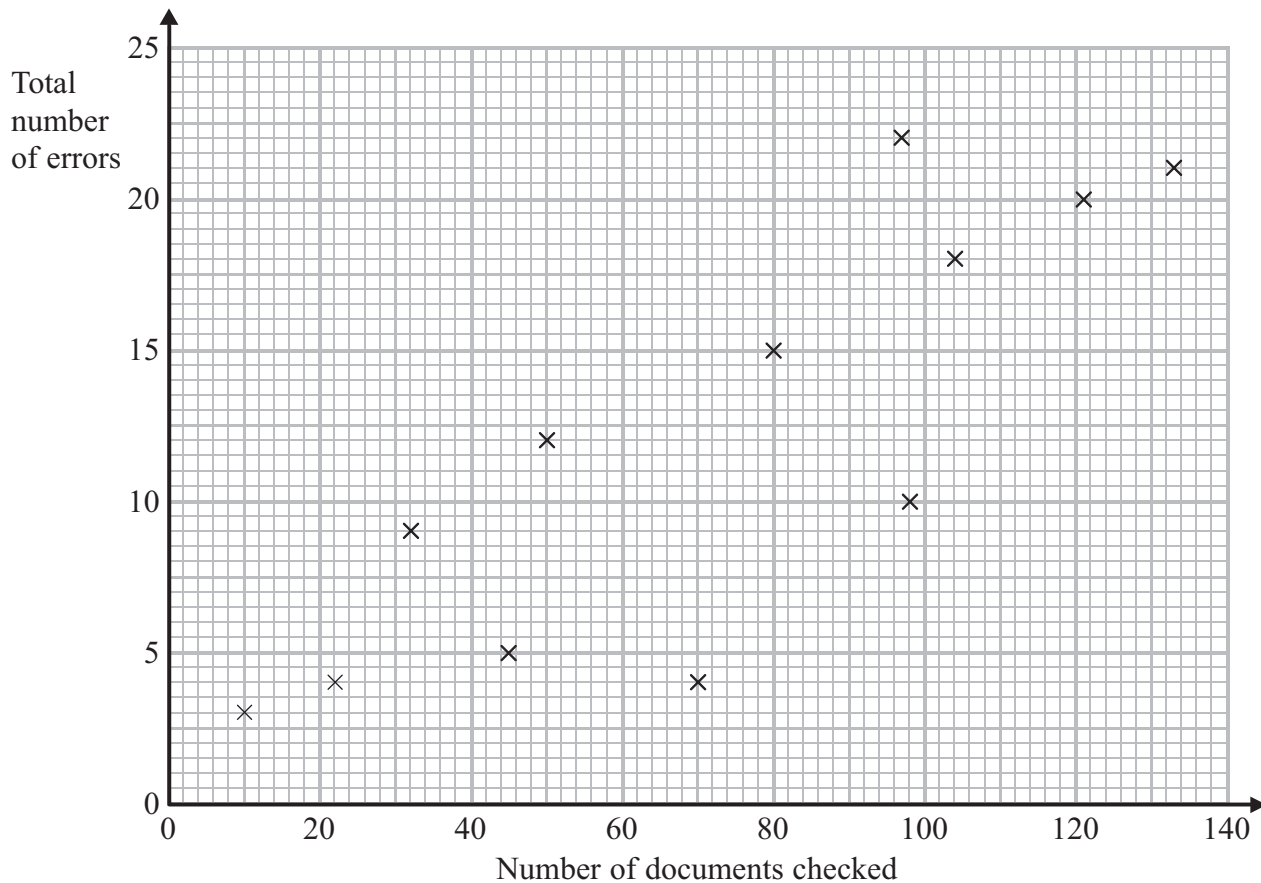
 (2)

(Total for Question 87 is 6 marks)

88 A publisher checks documents for errors.

He records the number of documents that are checked each day.
He also records the total number of errors in the documents each day.

The scatter graph shows this information.



On another day 90 documents are checked.
There is a total of 17 errors.

(a) Show this information on the scatter graph.

(1)

(b) Describe the correlation between the number of documents checked and the total number of errors.

.....
(1)

One day 110 documents are checked.

(c) Estimate the total number of errors in these documents.

.....
(2)

(Total for Question 88 is 4 marks)

89 Hertford Juniors is a basketball team.

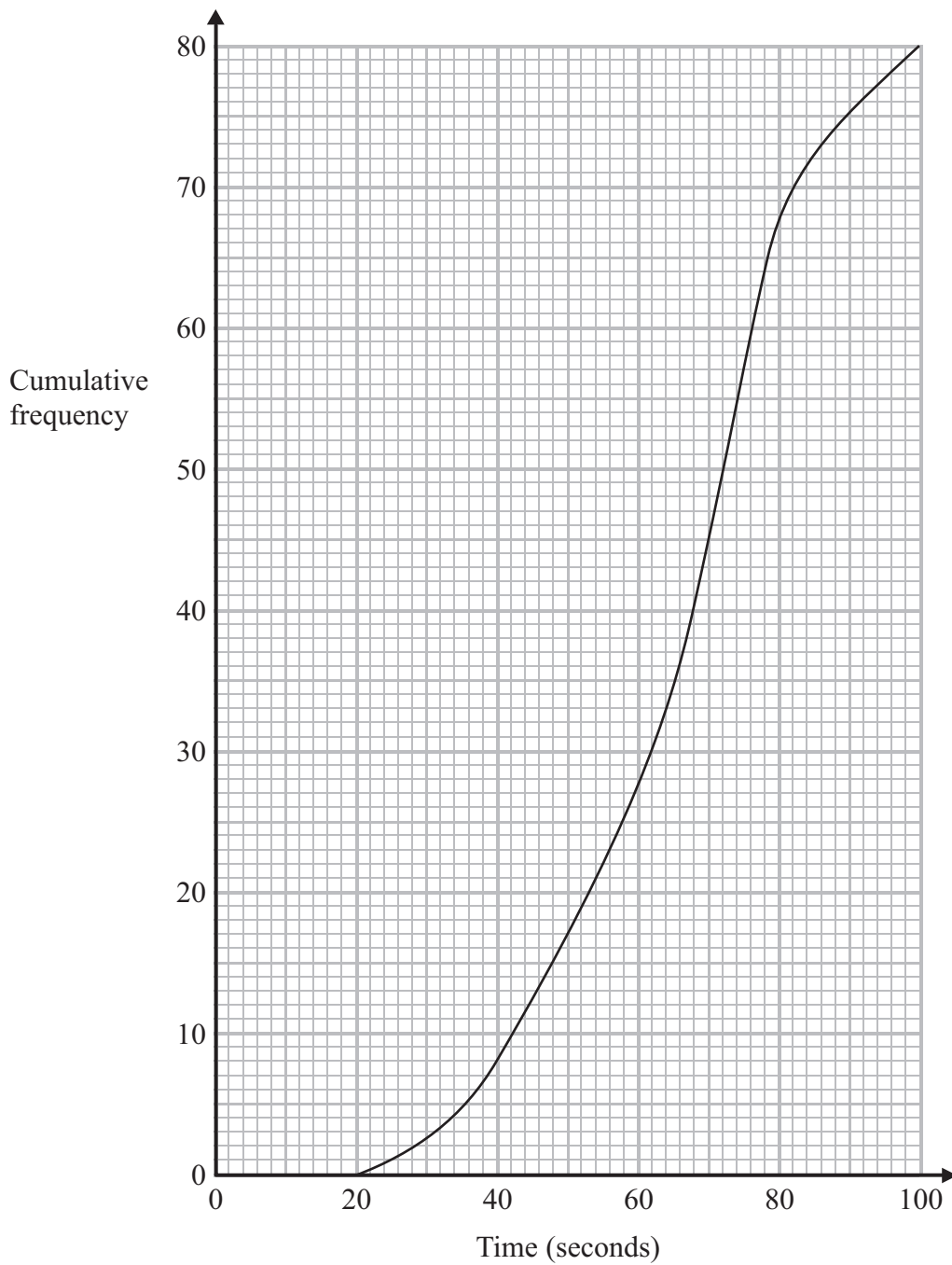
At the end of 10 games, their mean score is 35 points per game.

At the end of 11 games, their mean score has gone down to 33 points per game.

How many points did the team score in the 11th game?

.....
(Total for Question 89 is 3 marks)

90 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?

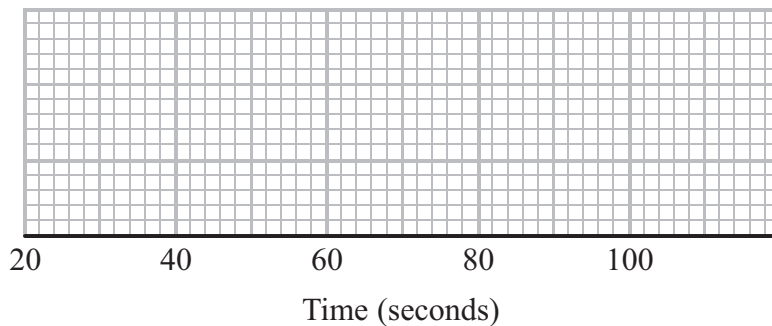
You must show how you got your answer.

(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)

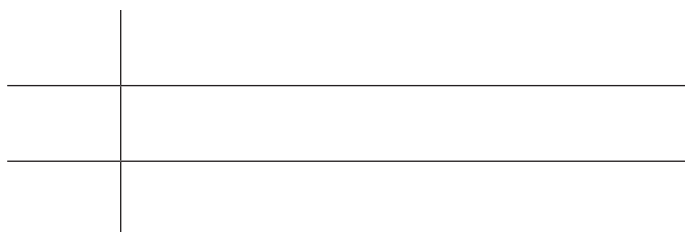
(Total for Question 90 is 7 marks)

91 Sixteen babies are born in a hospital.

Here are the weights of the babies in kilograms.

2.4 2.7 3.5 4.4 4.5 4.1 4.4 2.8
4.1 3.8 3.8 4.2 3.3 3.0 3.7 3.3

Show this information in an ordered stem and leaf diagram.



Key:

(Total for Question 91 is 3 marks)

92 Ed has 4 cards.
There is a number on each card.

12

6

15

?

The mean of the 4 numbers on Ed's cards is 10

Work out the number on the 4th card.

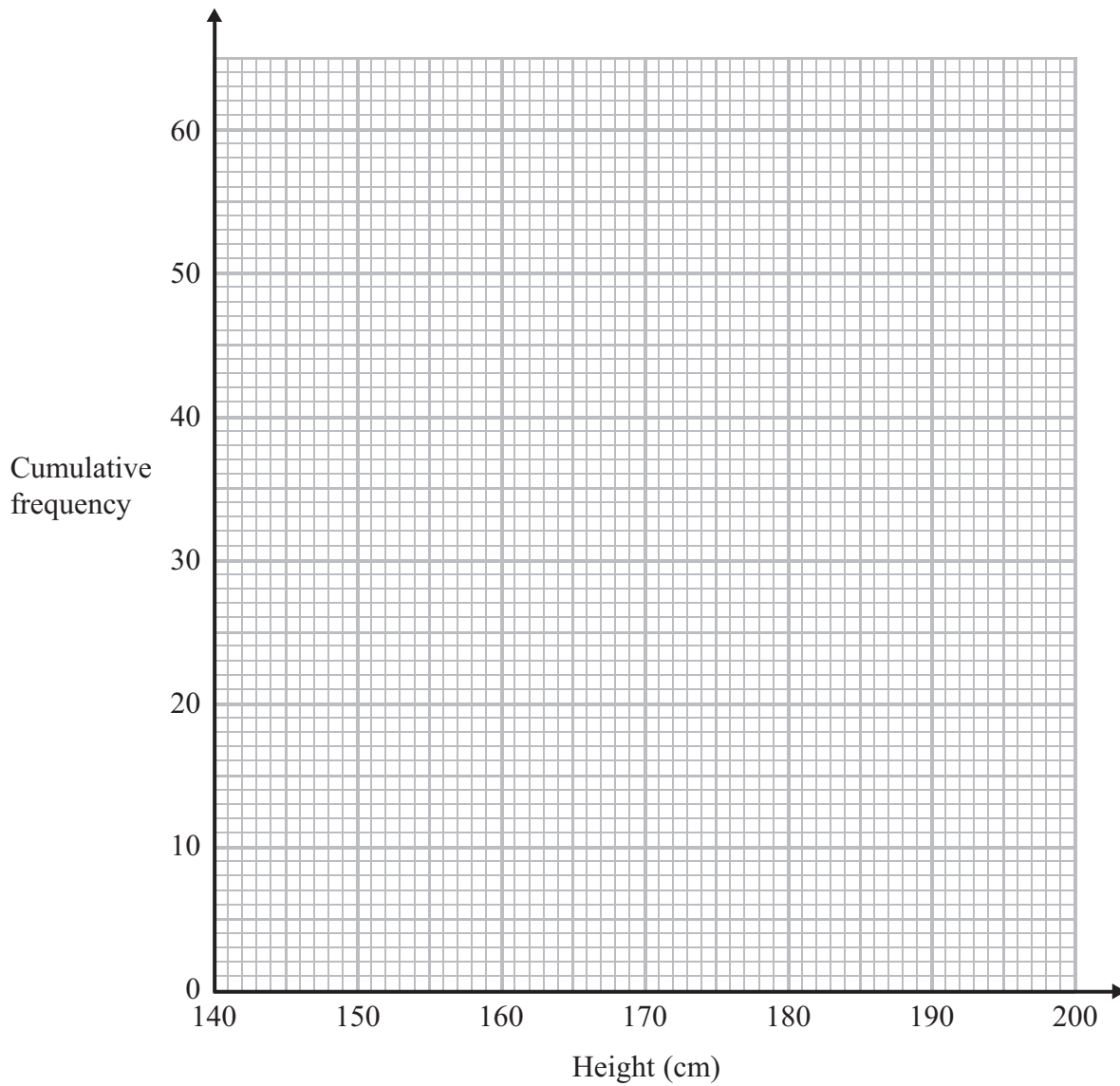
(Total for Question 92 is 3 marks)

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

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

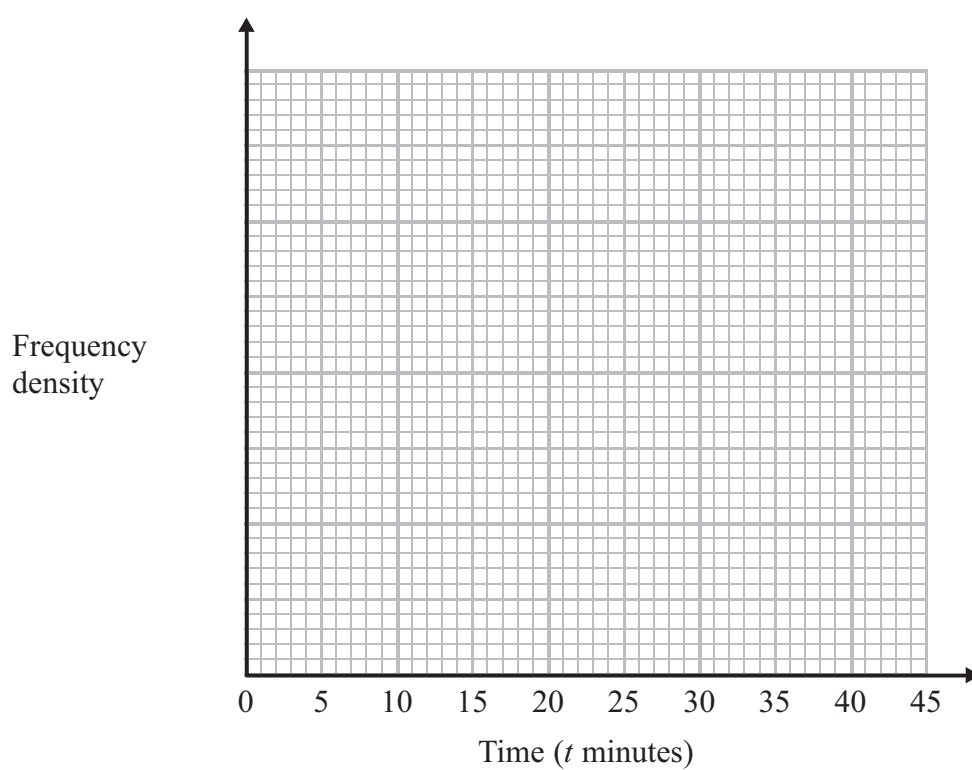
(Total for Question 93 is 6 marks)

94 Bill works for a computer service centre.

The table shows some information about the length of time, t minutes, of the phone calls Bill had.

Time (t minutes)	$0 < t \leq 10$	$10 < t \leq 15$	$15 < t \leq 20$	$20 < t \leq 30$	$30 < t \leq 45$
Number of calls	12	15	13	18	3

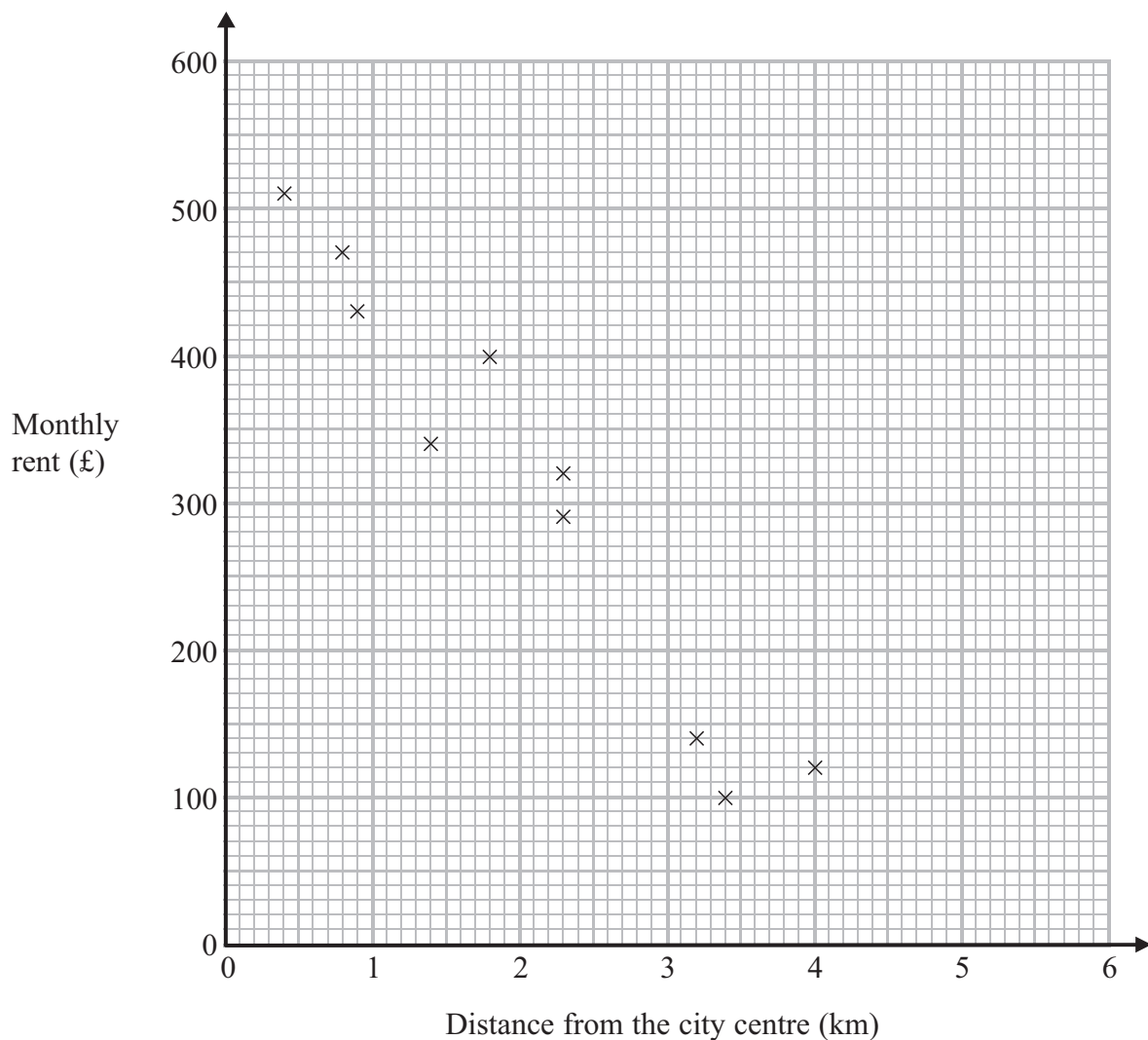
On the grid, draw a histogram to show this information.



(Total for Question 94 is 3 marks)

95 The scatter graph shows information about 10 apartments in a city.

The graph shows the distance from the city centre and the monthly rent of each apartment.



The table shows the distance from the city centre and the monthly rent for two other apartments.

Distance from the city centre (km)	2	3.1
Monthly rent (£)	250	190

- (a) On the scatter graph, plot the information from the table. (1)
- (b) Describe the relationship between the distance from the city centre and the monthly rent.

(1)

An apartment is 2.8 km from the city centre.

(c) Find an estimate for the monthly rent for this apartment.

£

(2)

(Total for Question 95 is 4 marks)

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

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

(a) Complete the cumulative frequency table.

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

(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.

£

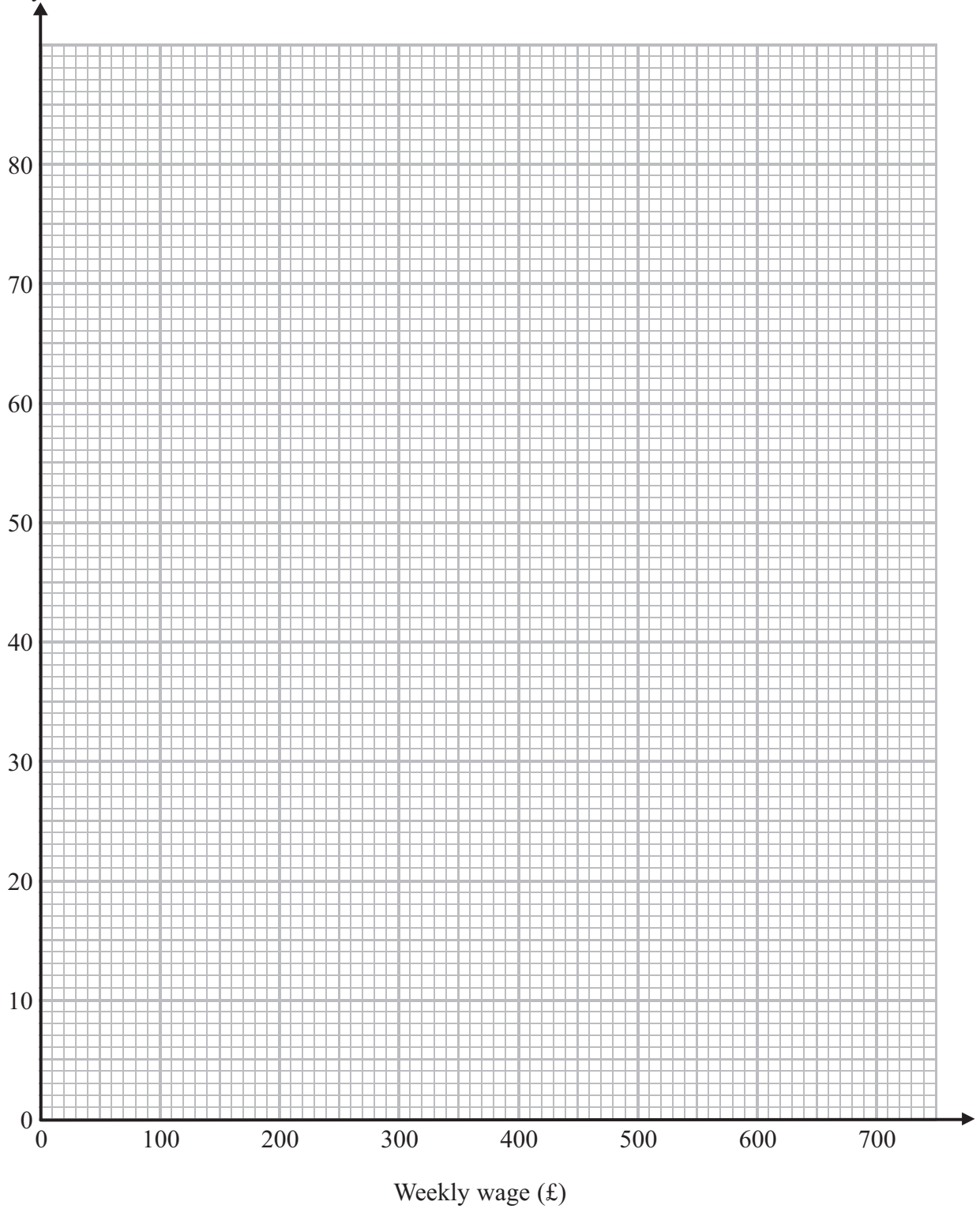
(2)

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

.....

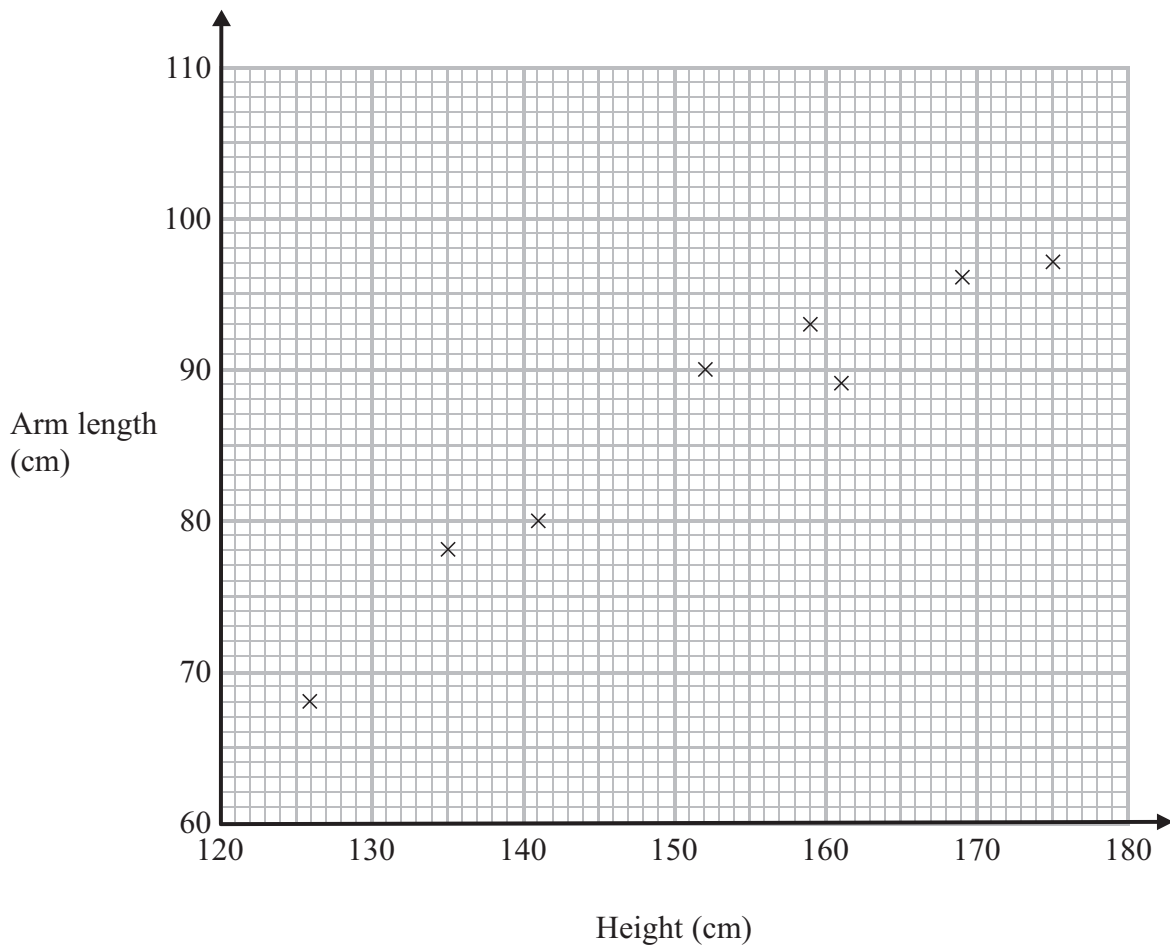
(2)

Cumulative frequency



(Total for Question 96 is 7 marks)

- 97 The scatter graph shows information about the height and the arm length of each of 8 students in Year 11



- (a) What type of correlation does this scatter graph show?

.....
(1)

A different student in Year 11 has a height of 148 cm.

- (b) Estimate the arm length of this student.

.....cm
(2)

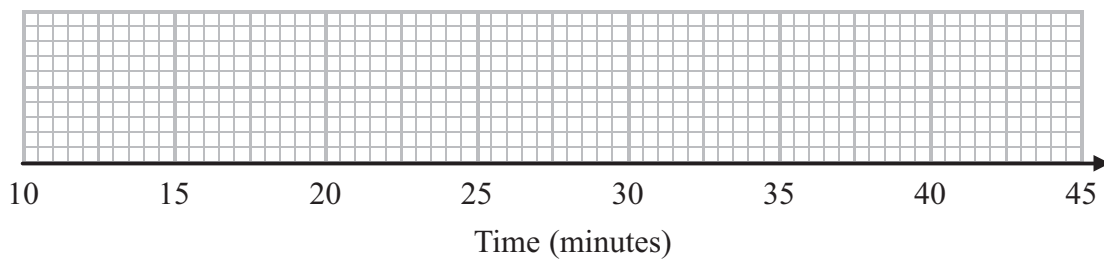
(Total for Question 97 is 3 marks)

98 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.

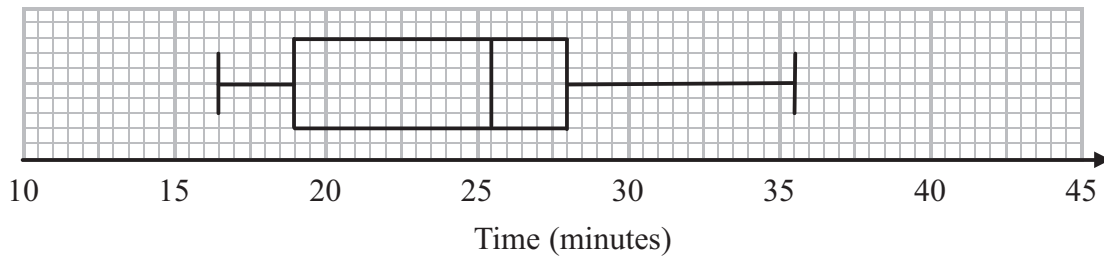
	Minutes
Shortest time	18
Lower quartile	25
Median	29
Upper quartile	33
Longest time	44

(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 98 is 4 marks)

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

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

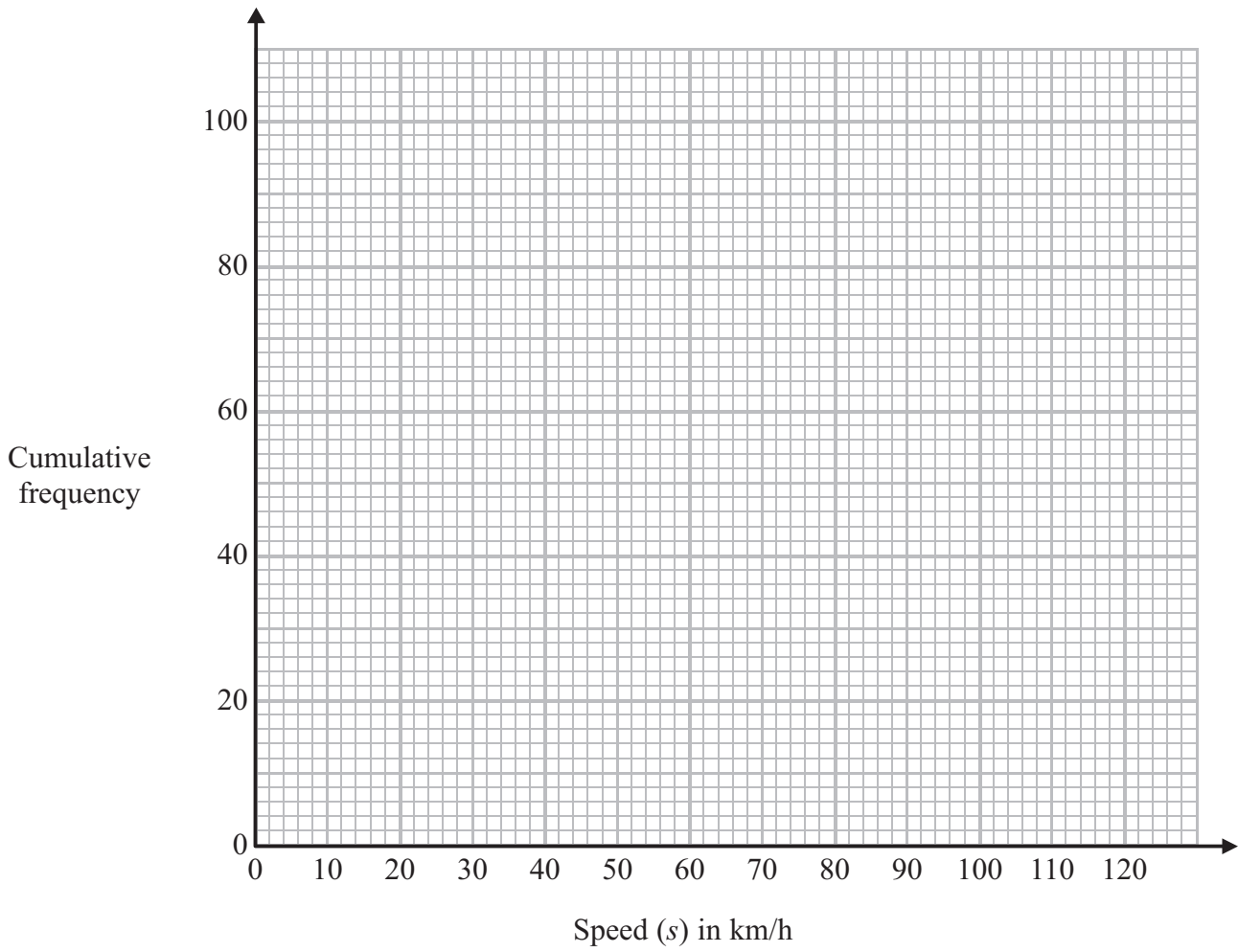
(a) Complete the cumulative frequency table for this information.

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

(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 99 is 5 marks)

100 Here are the speeds, in miles per hour, of 16 cars.

31	52	43	49	36	35	33	29
54	43	44	46	42	39	55	48

Draw an ordered stem and leaf diagram for these speeds.

(Total for Question 100 is 3 marks)

101 Harry grows tomatoes.

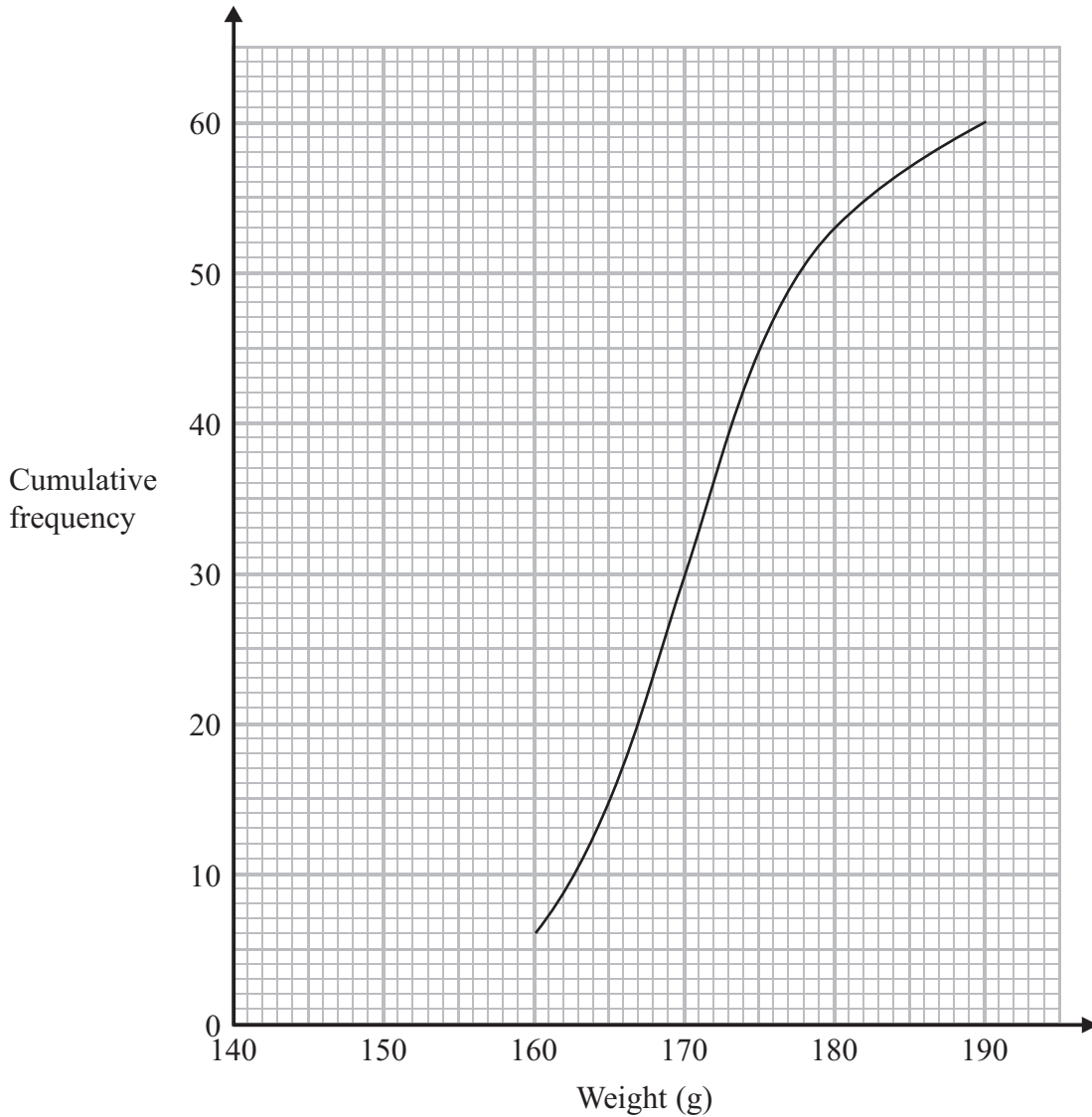
This year he put his tomato plants into two groups, group A and group B.

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.

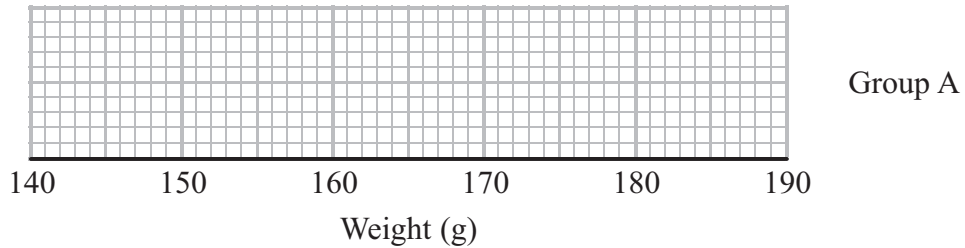


(a) Use the graph to find an estimate for the median weight.

..... g
(1)

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

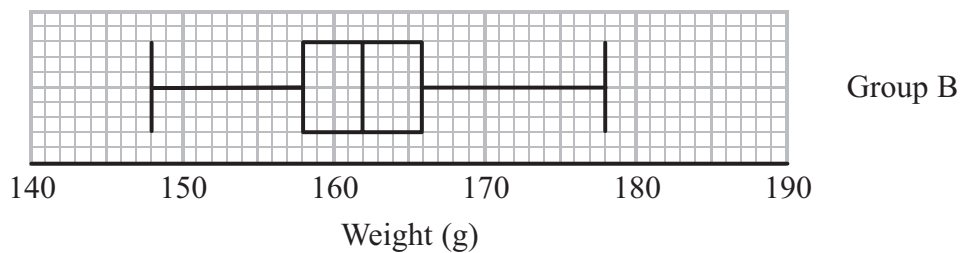
(b) Use this information and the cumulative frequency graph to draw a box plot
 for the 60 tomatoes from group A.



(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.



(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.

.....

.....

.....

.....

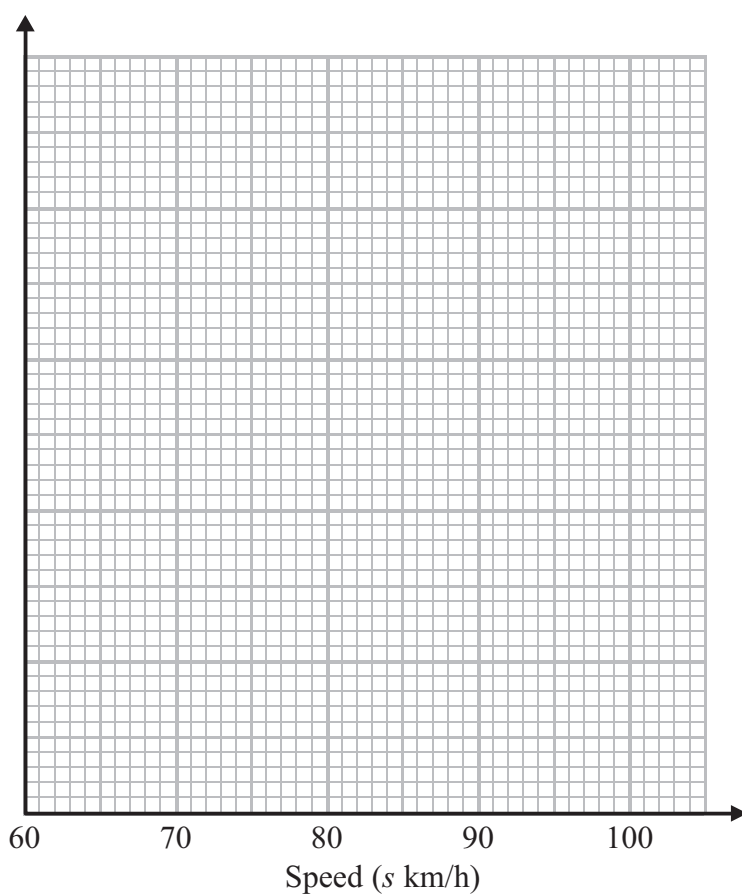
(2)

(Total for Question 101 is 6 marks)

102 The table gives some information about the speeds, in km/h, of 100 cars.

Speed (s km/h)	Frequency
$60 < s \leq 65$	15
$65 < s \leq 70$	25
$70 < s \leq 80$	36
$80 < s \leq 100$	24

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



(3)

(b) Work out an estimate for the number of cars with a speed of more than 85 km/h.

.....
(2)

(Total for Question 102 is 5 marks)

103 Mr Walton is responsible for maintaining fish stocks in a river. The table gives some information about the lengths, in centimetres, of a type of fish caught from the river.

Length (L) cm	Frequency
$0 < L \leq 10$	40
$10 < L \leq 20$	60
$20 < L \leq 40$	90
$40 < L \leq 80$	60
$L > 80$	0

He wants to study the effect of returning to the river fish less than 50 cm in length that are caught.

Mr Walton suggests that fish which are less than 50 cm in length are returned to the river.

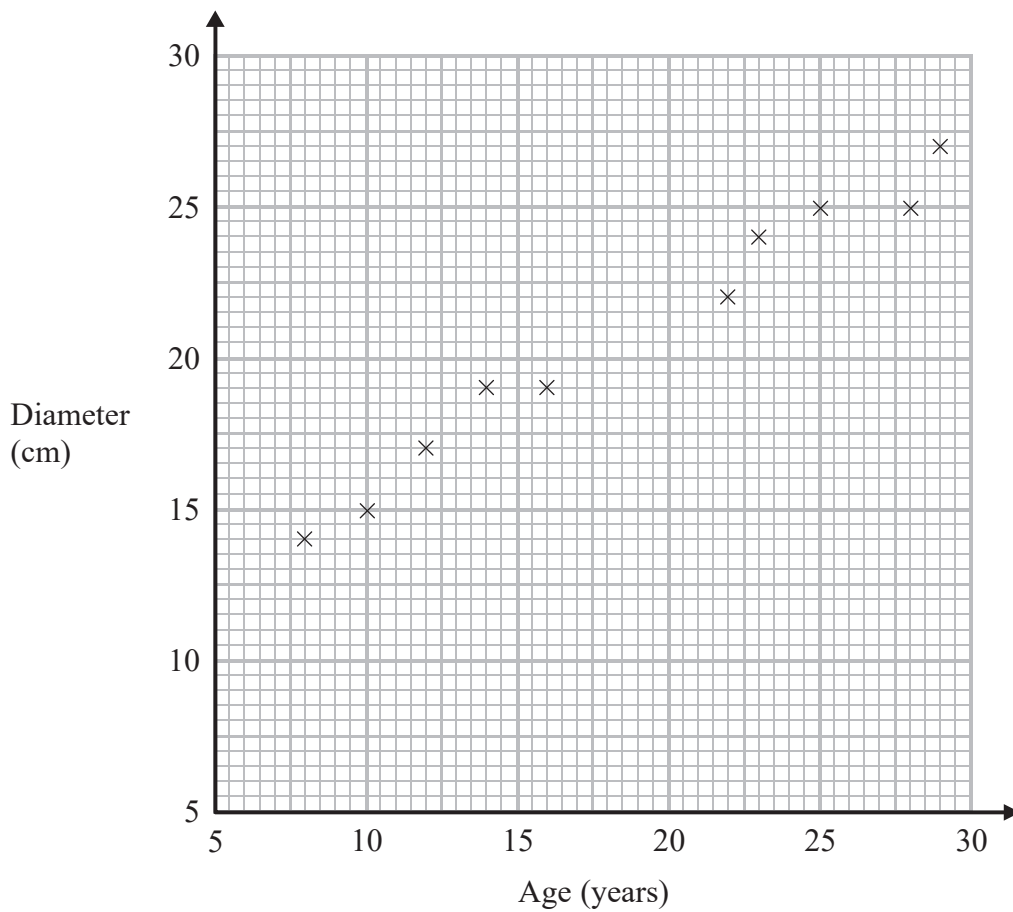
Draw a suitable statistical diagram for the information in the table.

Use it to find an estimate of the percentage of fish returned to the river.

..... %

(Total for Question 103 is 6 marks)

- 104 The scatter graph shows information about ten trees of the same type. It shows the age and the diameter of the trunk of each tree.



- (a) What type of correlation does this scatter graph show?

..... (1)

Another tree of the same type has a trunk with diameter 21 cm.

- (b) Estimate the age of this tree.

..... years (2)

(Total for Question 104 is 3 marks)

105 The table gives information about the heights of 35 girls.

Height (h metres)	Frequency
$1.30 \leq h < 1.40$	11
$1.40 \leq h < 1.50$	9
$1.50 \leq h < 1.60$	7
$1.60 \leq h < 1.70$	6
$1.70 \leq h < 1.80$	2

(a) Find the class interval that contains the median.

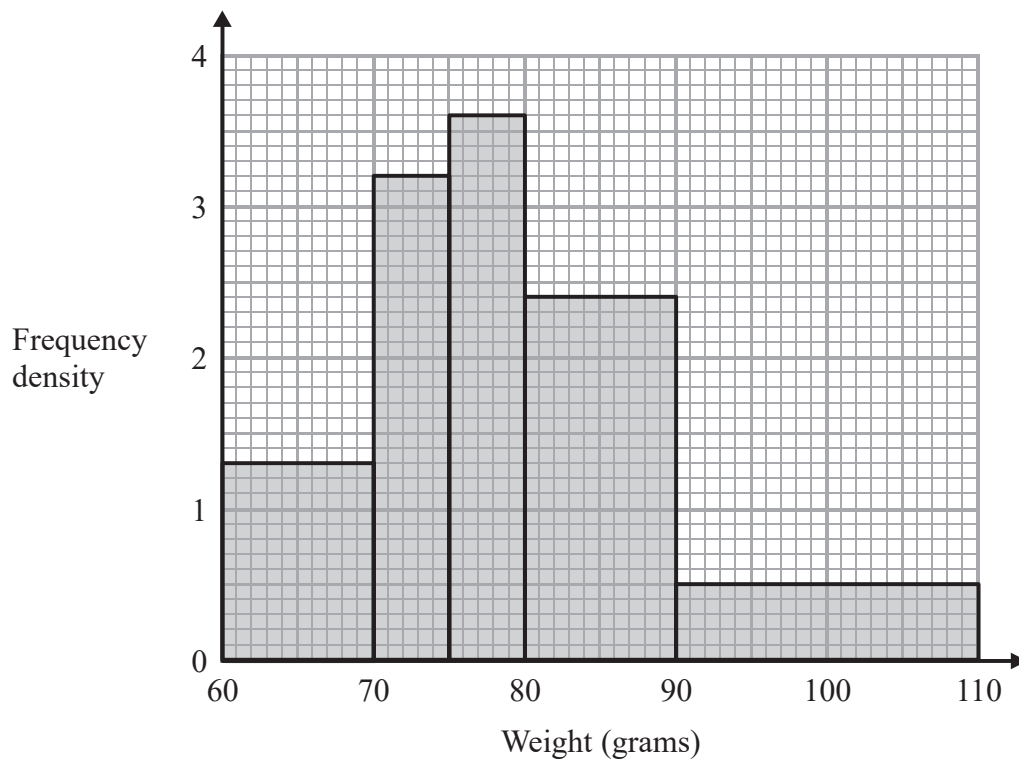
.....
(1)

(b) Work out an estimate for the mean height.

..... m
(4)

(Total for Question 105 is 5 marks)

106 The histogram shows information about the weights, in grams, of some plums.



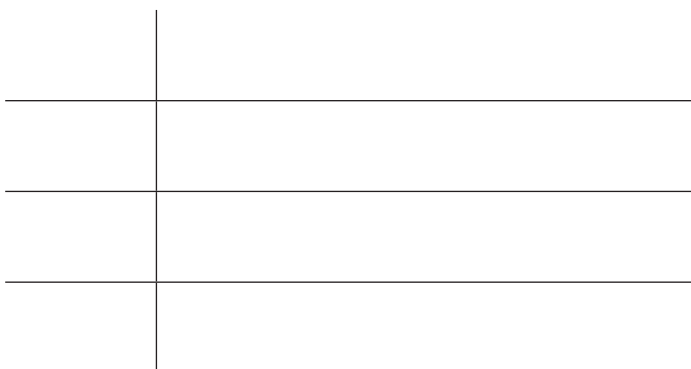
Work out an estimate for the proportion of these plums with a weight of less than 100 grams.

(Total for Question 106 is 3 marks)

107 Here are the heights, in mm, of 20 plants.

53 44 48 56 48 64 51 33 41 44
31 52 55 63 60 56 47 61 37 56

Draw an ordered stem and leaf diagram for these heights.



Key:

(Total for Question 107 is 3 marks)

108 Charlotte grows some potatoes.

The table shows information about the weights of her potatoes.

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

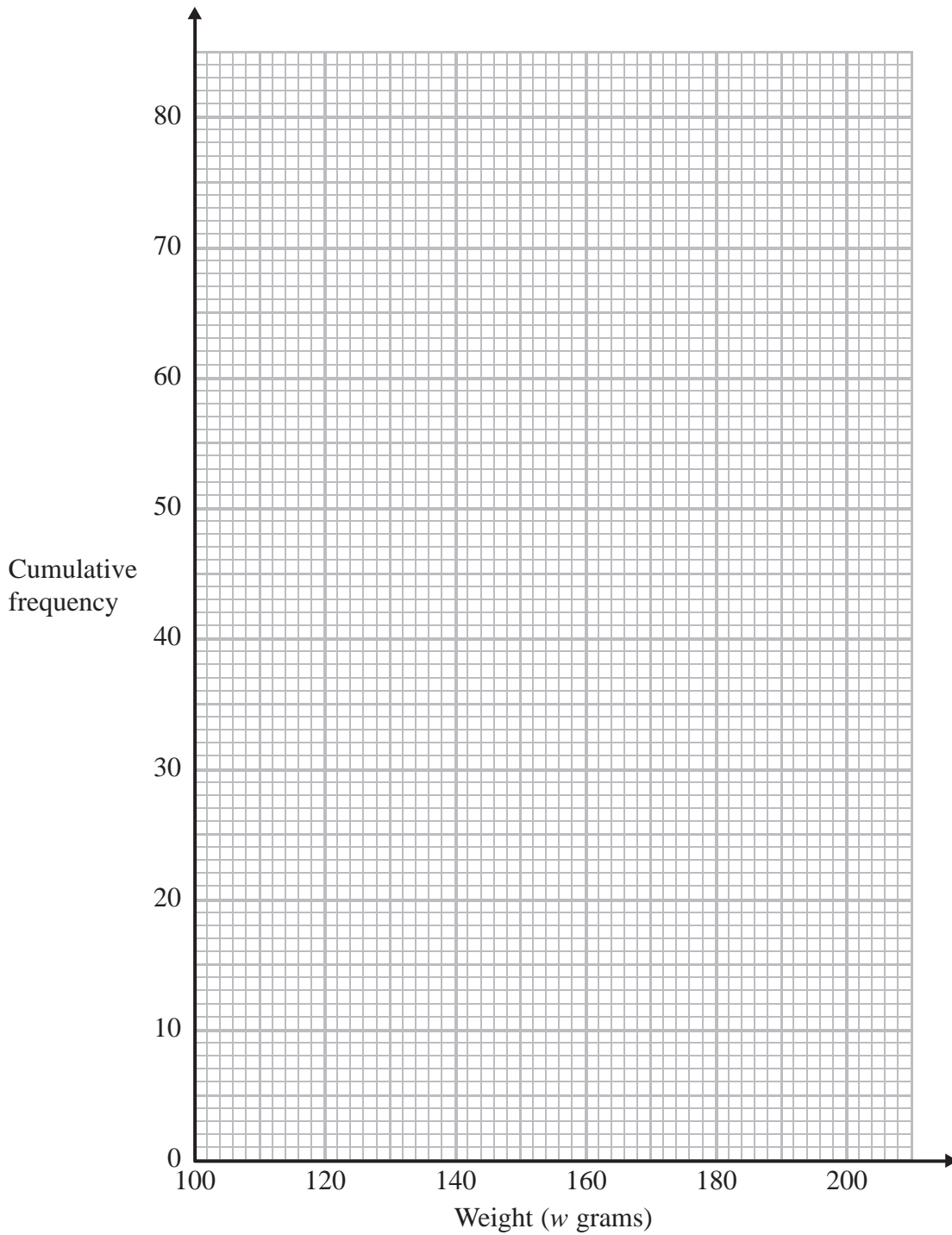
(a) Complete the cumulative frequency table.

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

(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 108 is 8 marks)

109 Chloe recorded the test marks of 20 students.

22 29 38 16 36 18 30 21 27 43
14 41 25 38 46 19 48 34 23 46

Show this information in an ordered stem and leaf diagram.



(3)

(Total for Question 109 is 3 marks)

110 The table gives information about the heights of 50 trees.

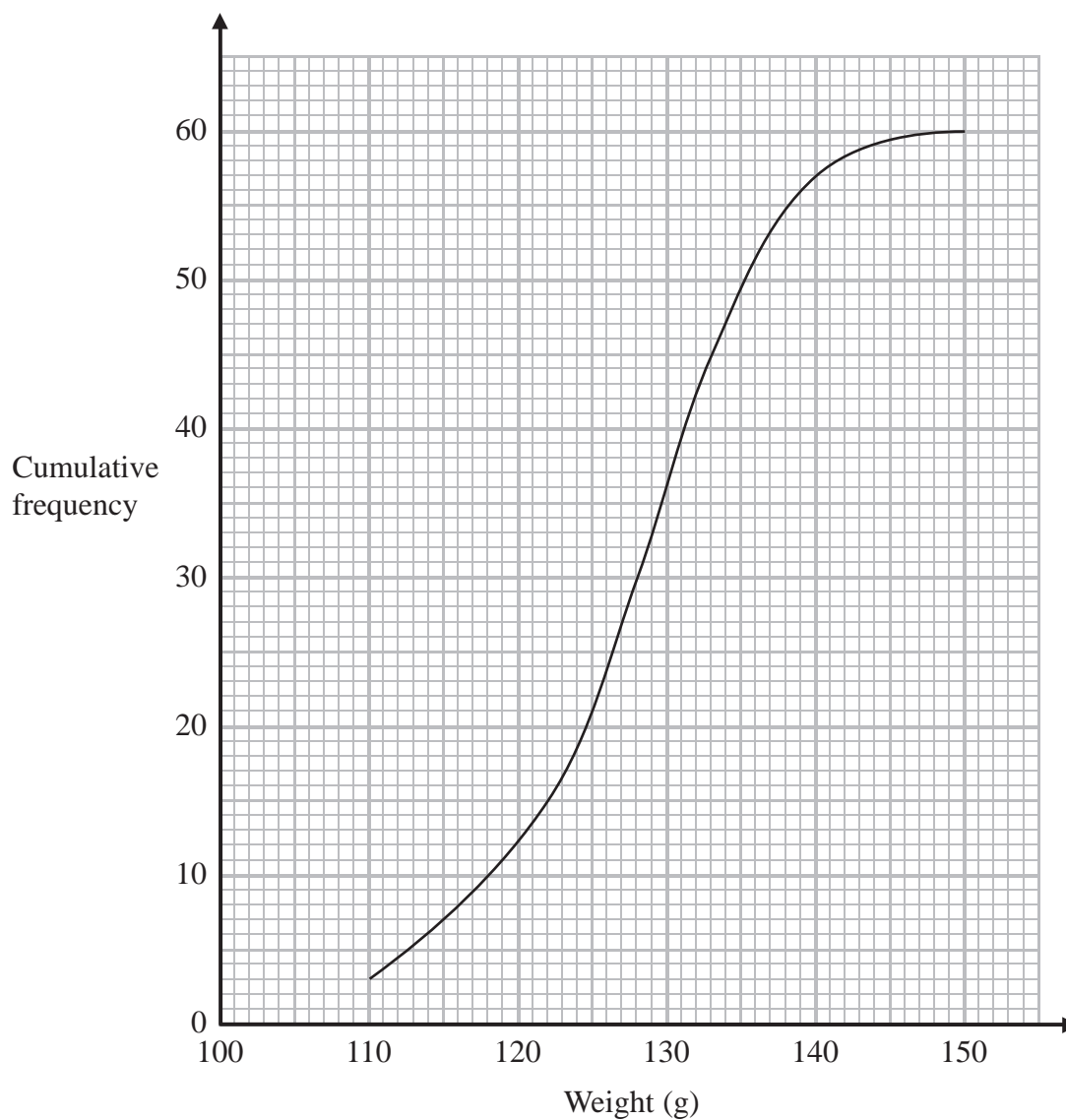
Height (h metres)	Frequency
$0 < h \leq 4$	8
$4 < h \leq 8$	21
$8 < h \leq 12$	12
$12 < h \leq 16$	7
$16 < h \leq 20$	2

Work out an estimate for the mean height of the trees.

..... m

(Total for Question 110 is 4 marks)

111 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.

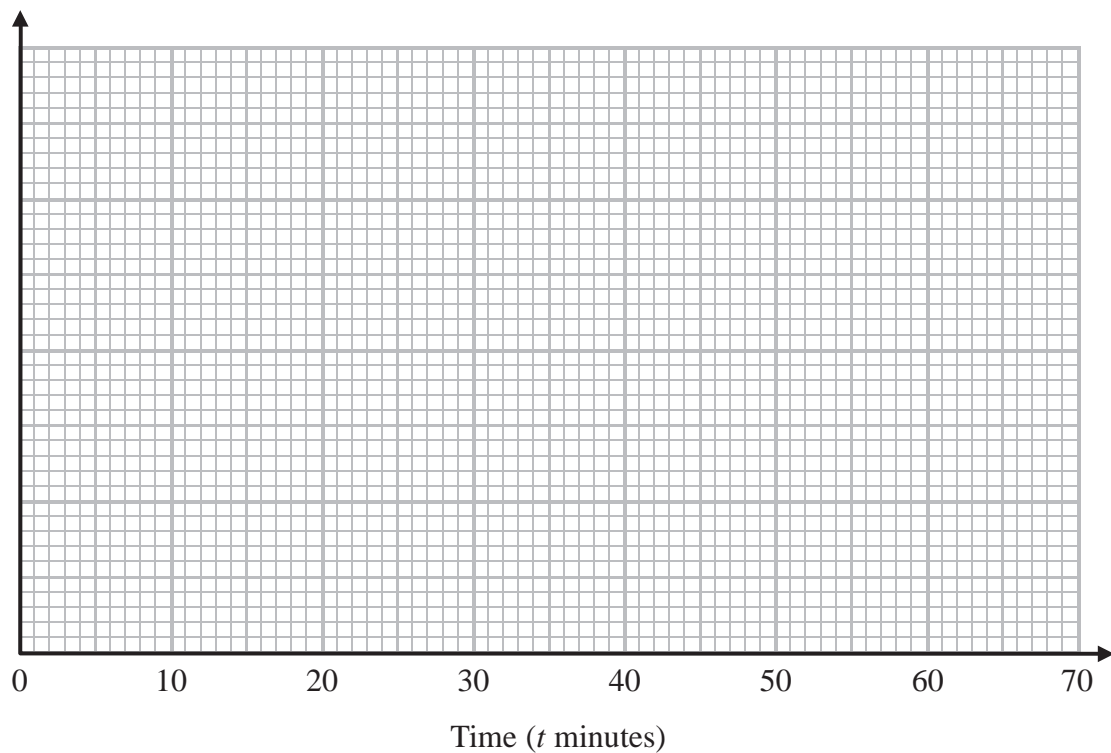
.....g
(2)

(Total for Question 111 is 3 marks)

112 The table gives information about the lengths of time some people were in a supermarket.

Time (t minutes)	Frequency
$0 < t \leq 5$	8
$5 < t \leq 15$	32
$15 < t \leq 30$	36
$30 < t \leq 40$	18
$40 < t \leq 60$	6

Draw a histogram for the information in the table.



(Total for Question 112 is 3 marks)

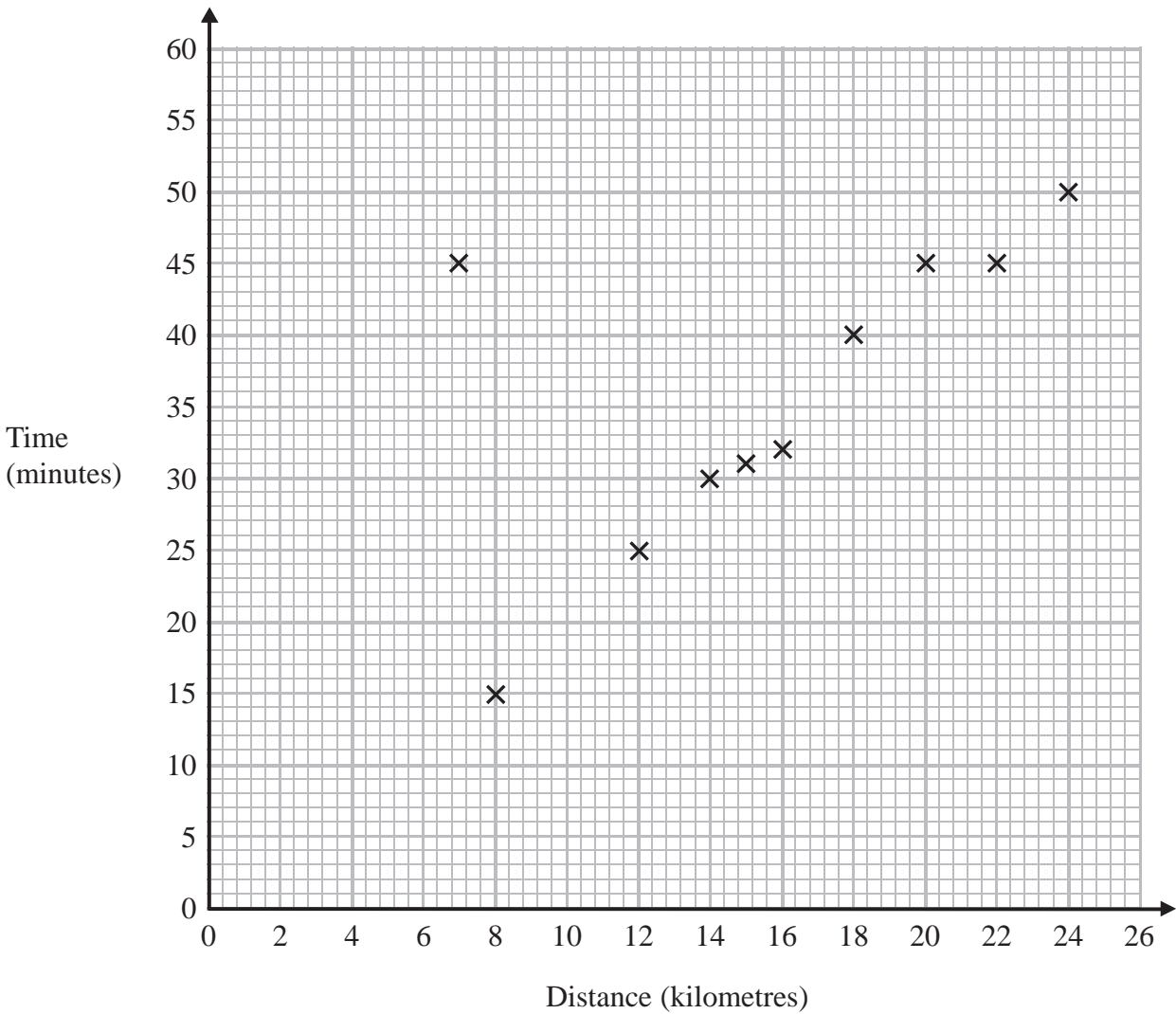
113 Here are the lengths, in cm, of 15 tables.

28	51	42	23	63
38	44	29	32	37
61	35	39	41	25

Draw an ordered stem and leaf diagram for these lengths.

(Total for Question 113 is 3 marks)

114 A delivery driver records for each delivery the distance he drives and the time taken.
The scatter graph shows this information.



For another delivery he drives 22 kilometres and takes 50 minutes.

(a) Show this information on the scatter graph. (1)

(b) What type of correlation does the scatter graph show?

.....
(1)

The driver has to drive a distance of 10 km for his next delivery.

(c) Estimate the time taken for this delivery.

..... minutes
(2)

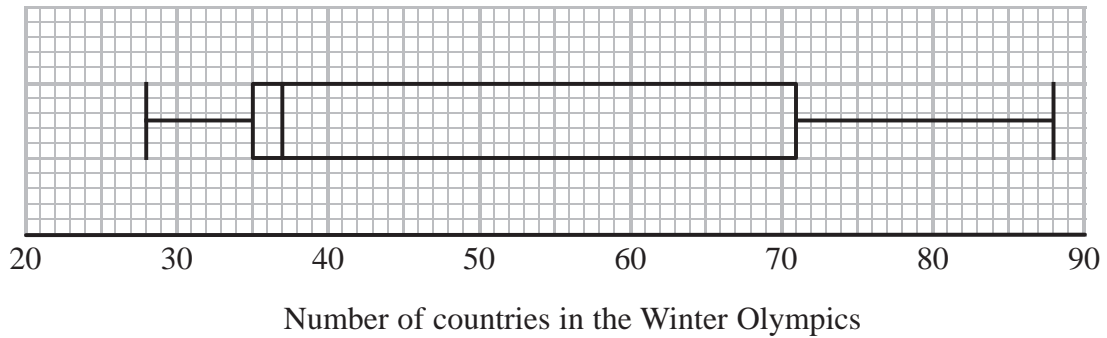
During one of the deliveries, the driver was delayed by road works.

(d) Using the graph write down the time taken for this delivery.

..... minutes
(1)

(Total for Question 114 is 5 marks)

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



(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 115 is 5 marks)

116 148 students went to Brighton.

Each student went to the Aquarium or the Brighton Wheel or the Royal Pavilion.

The table gives information about these students.

	Aquarium	Brighton Wheel	Royal Pavilion
Male	16	15	22
Female	36	35	24

The teacher takes a sample of 40 of these students.

The sample is stratified by gender and by place visited.

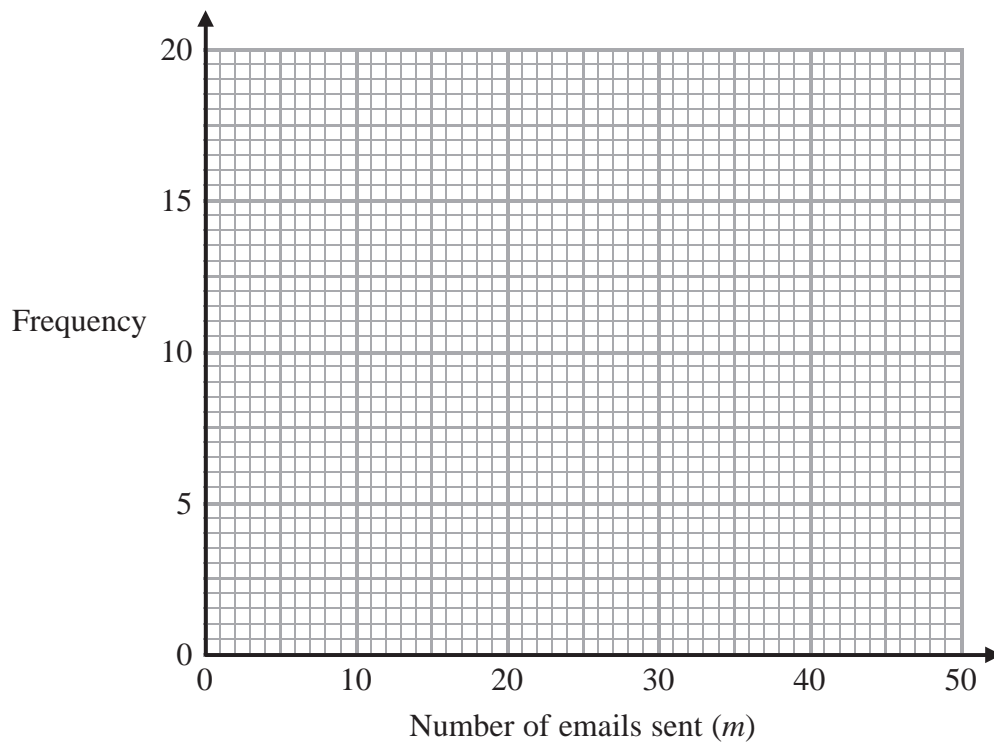
Work out the number of students in the sample who are female and went to the Brighton Wheel.

.....
(Total for Question 116 is 2 marks)

117 The frequency table gives information about the numbers of emails sent by 51 teachers on Monday.

Number of emails sent (m)	Frequency
$0 < m \leq 10$	5
$10 < m \leq 20$	17
$20 < m \leq 30$	14
$30 < m \leq 40$	9
$40 < m \leq 50$	6

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



(2)

*(b) Nalini says that at least a quarter of these teachers sent more than 30 emails.

Is Nalini correct?

You must explain your answer.

(2)

(Total for Question 117 is 4 marks)

118 Sumeet records the times, in minutes, for 40 runners to finish a half marathon.

Information about these times is shown in the table.

Time (t minutes)	Frequency
$60 < t \leq 90$	10
$90 < t \leq 120$	14
$120 < t \leq 150$	9
$150 < t \leq 180$	5
$180 < t \leq 210$	2

Calculate an estimate for the mean time.

..... minutes

(Total for Question 118 is 4 marks)

119 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?

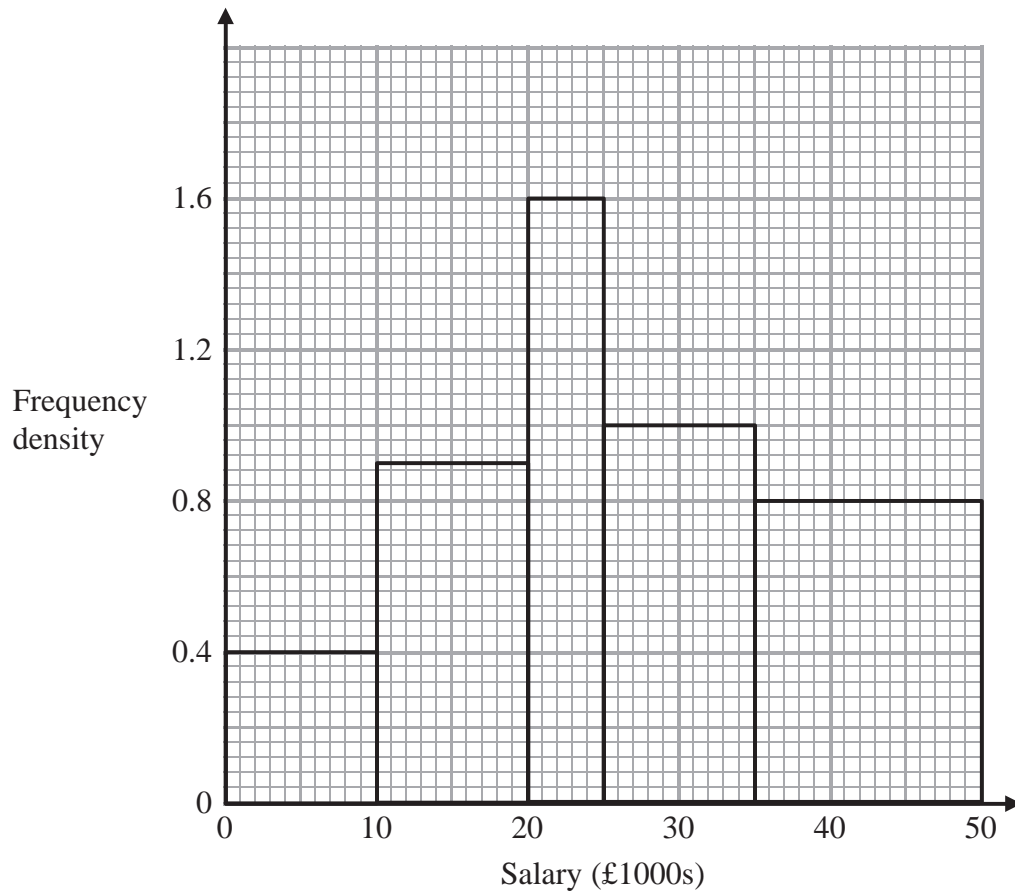
.....
(1)

*(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 119 is 3 marks)

120 The histogram shows some information about the salaries of a sample of people.



(a) Use the histogram to complete the frequency table.

Salary (p) in £1000s	Frequency
$0 < p \leq 10$	4
$10 < p \leq 20$	
$20 < p \leq 25$	
$25 < p \leq 35$	
$35 < p \leq 50$	

(2)

(b) Work out the proportion of people in the sample who have a salary greater than £40 000

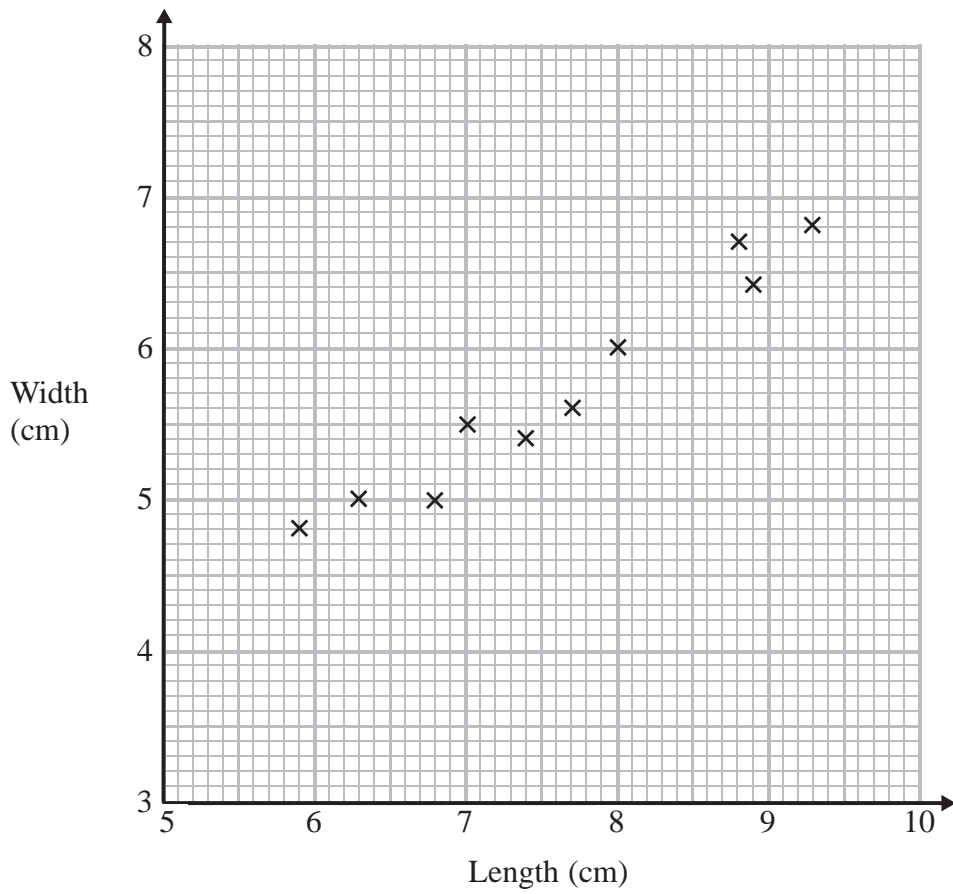
.....
(2)

(c) Find an estimate for the median salary.

£.....
(2)

(Total for Question 120 is 6 marks)

- 121 The scatter graph shows some information about ten pine cones from the same tree. It shows the length and the width of each pine cone.



- (a) Describe the relationship between the length and the width of a pine cone.

.....

.....

(1)

Another pine cone from this tree has a length of 8.4 cm.

- (b) Estimate the width of this pine cone.

.....cm

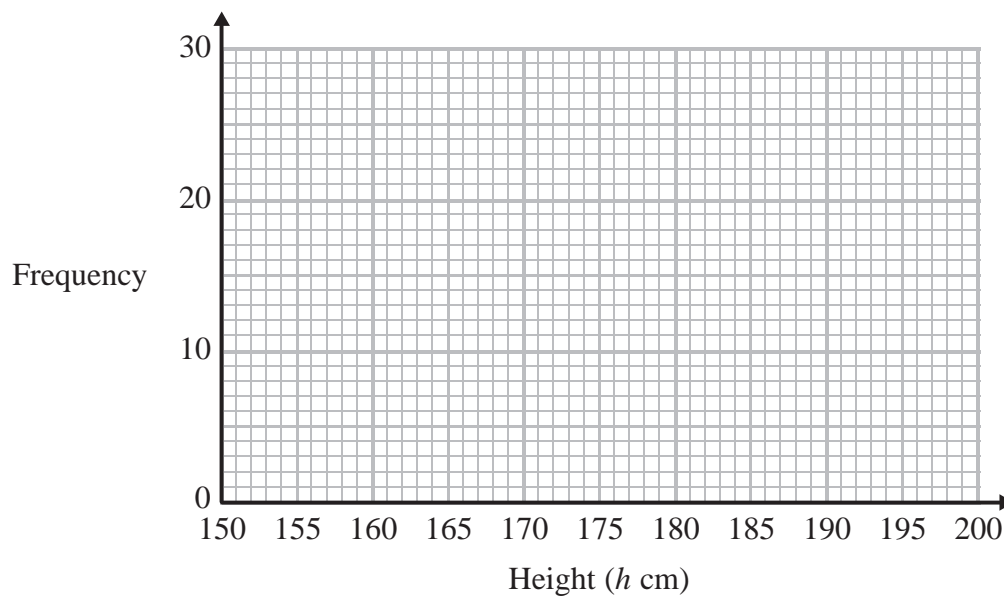
(2)

(Total for Question 121 is 3 marks)

122 The frequency table gives information about the heights of some people.

Height (h cm)	Frequency
$160 < h \leq 165$	2
$165 < h \leq 170$	5
$170 < h \leq 175$	10
$175 < h \leq 180$	21
$180 < h \leq 185$	16
$185 < h \leq 190$	4

Draw a frequency polygon for this information.



(Total for Question 122 is 2 marks)

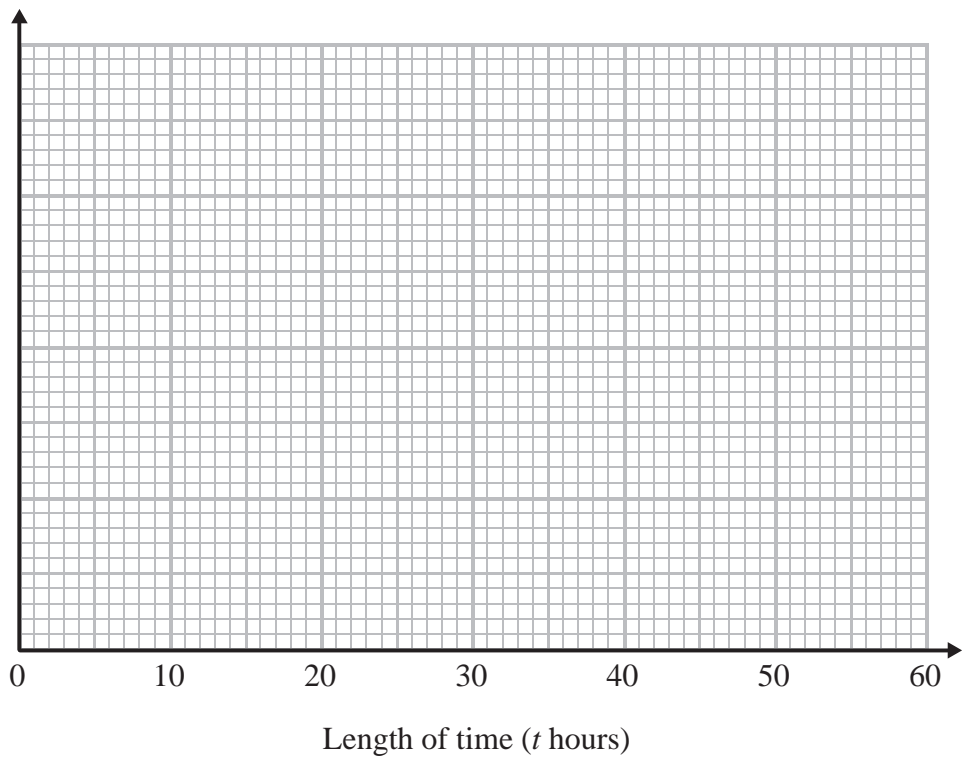
123 The table gives some information about the lengths of time, in hours, that some adults watched TV last week.

Length of time (t hours)	Frequency
$0 \leq t < 10$	8
$10 \leq t < 15$	15
$15 \leq t < 20$	11
$20 \leq t < 30$	10
$30 \leq t < 50$	6

(a) Work out an estimate for the mean length of time.

..... hours
(4)

(b) Draw a histogram for the information in the table.

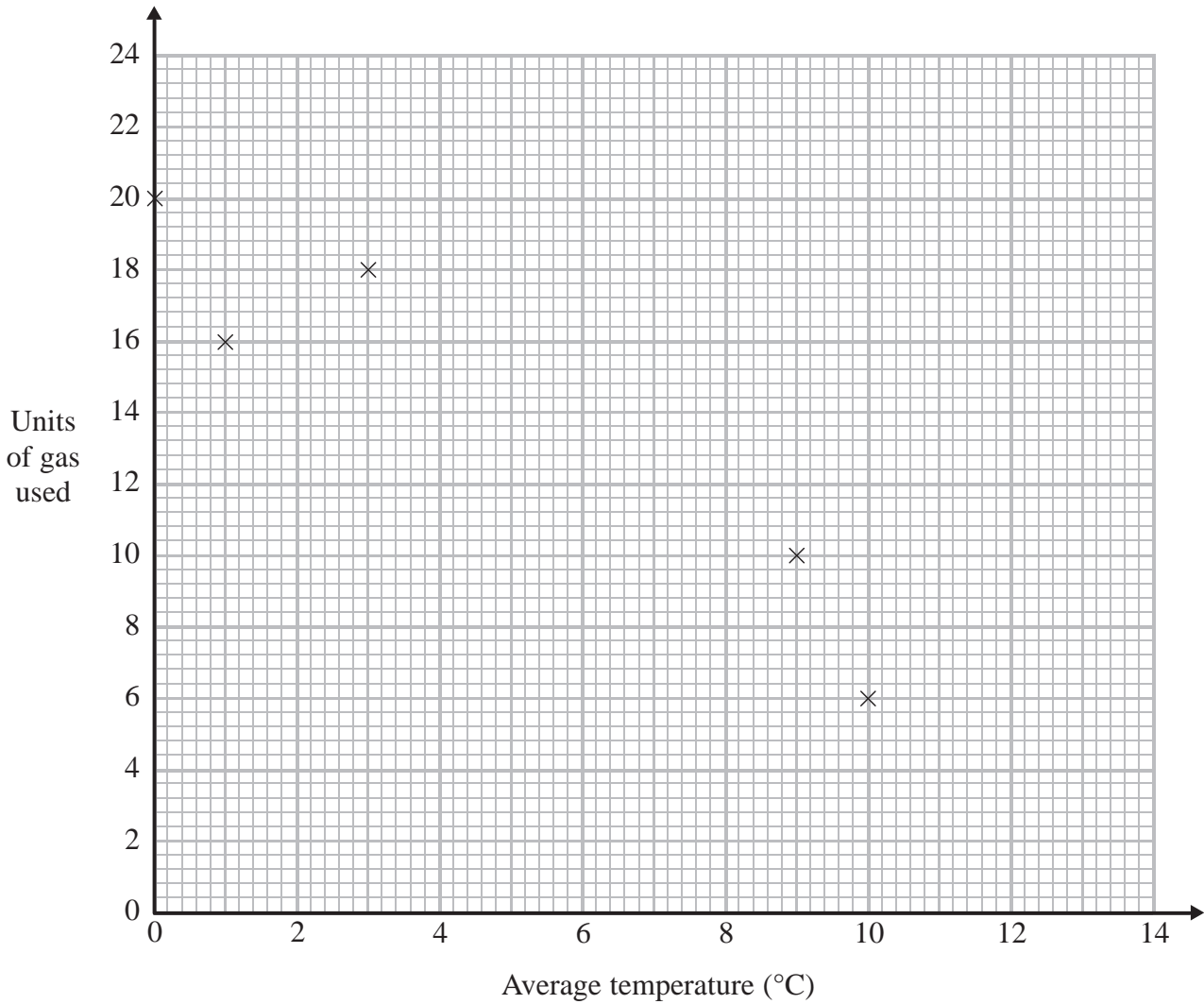


(3)

(Total for Question 123 is 7 marks)

124 The table shows the average temperature on each of seven days and the number of units of gas used to heat a house on these days.

Average temperature ($^{\circ}\text{C}$)	0	1	3	9	10	12	13
Units of gas used	20	16	18	10	6	6	2



(a) Complete the scatter graph to show the information in the table.
The first 5 points have been plotted for you.

(1)

(b) Describe the relationship between the average temperature and the number of units of gas used.

(1)

(c) Estimate the average temperature on a day when 12 units of gas are used.

..... °C

(2)

(Total for Question 124 is 4 marks)

125 Lorna carries out a survey about the number of times customers go to a shop. She asks at random 100 customers how many times they went to the shop last month. The table shows Lorna's results.

Number of times	0	1	2	3	4	5	6	more than 6
Frequency	4	12	13	17	25	13	11	5

One of the 100 customers is chosen at random.

(a) What is the probability that this customer went to the shop 5 or more times?

.....
(2)

Last month the shop had a total of 1500 customers.

(b) Work out an estimate for the number of customers who went to the shop exactly 2 times last month.

.....
(2)

The owner of a different shop is carrying out a survey on the ages of his customers. He records the ages of the first 10 customers in his shop after 9 am one morning.

(c) This may **not** be a suitable sample. Give **two** reasons why.

1.....
.....

2.....
.....

.....
(2)

(Total for Question 125 is 6 marks)

126 25 students in class A did a science exam.
30 students in class B did the same science exam.

The mean mark for the 25 students in class A is 67.8

The mean mark for all the 55 students is 72.0

Work out the mean mark for the students in class B.

.....
(Total for Question 126 is 3 marks)

127 The table gives information about the temperature, T °C, at noon in a town for 50 days.

Temperature (T °C)	Frequency
$8 < T \leq 12$	6
$12 < T \leq 16$	8
$16 < T \leq 20$	13
$20 < T \leq 24$	21
$24 < T \leq 28$	2

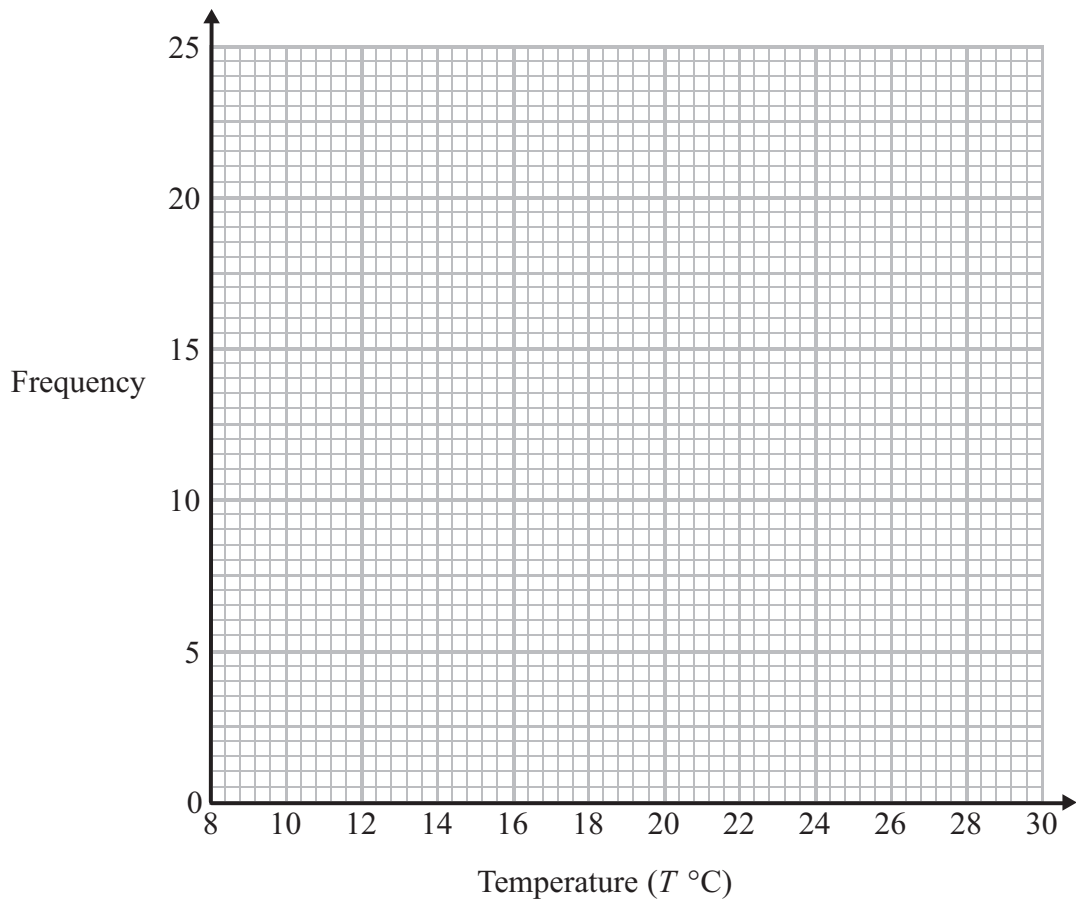
(a) Write down the modal class interval.

.....
(1)

(b) Calculate an estimate for the mean temperature.

..... °C
(4)

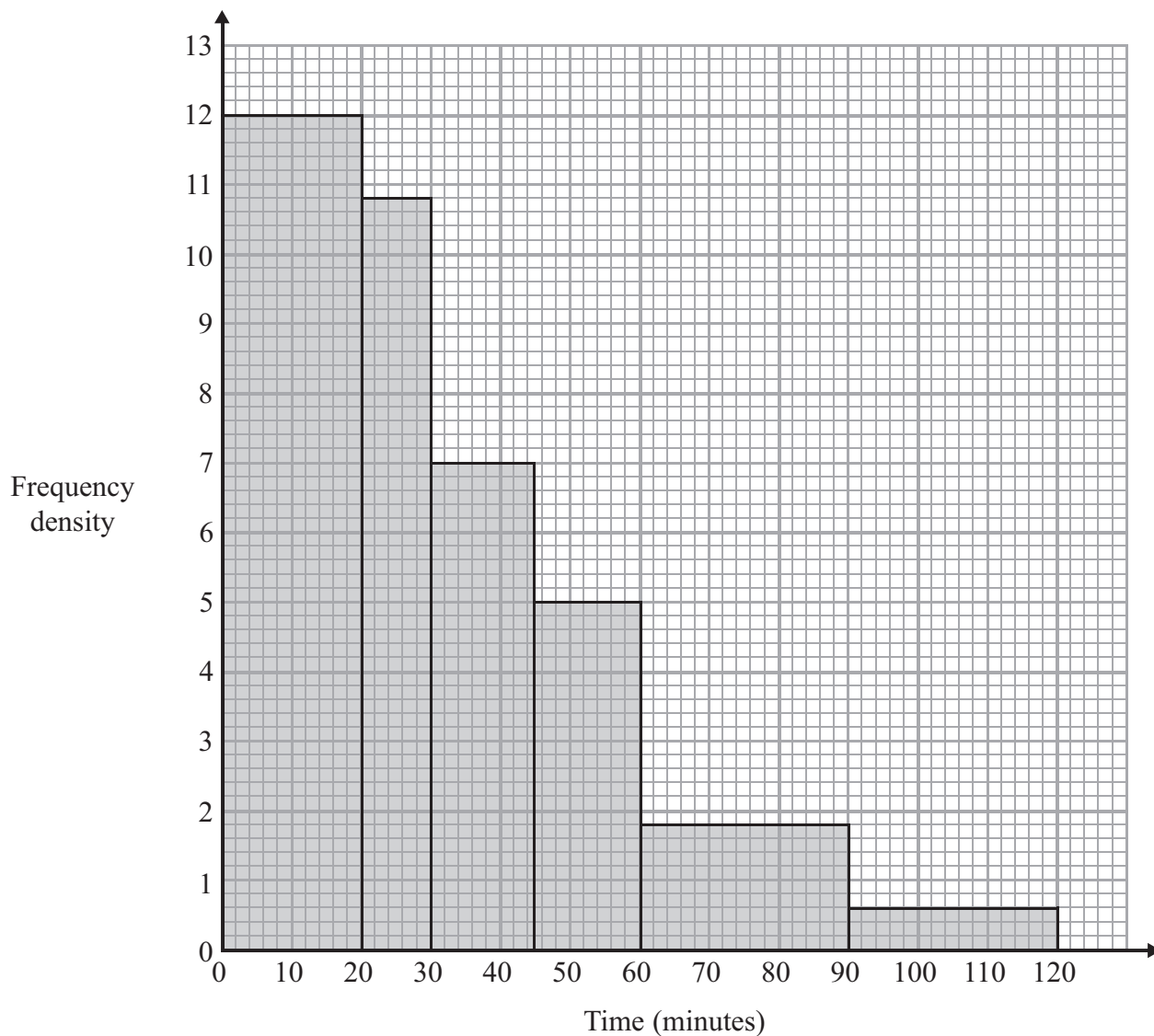
(c) Draw a frequency polygon for the information in the table.



(2)

(Total for Question 127 is 7 marks)

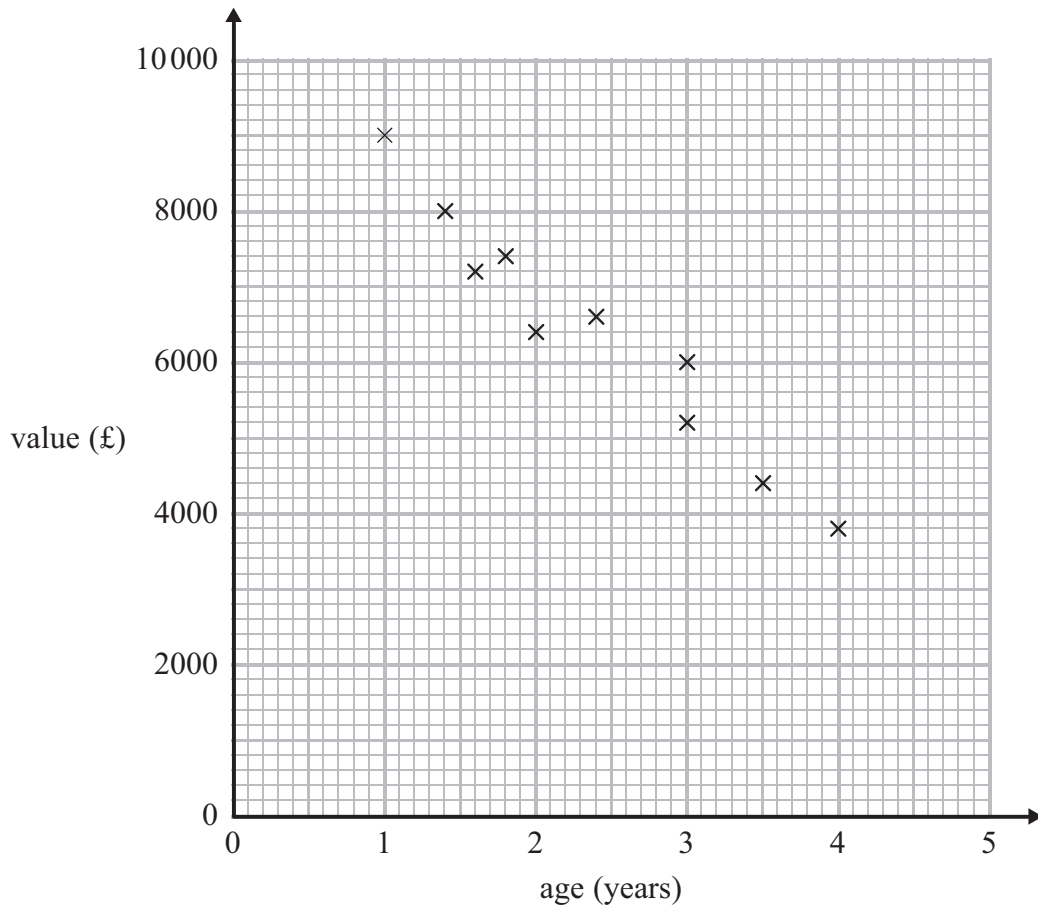
128 The histogram shows information about the times, in minutes, that some passengers had to wait at an airport.



Work out the percentage of the passengers who had to wait for more than one hour.

(Total for Question 128 is 3 marks)

129 The scatter graph shows some information about 10 cars, of the same type and make.
 The graph shows the age (years) and the value (£) of each car.



The table shows the age and the value of two other cars of the same type and make.

age (years)	1	3.5
value (£)	8200	5000

(a) On the scatter graph, plot the information from the table. (1)

(b) Describe the relationship between the age and the value of the cars.

(1)

A car of the same type and make is $2\frac{1}{2}$ years old.

(c) Estimate the value of the car.

£.....

(2)

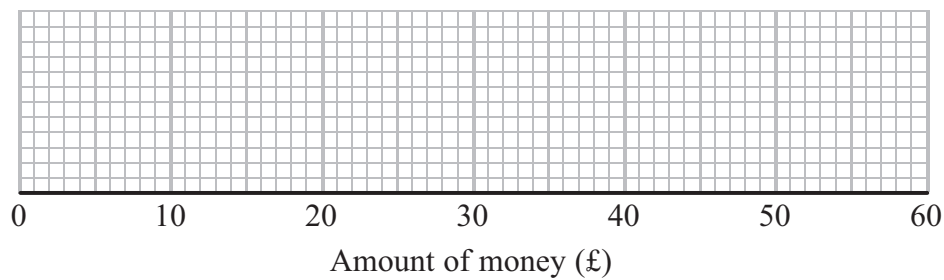
(Total for Question 129 is 4 marks)

130 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

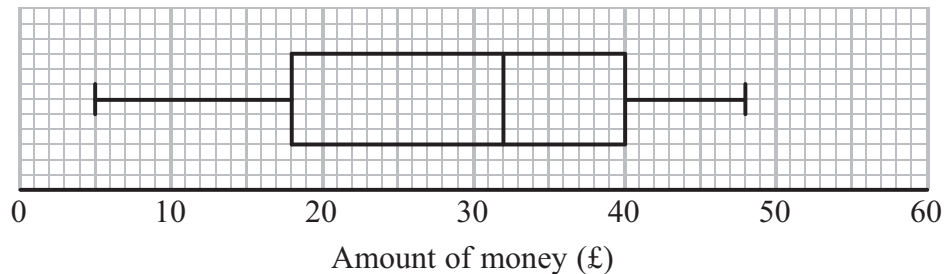
(a) On the grid, draw a box plot for the information in the table.



(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 130 is 4 marks)

131 Here are the ages, in years, of 15 students.

19 18 20 25 37
33 21 17 29 20
42 18 23 37 22

Show this information in an ordered stem and leaf diagram.



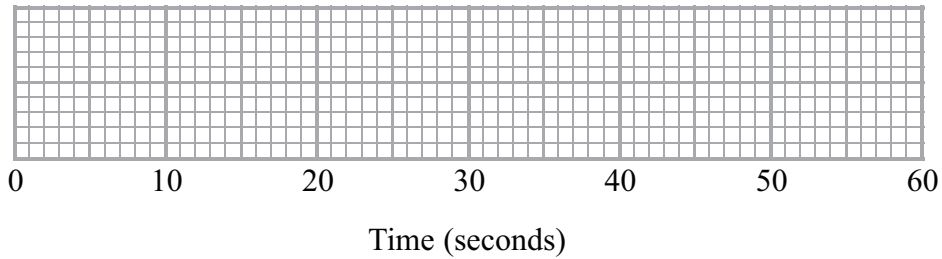
Key:

(Total for Question 131 is 3 marks)

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

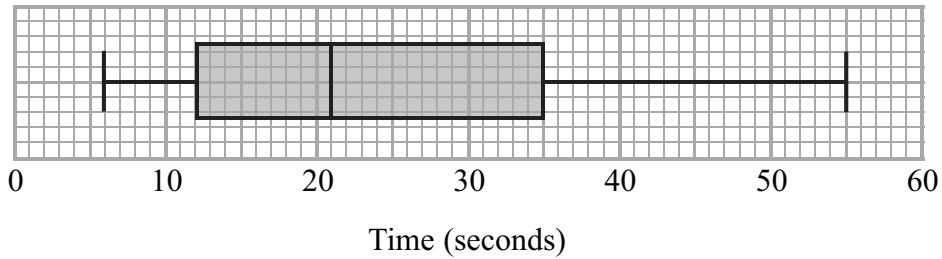
5 9 11 14 15 20 22 25 27 27 28 30 32 35 44

(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.

.....

.....

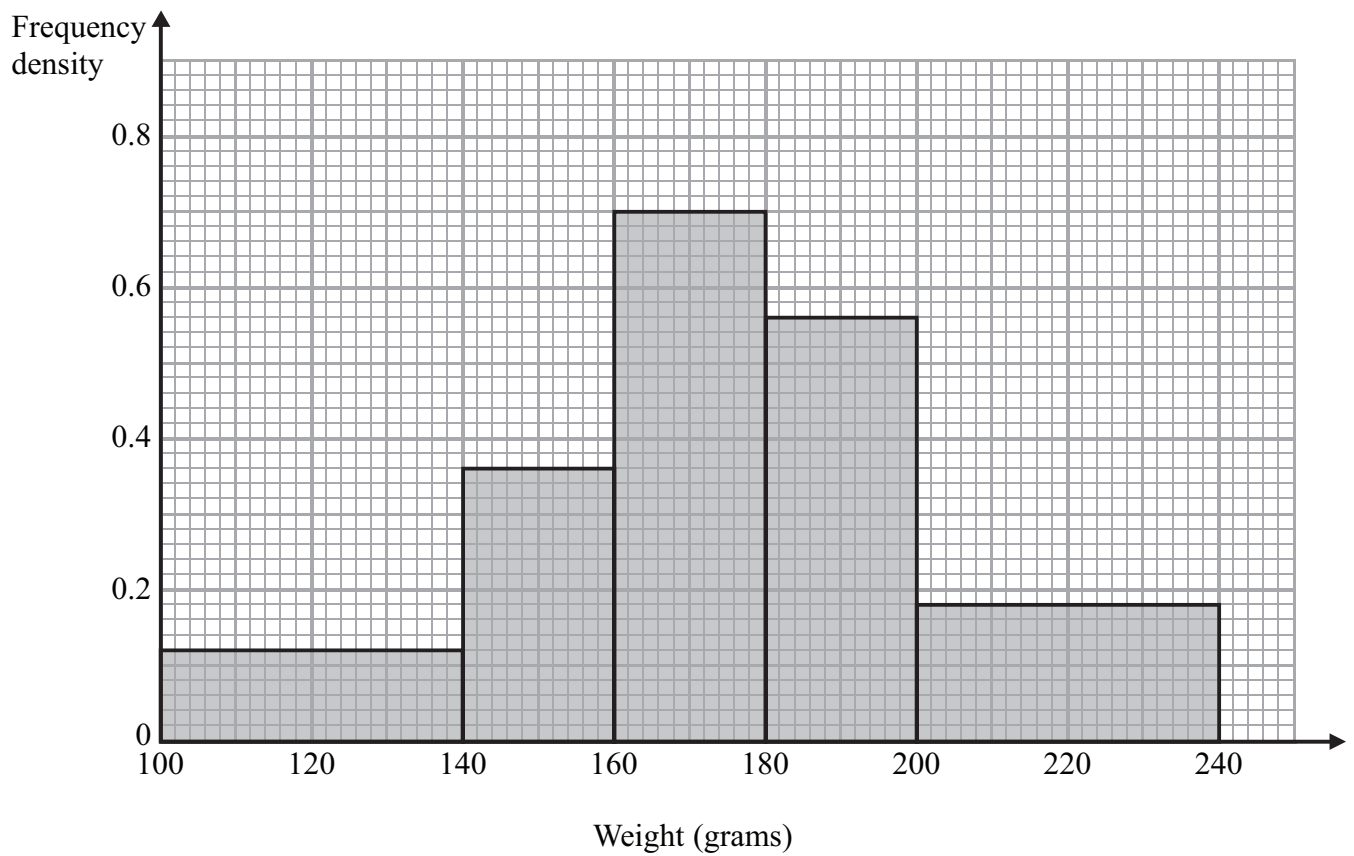
.....

.....

(2)

(Total for Question 132 is 5 marks)

133 The histogram shows some information about the weights of a sample of apples.



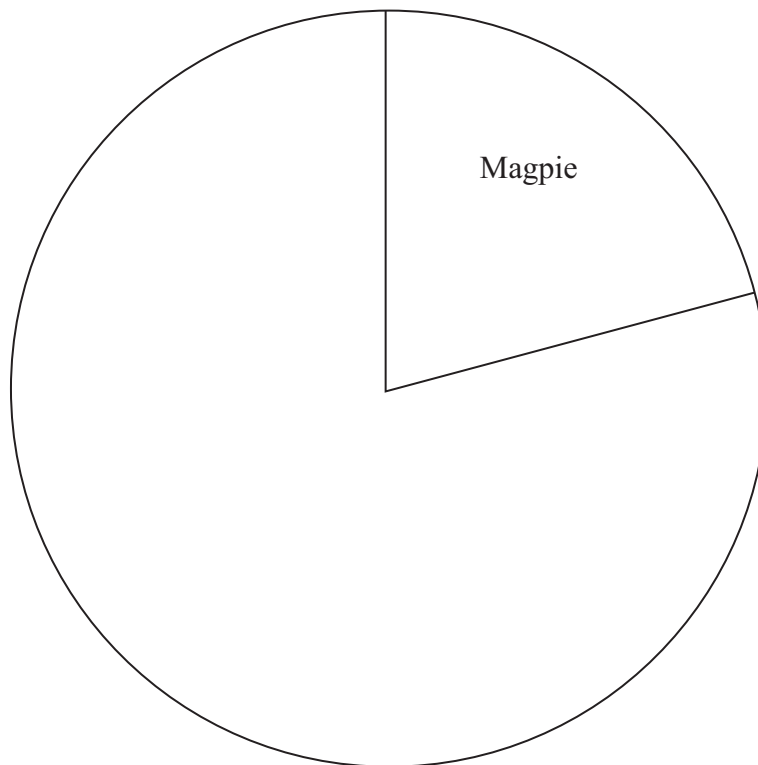
Work out the proportion of apples in the sample with a weight between 140 grams and 200 grams.

(Total for Question 133 is 4 marks)

134 The table gives some information about the birds Paula sees in her garden one day.

Bird	Frequency
Magpie	15
Thrush	10
Starling	20
Sparrow	27

Complete the accurate pie chart.



(Total for Question 134 is 3 marks)

135 The stem and leaf diagram gives information about the numbers of tomatoes on 31 tomato plants.

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

Key: 5 | 7 = 57 tomatoes

(a) Work out the median.

.....
(1)

(b) Work out the interquartile range.

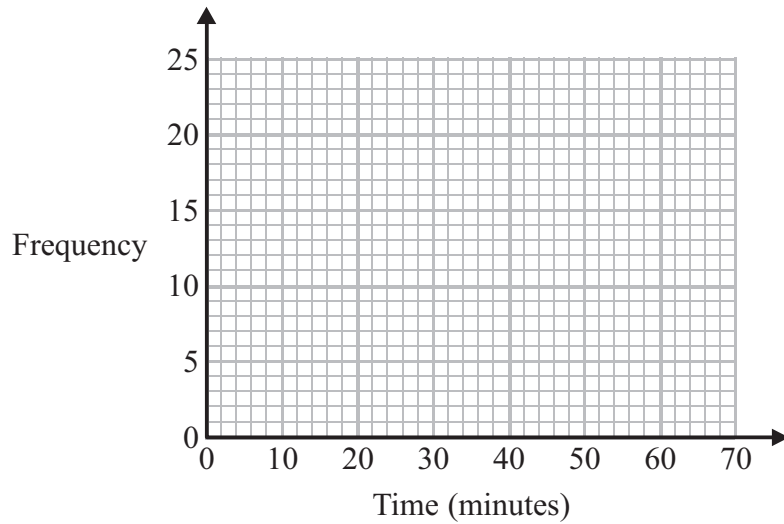
.....
(2)

(Total for Question 135 is 3 marks)

136 The frequency table gives information about the times it took some office workers to get to the office one day.

Time (t minutes)	Frequency
$0 < t \leq 10$	4
$10 < t \leq 20$	8
$20 < t \leq 30$	14
$30 < t \leq 40$	16
$40 < t \leq 50$	6
$50 < t \leq 60$	2

(a) Draw a frequency polygon for this information.



(2)

(b) Write down the modal class interval.

.....
(1)

One of the office workers is chosen at random.

(c) Work out the probability that this office worker took more than 40 minutes to get to the office.

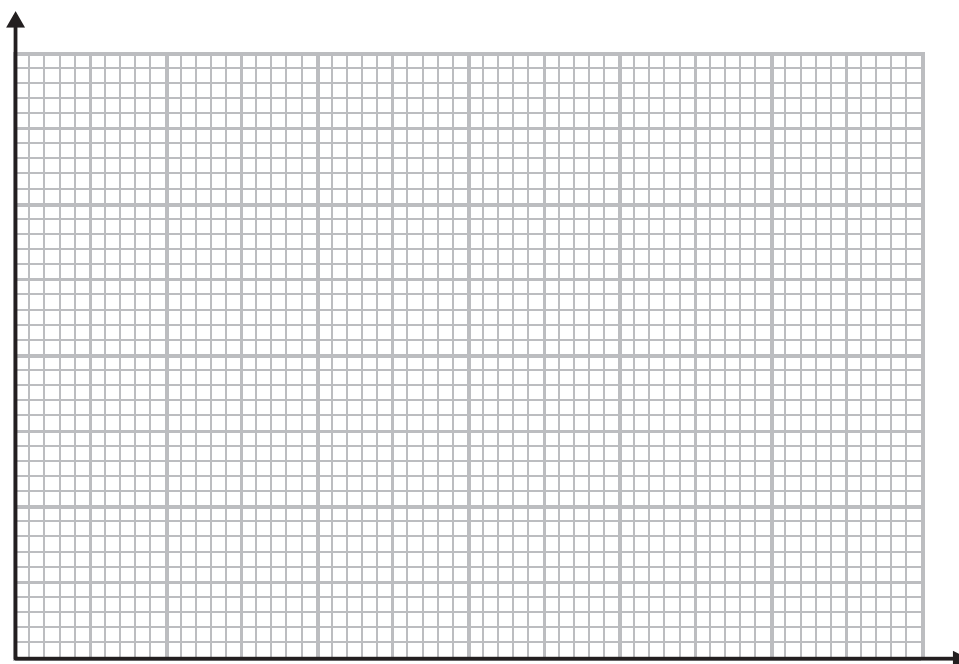
.....
(2)

(Total for Question 136 is 5 marks)

137 The table gives information about the heights, h metres, of trees in a wood.

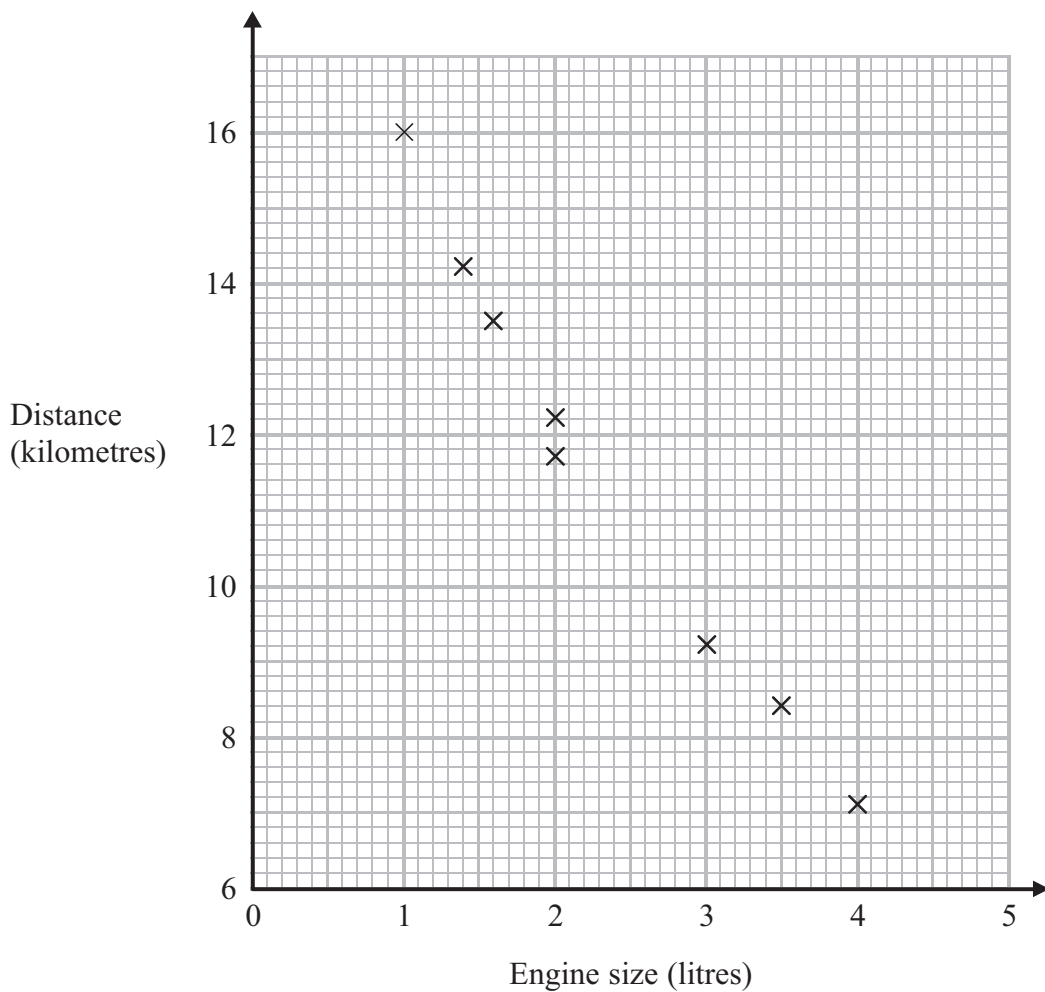
Height (h metres)	Frequency
$0 < h \leq 2$	7
$2 < h \leq 4$	14
$4 < h \leq 8$	18
$8 < h \leq 16$	24
$16 < h \leq 20$	10

Draw a histogram to show this information.



(Total for Question 137 is 3 marks)

- 138 The scatter graph shows some information about 8 cars. For each car it shows the engine size, in litres, and the distance, in kilometres, the car travels on one litre of petrol.



- (a) What type of correlation does the scatter graph show?

.....
(1)

A different car of the same type has an engine size of 2.5 litres.

- (b) Estimate the distance travelled on one litre of petrol by this car.

..... kilometres
(2)

(Total for Question 138 is 3 marks)

139 Bob asked each of 40 friends how many minutes they took to get to work.

The table shows some information about his results.

Time taken (m minutes)	Frequency
$0 < m \leq 10$	3
$10 < m \leq 20$	8
$20 < m \leq 30$	11
$30 < m \leq 40$	9
$40 < m \leq 50$	9

Work out an estimate for the mean time taken.

..... minutes

(Total for Question 139 is 4 marks)
