Name	Class

MATHS TEACHER HUB

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Histograms

(9 – 1) Topic booklet

Higher

These questions have been collated from previous years GCSE Mathematics papers.

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.	Total Marks

Instructions

•Use **black** ink or ball-point pen.
•**Fill in the boxes** at the top of this page with your name, centre number and candidate number.
•Answer **all** questions.
•Answer the questions in the spaces provided
– *there may be more space than you need*.
•Diagrams are NOT accurately drawn, unless otherwise indicated.
•You must **show all your working out.**
•If the question is a **1H** question you are not allowed to use a calculator.
•If the question is a **2H** or a **3H** question, you may use a calculator to help you answer.

Information

•The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question*.

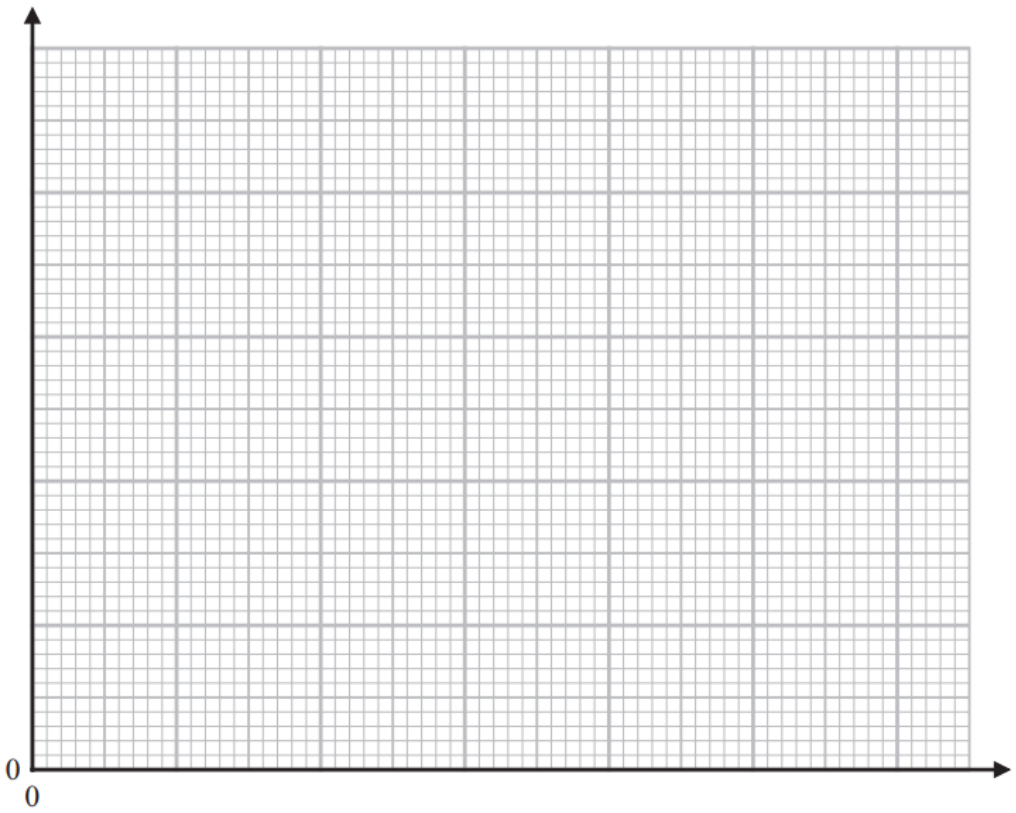
Advice

•Read each question carefully before you start to answer it.
•Keep an eye on the time.
•Try to answer every question.
•Check your answers if you have time at the end.

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

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

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



(3)

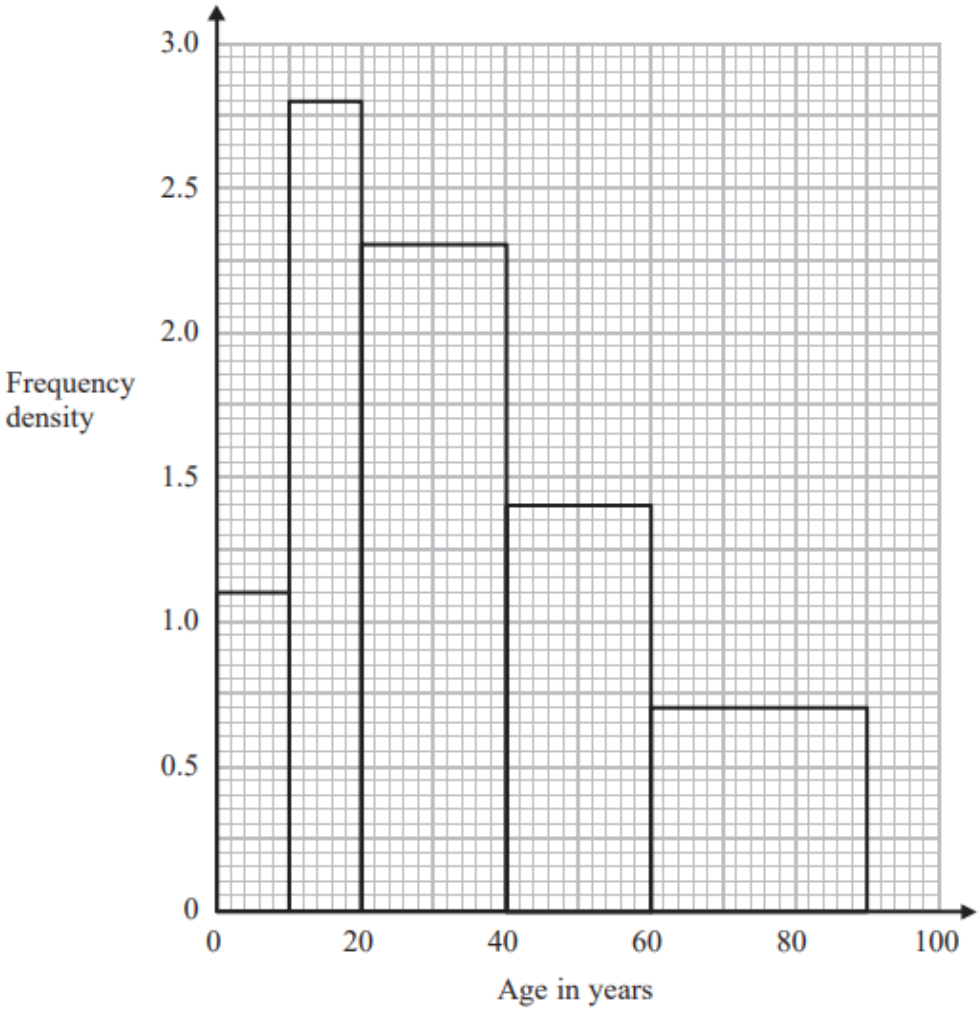
(b) Work out an estimate for the fraction of these 150 people who were in the shop for between 20 minutes and 40 minutes.

.....

(2)

(Total for Question 13 is 5 marks)

13 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.

.....

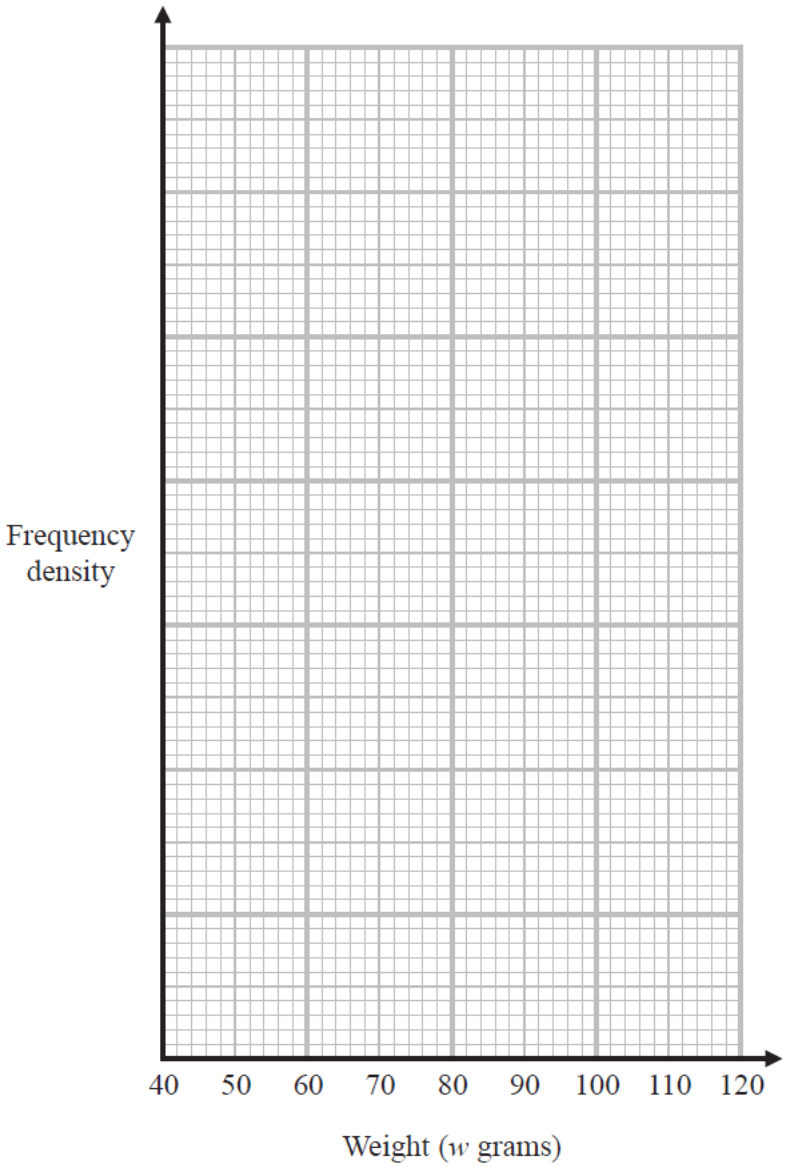
June 2017 – Paper 2H

(Total for Question 13 is 3 marks)

14 The table shows information about the weights, in grams, of some potatoes.

Weight (w grams)	Number of potatoes
$50 < w \leqslant 70$	20
$70 < w \leqslant 80$	50
$80 < w \leqslant 90$	60
$90 < w \leqslant 110$	30

On the grid, draw a histogram for this information.

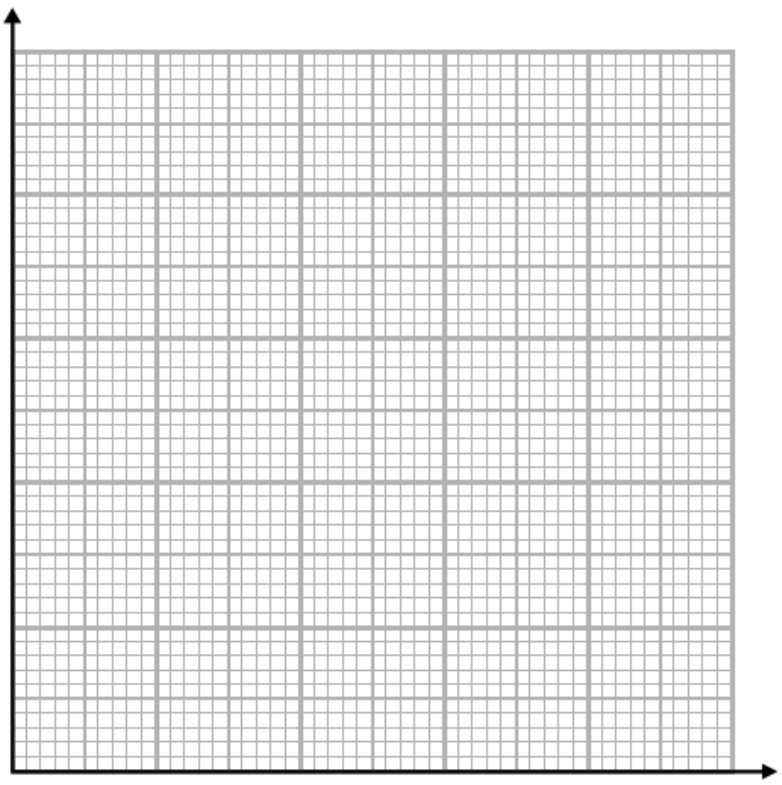


(Total for Question 14 is 3 marks)

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

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

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



(3)

(b) Find an estimate for the median.

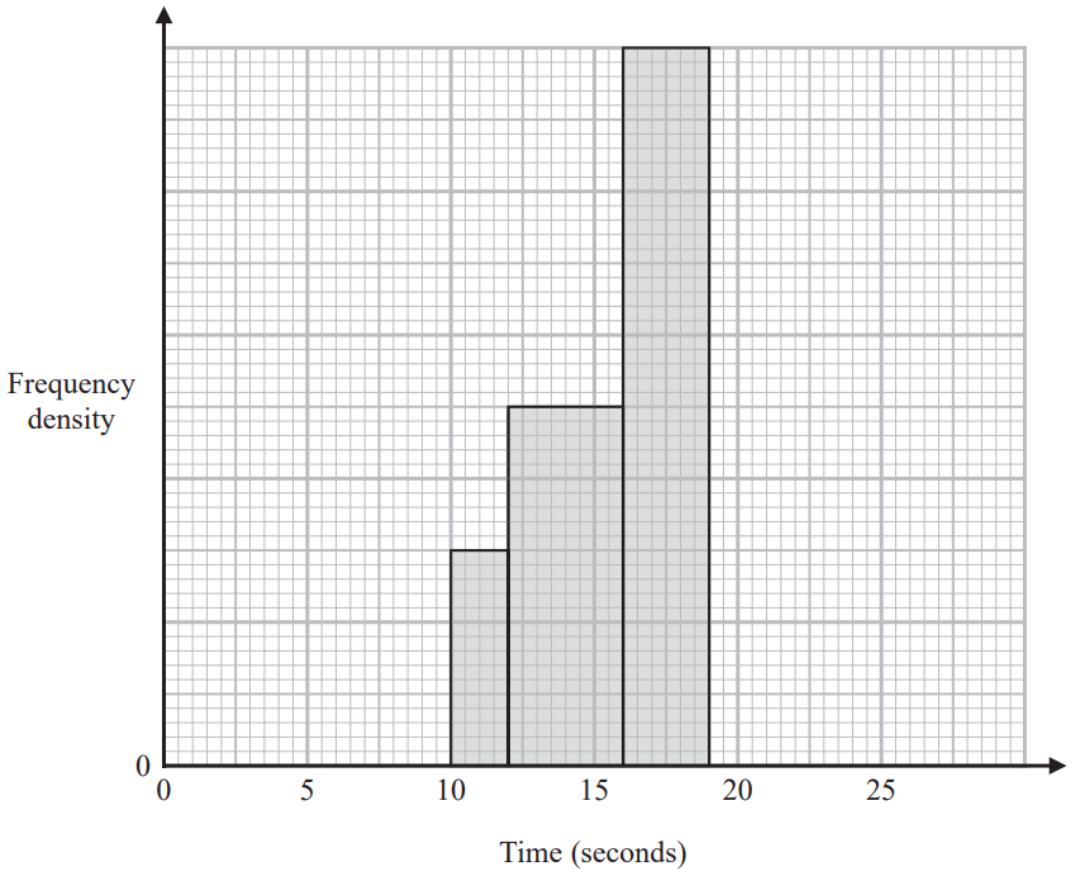
.....km/h

(2)

(Total for Question 14 is 5 marks)

15 The incomplete table and the incomplete histogram give information about the times taken by some students to run a race.

Time (t seconds)	Frequency
$10 < t \leqslant 12$	
$12 < t \leqslant 16$	10
$16 < t \leqslant 19$	15
$19 < t \leqslant 21$	9
$21 < t \leqslant 26$	7



None of these students had a time for the race such that $t \leqslant 10$ or $t > 26$

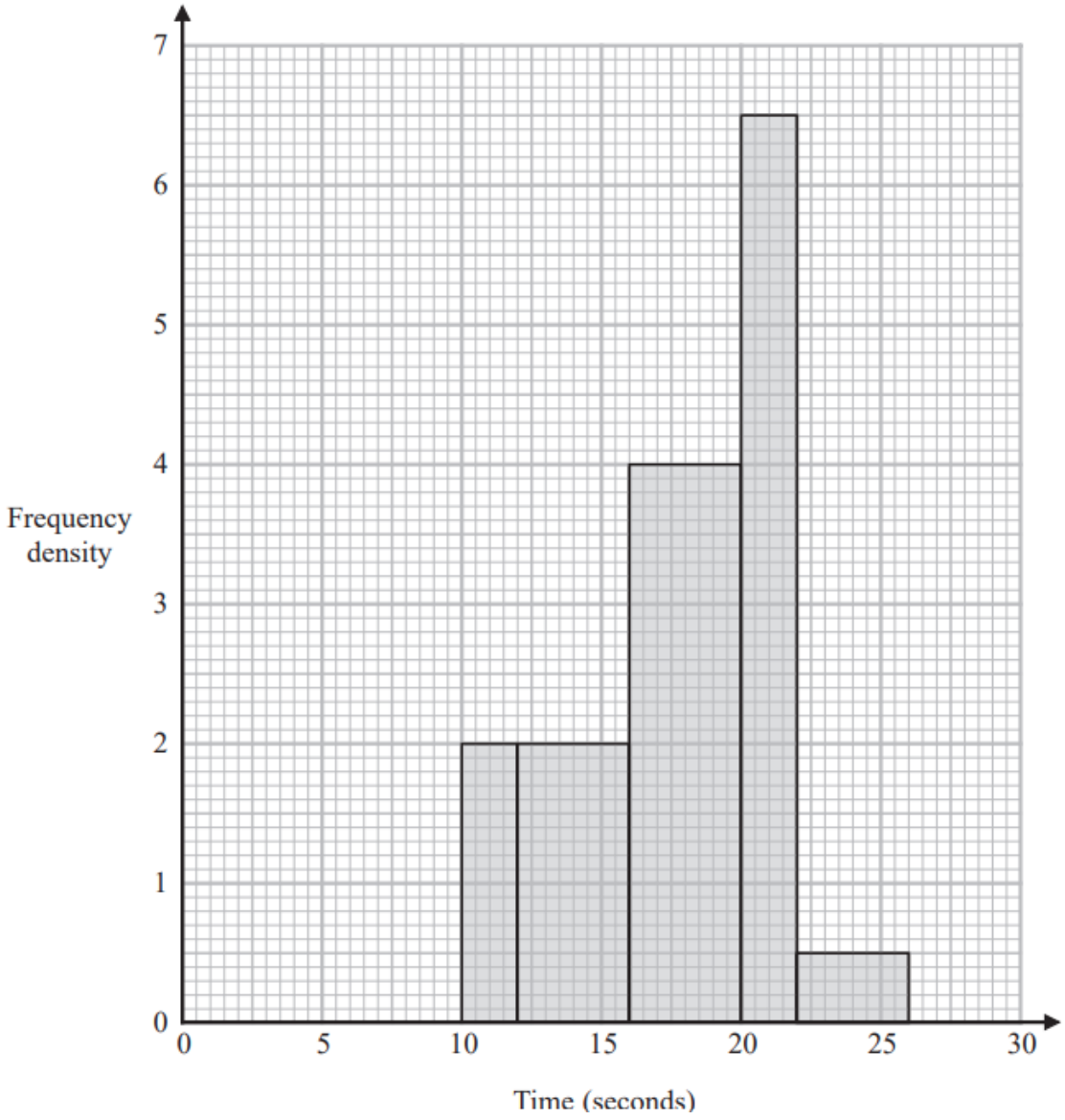
(a) Use the histogram to complete the table.

(1)

(b) Use the table to complete the histogram.

(2)

The histogram below gives information about the times taken by 43 students to run a different race.



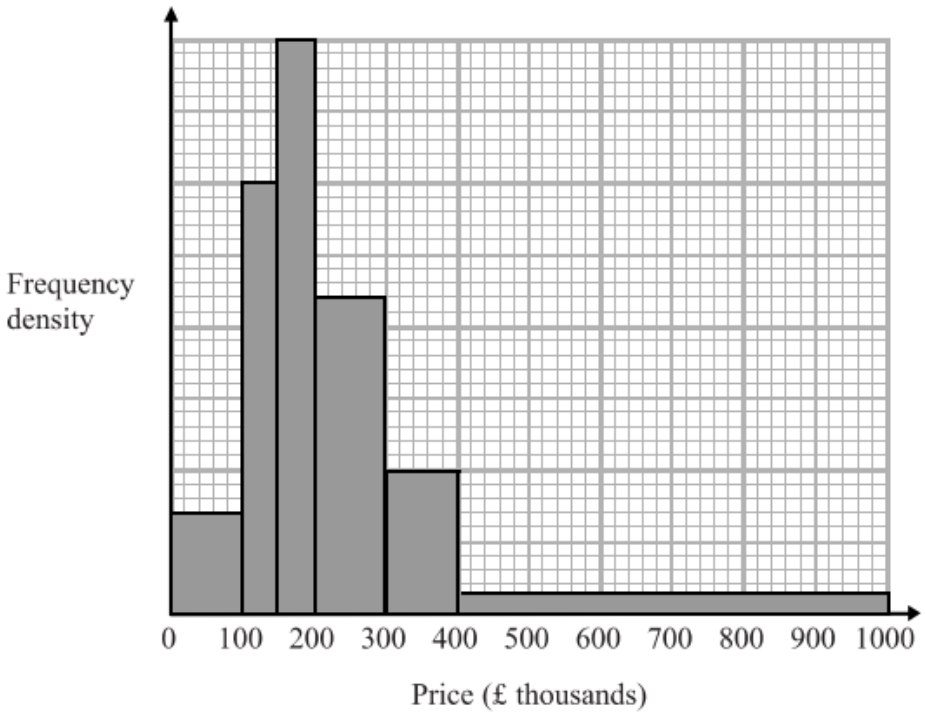
(c) Work out an estimate for the median of the times taken by these 43 students to run the race.

..... seconds

(3)

(Total for Question 15 is 6 marks)

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

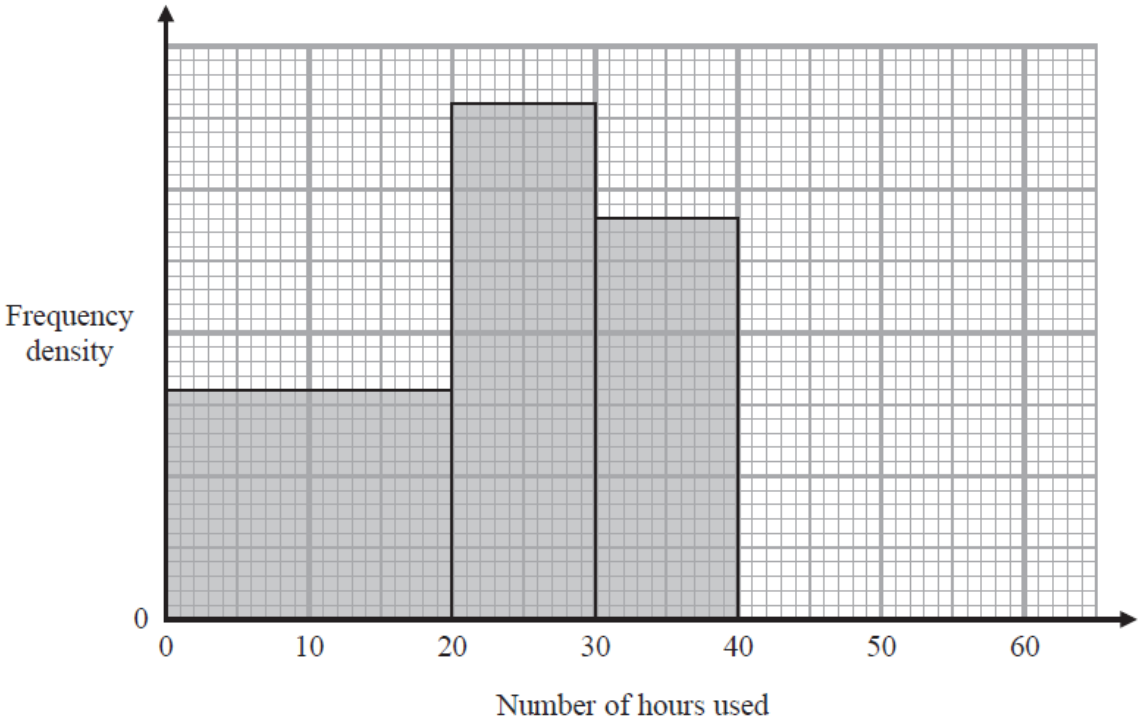


20 houses in the village have a price between £300 000 and £400 000

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

(Total for Question 16 is 3 marks)

16 The histogram gives information about the number of hours some students used their phones last week.
The histogram is incomplete.



28 students used their phones for between 30 and 40 hours.
24 students used their phones for between 40 and 60 hours.

(a) Use this information to complete the histogram.

(2)

No student used their phone for more than 60 hours.

(b) Work out the total number of students.

.....

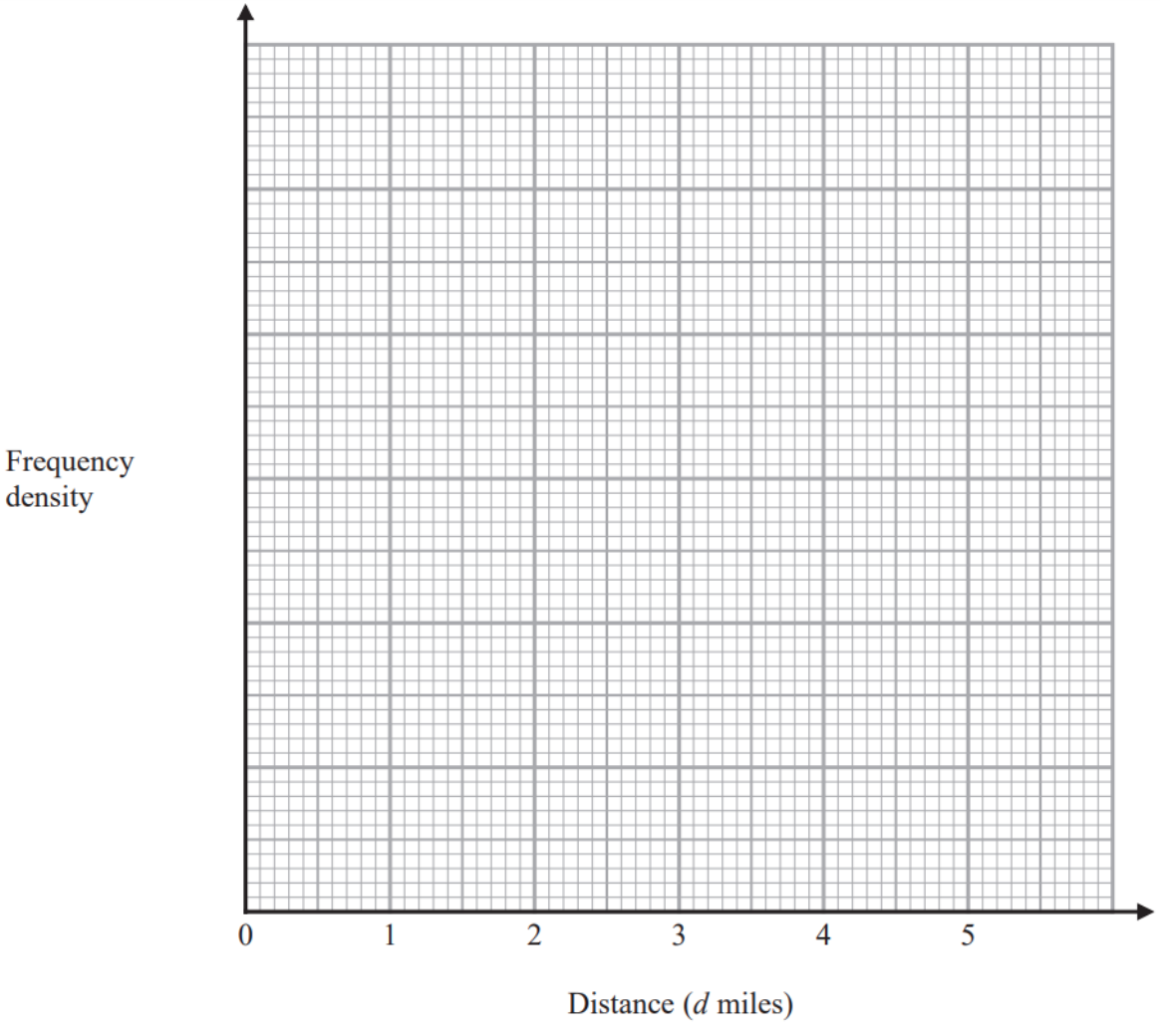
(2)

(Total for Question 16 is 4 marks)

17 The table gives information about the distances, in miles, that some Year 10 students live from school.

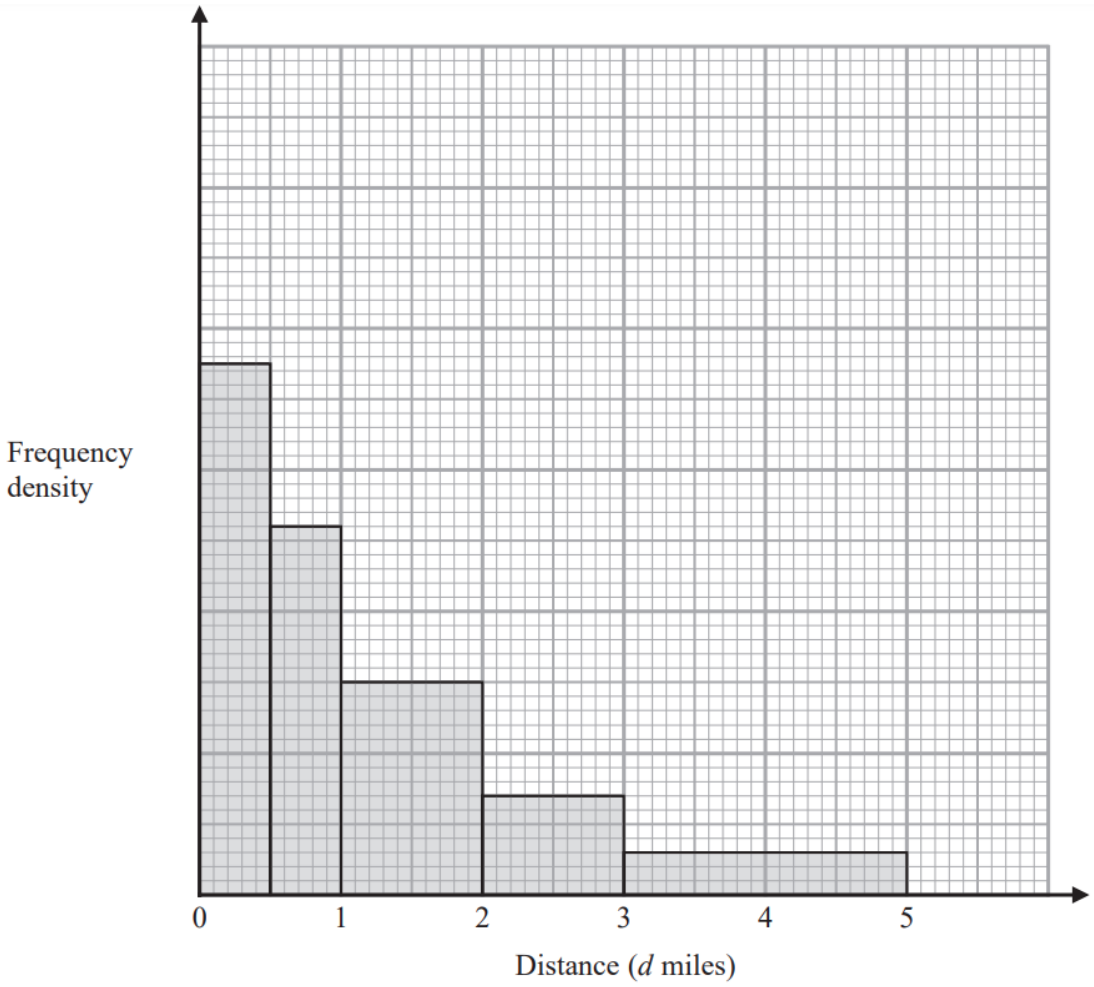
Distance (d miles)	Frequency
$0 < d \leqslant 1.0$	90
$1.0 < d \leqslant 1.5$	48
$1.5 < d \leqslant 2.0$	22
$2.0 < d \leqslant 3.0$	8
$3.0 < d \leqslant 5.0$	12

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



(3)

The histogram below shows information about the distances, in miles, that some Year 11 students live from school.



The number of Year 11 students who live between 1 and 2 miles from school is n.

(b) Find an expression, in terms of n, for the number of Year 11 students who live between 3 and 5 miles from school.

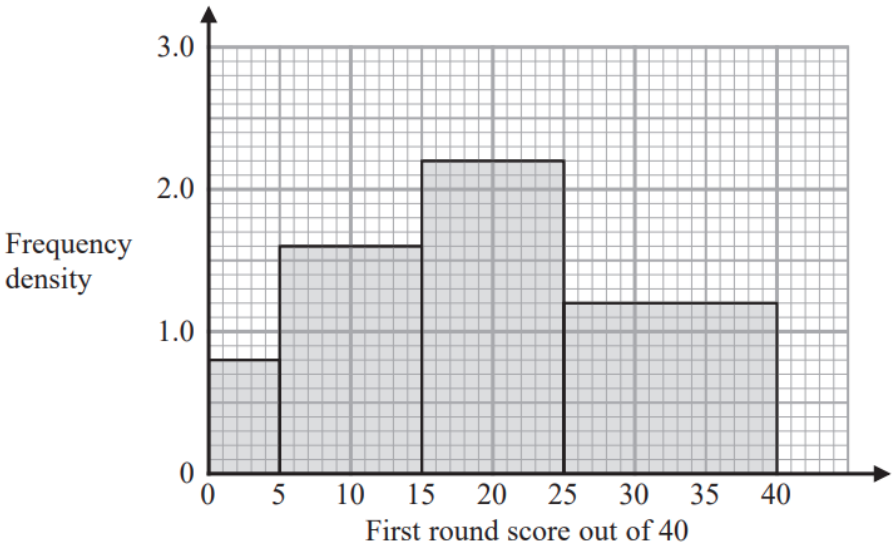
.....

(2)

(Total for Question 17 is 5 marks)

17 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.



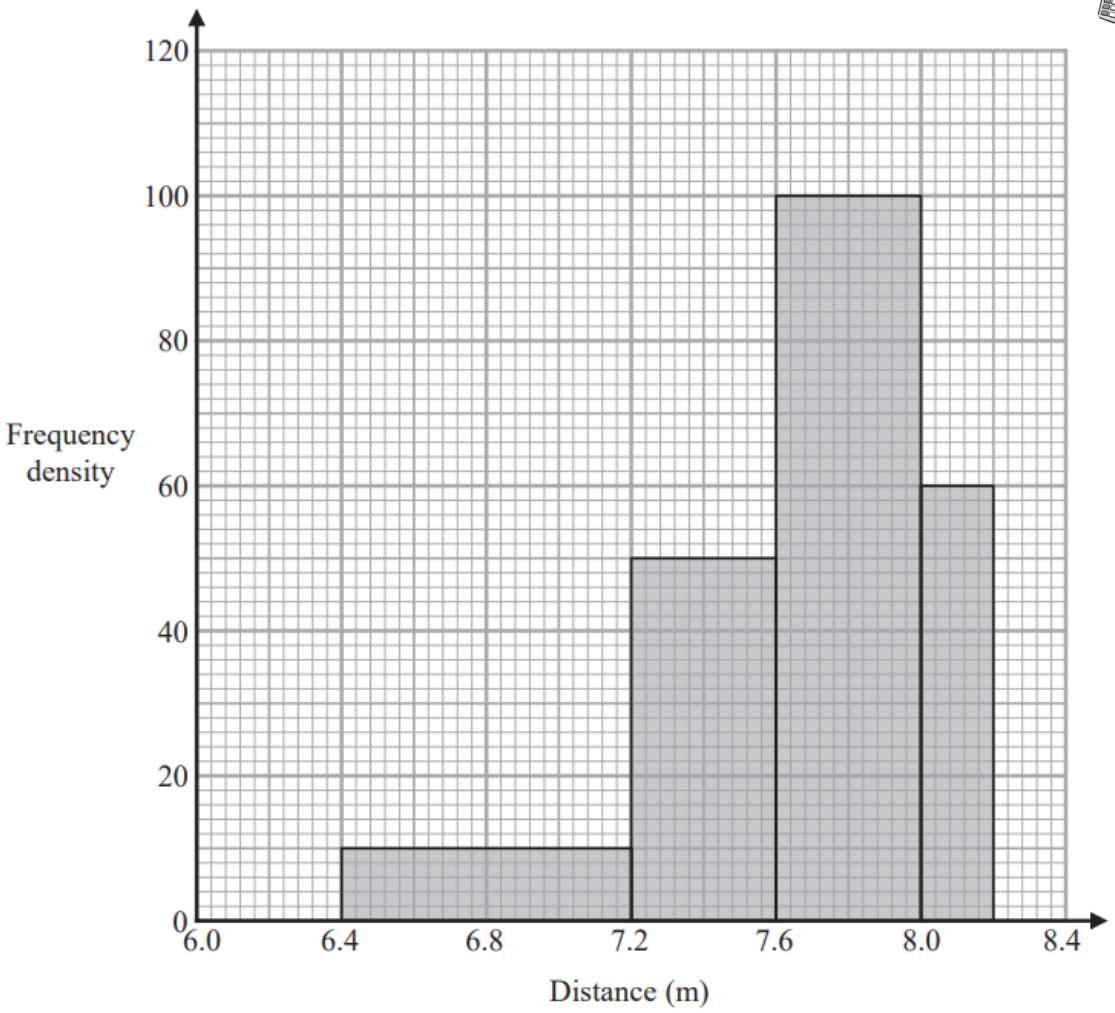
20% of the people got a score high enough for them to qualify for the second round.

Work out an estimate for the score needed to qualify for the second round.
You must show all your working.

.....

(Total for Question 17 is 4 marks)

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

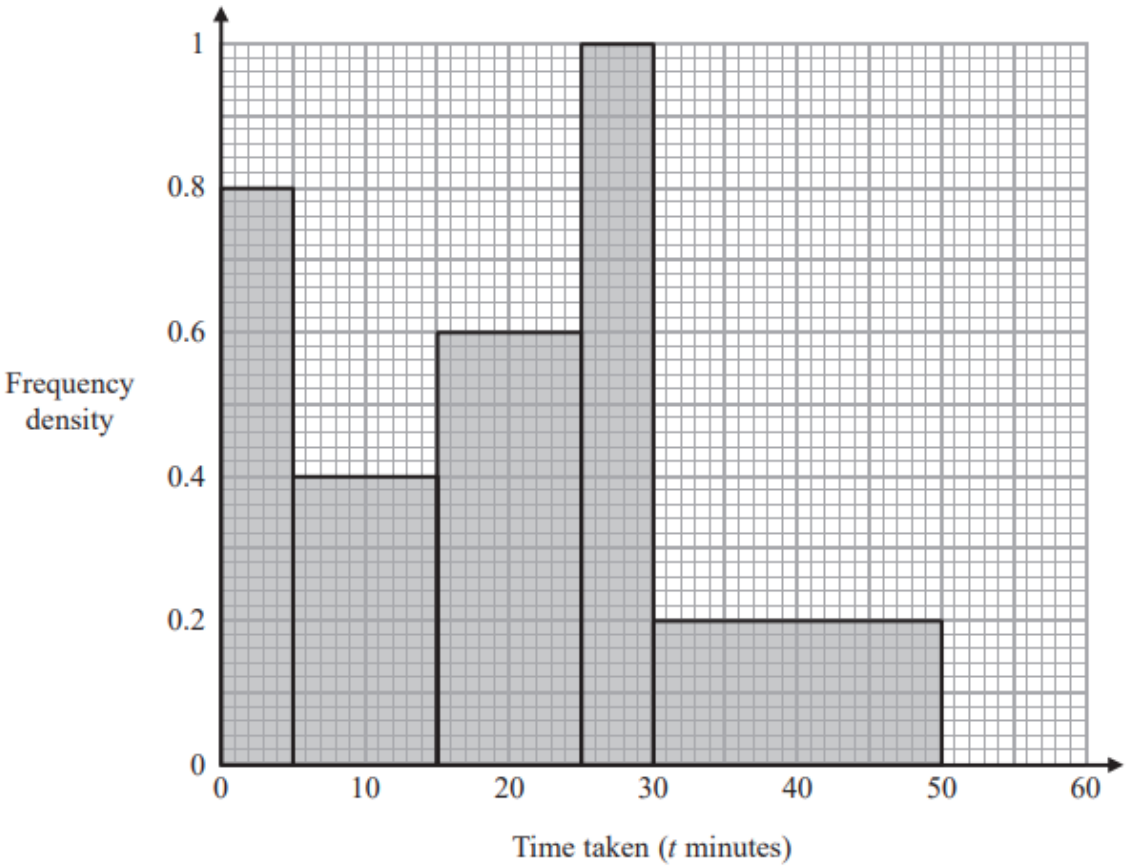


Calculate an estimate for the mean distance.

..... m

(Total for Question 17 is 4 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

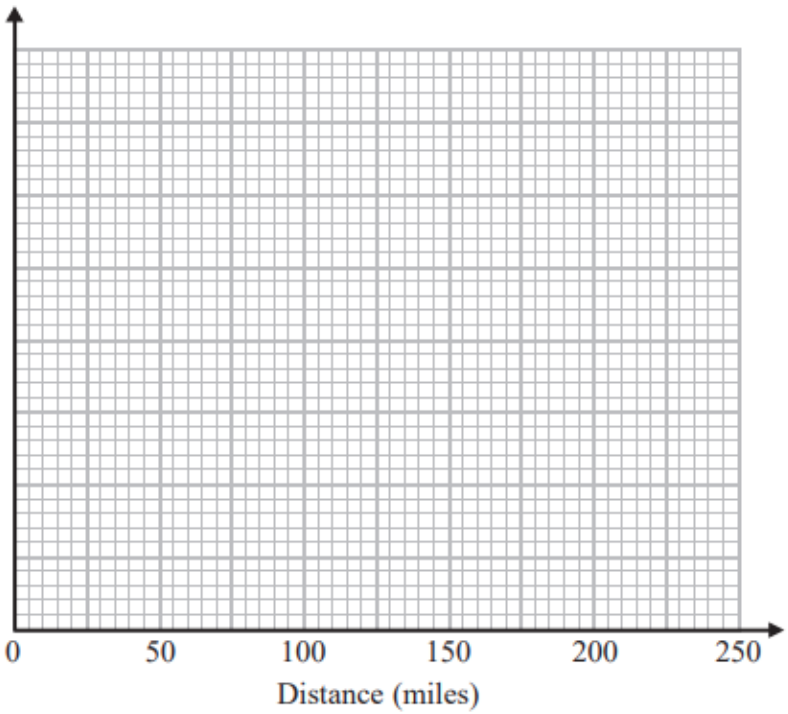
(2)

June 2018 – Paper 2H **(Total for Question 17 is 4 marks)**

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

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

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



(3)

(b) Estimate the median distance.

..... miles

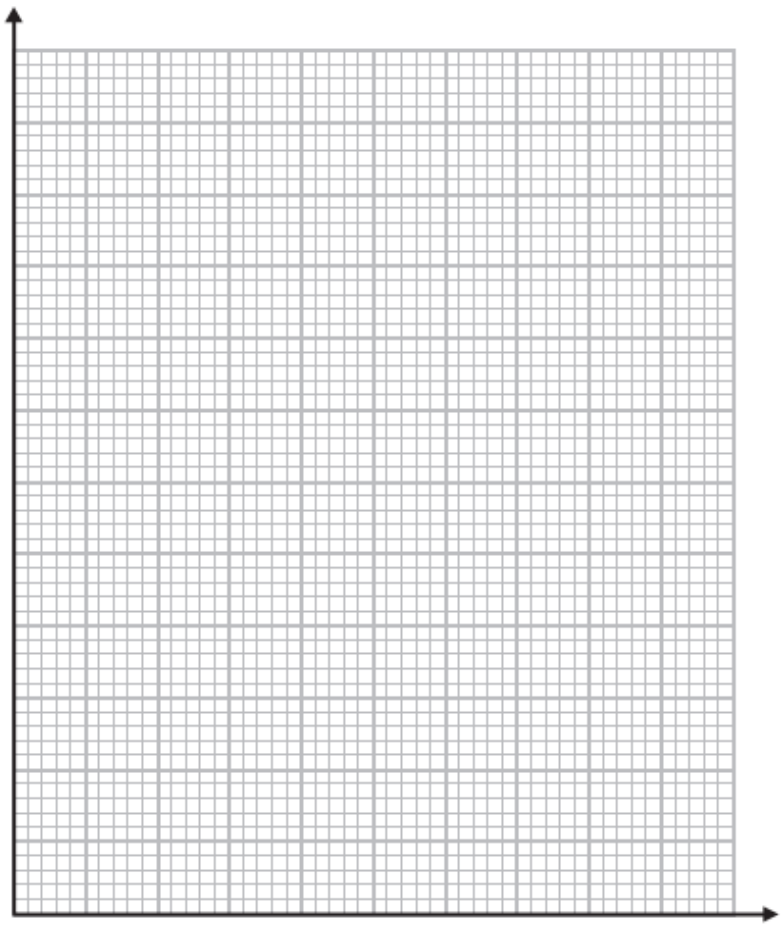
(2)

(Total for Question 17 is 5 marks)

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

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

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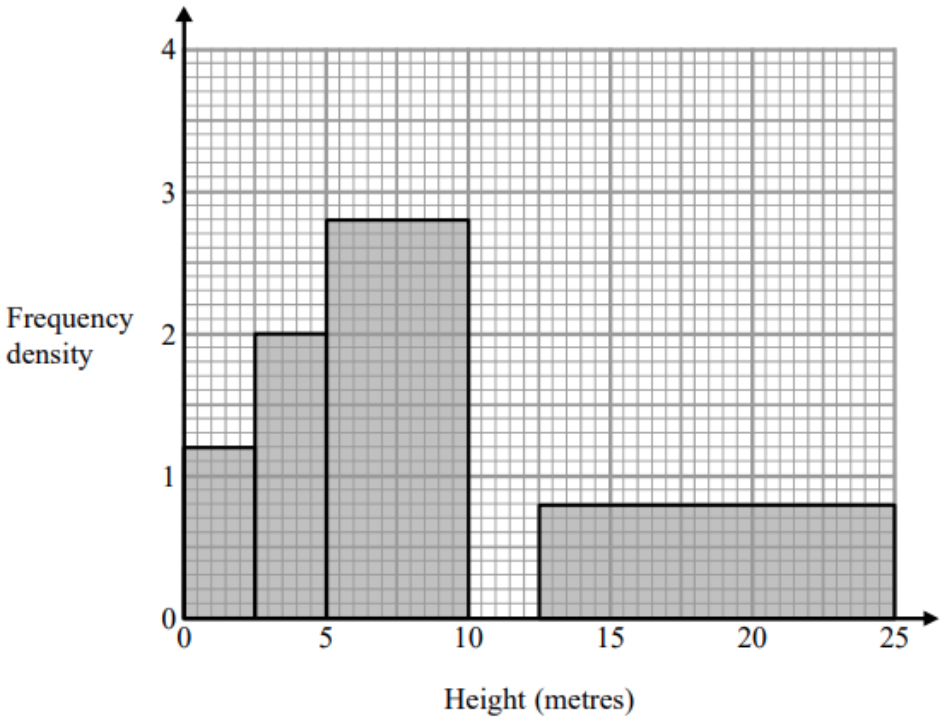
(2)

(Total for Question 17 is 5 marks)

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

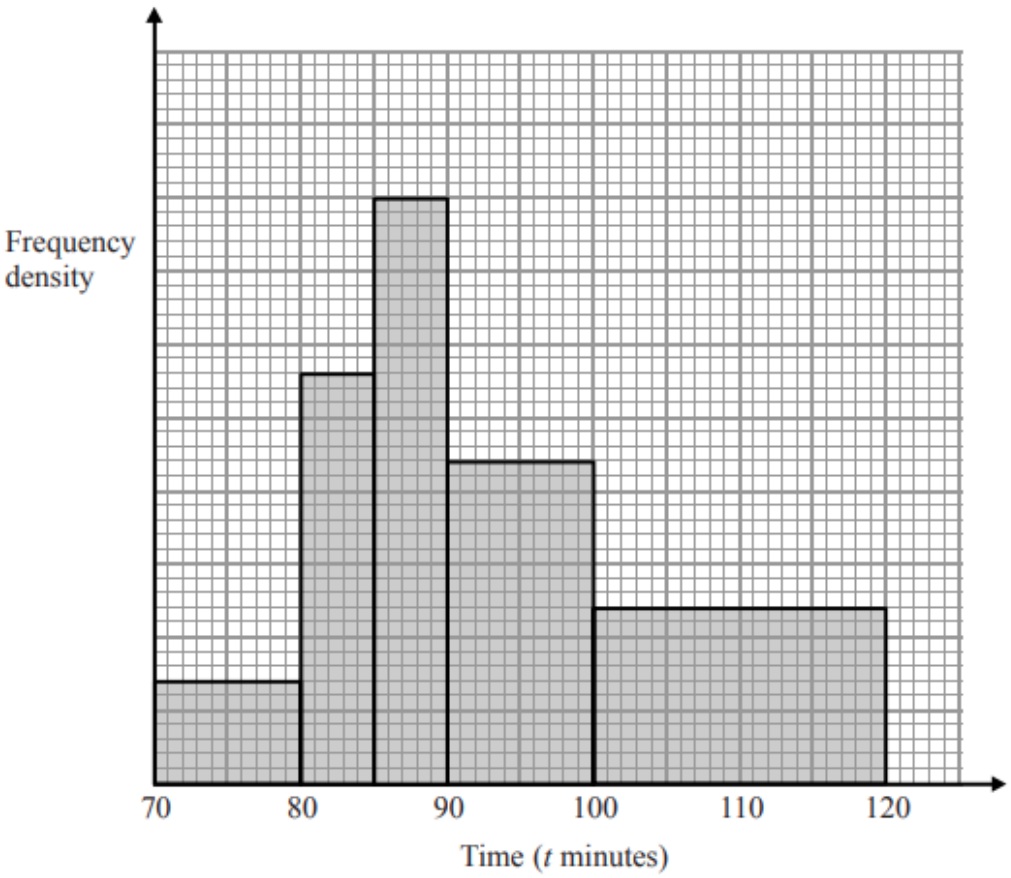


20% of the trees in the park have a height between 10 metres and 12.5 metres.
None of the trees in the park have a height greater than 25 metres.

Complete the histogram.

(Total for Question 18 is 3 marks)

19 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.

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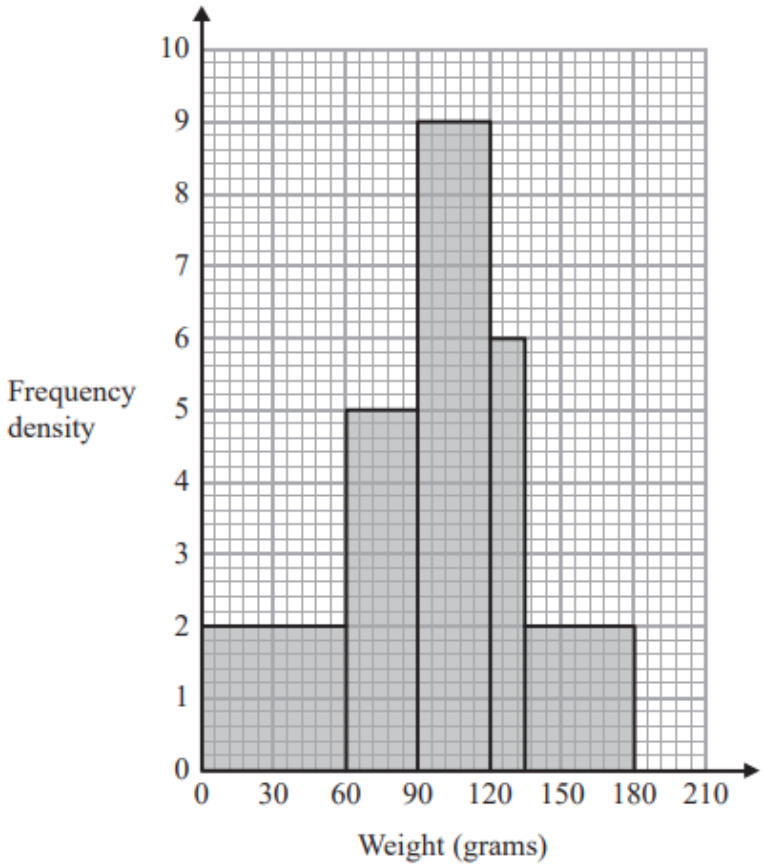
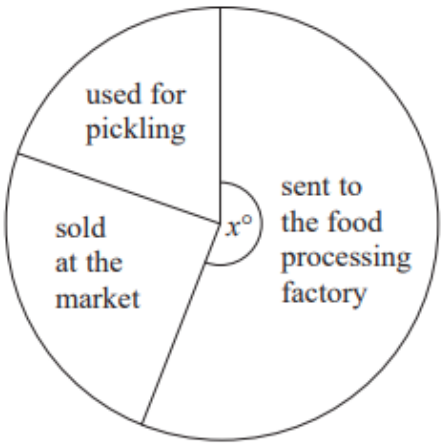
(Total for Question 19 is 4 marks)

21 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.

$x =$ .....

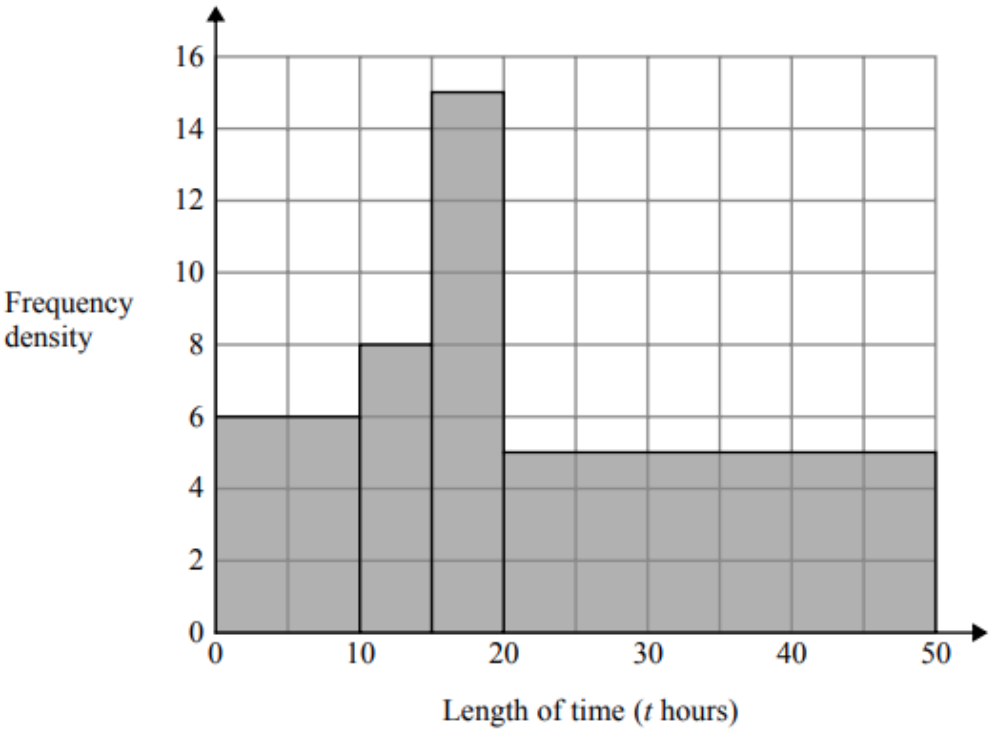
June 2019 – Paper 3H **(Total for Question 21 is 4 marks)**

22 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
$0 \leqslant t < 10$	6
$10 \leqslant t < 15$	8
$15 \leqslant t < 20$	15
$20 \leqslant t < 40$	5

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



Write down **two** mistakes Bhavna made.

1 .....

.....

2 .....

.....

(Total for Question 22 is 2 marks)