In the style of:
Pearson Edexcel
Level 1/Level 2 GCSE (9 - 1)

Centre Number | Candidate Number

Mathematics

Histograms

Higher Tier

GCSE style questions arranged by topic | Paper Reference **1MA1/1H**

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*.
- **Calculators may not be used.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- You must **show all your working out**.

Information

- The total mark for this paper is
- 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.
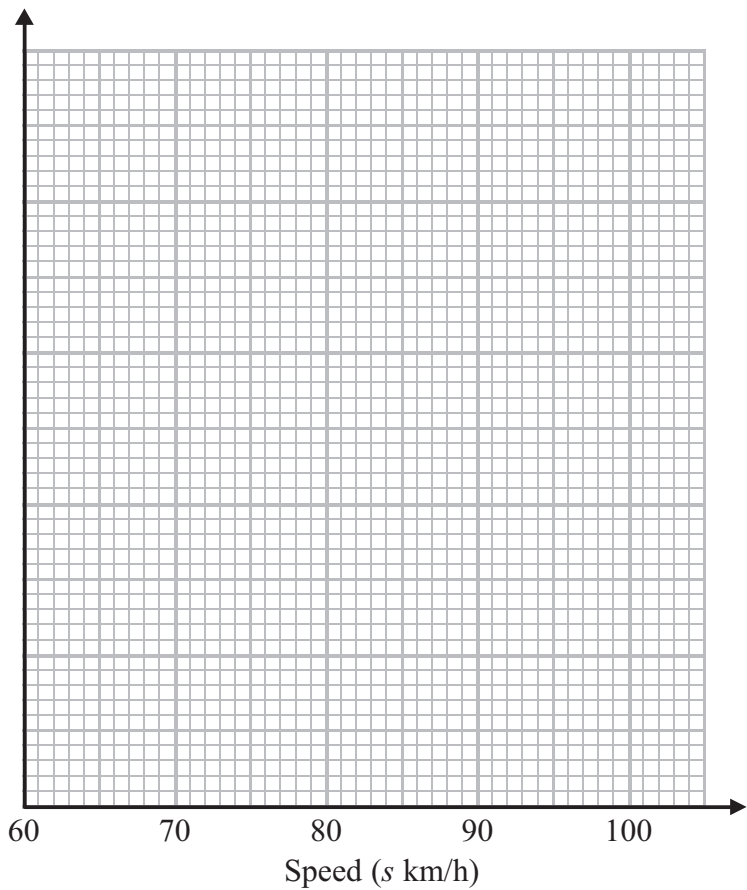- Check your answers if you have time at the end.

Turn over ▶

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

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

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

Speed (s km/h)

(3)

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

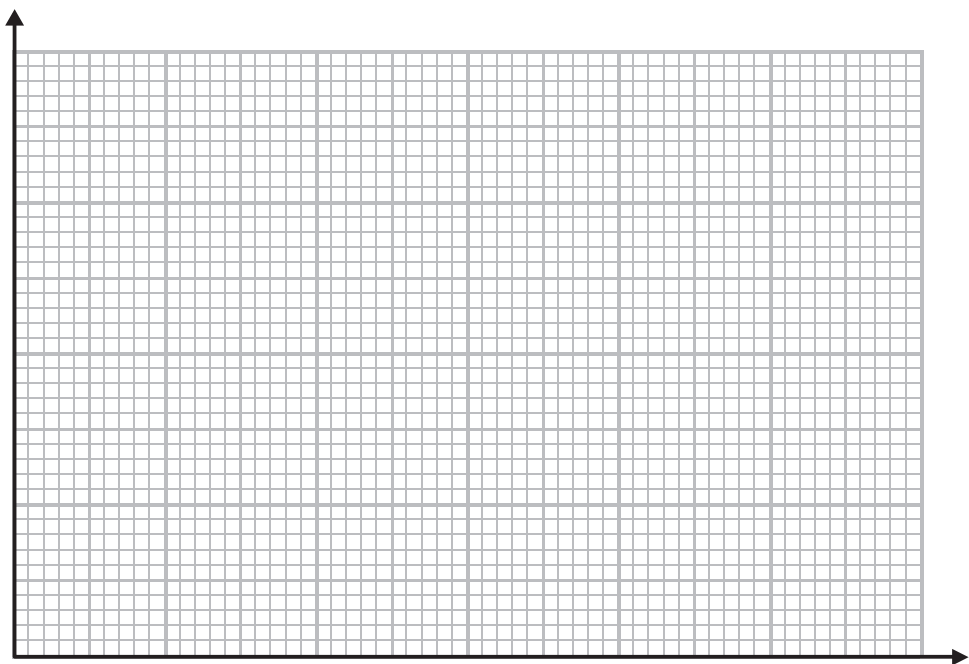.......................................

(2)

(Total for Question 1 is 5 marks)

2 The table gives information about the heights, *h* centimetres, of plants in a greenhouse.

Height (*h* centimetres)	Frequency
$0 < h \leqslant 2$	7
$2 < h \leqslant 4$	14
$4 < h \leqslant 8$	16
$8 < h \leqslant 16$	22
$16 < h \leqslant 20$	12

Draw a histogram to show this information.

(Total for Question 2 is 3 marks)

3 The table gives information about the ages of the population of a city.

Age (a years)	Number (thousands)
$0 \leqslant a < 10$	9
$10 \leqslant a < 20$	8
$20 \leqslant a < 35$	10
$35 \leqslant a < 50$	19
$50 \leqslant a < 55$	4
$55 \leqslant a < 65$	7
$65 \leqslant a < 80$	4
$80 \leqslant a < 100$	1

(a) On the graph paper below, using a scale of 1 cm to represent 10 years on the Age axis, draw a histogram to represent this information.

(4)
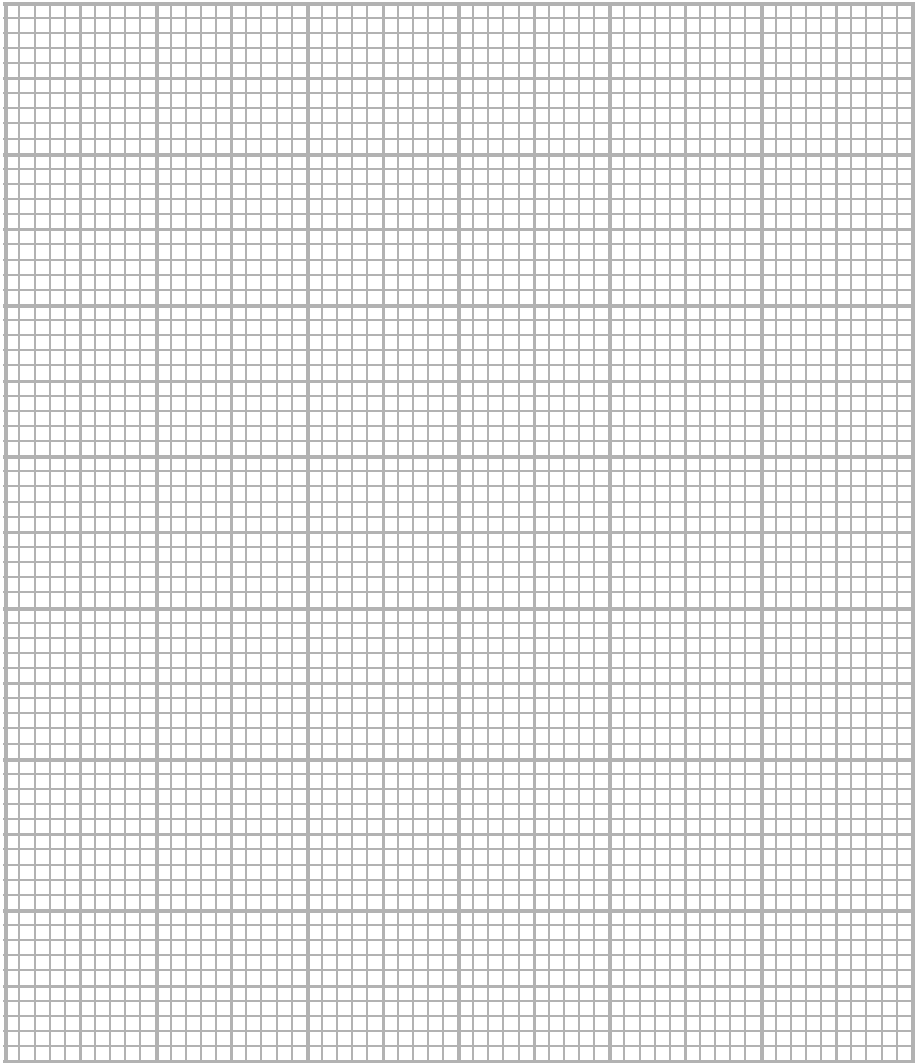
(b) Write down the class interval in which the median lies.

<div align="right">(1)</div>

(c) Calculate, giving your answer in years and months, an estimate of the mean age of the population.
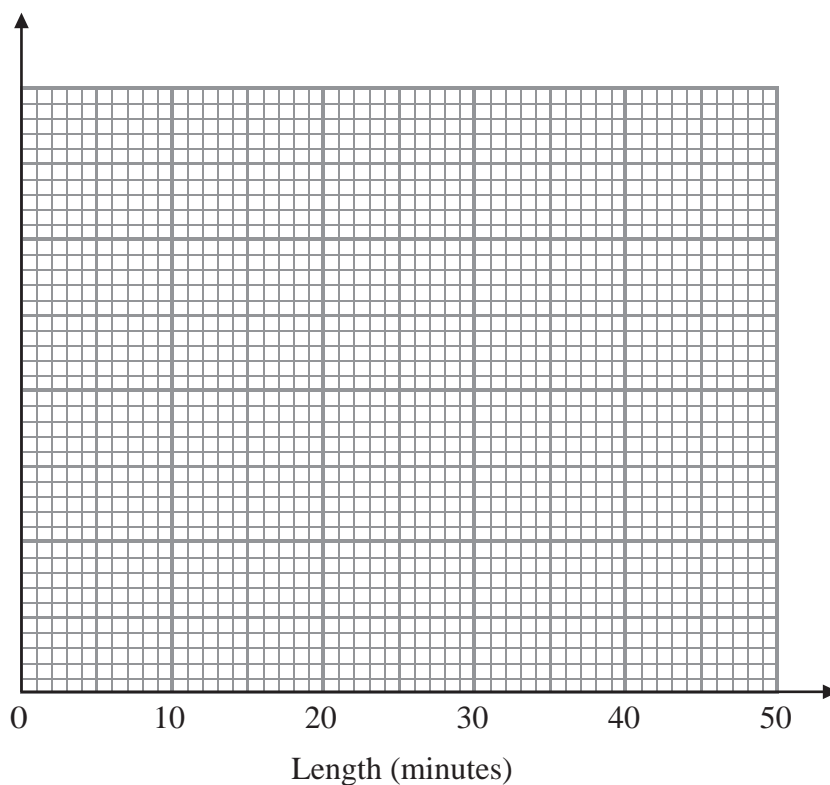
<div align="right">(4)</div>

<div align="center">**(Total for Question 3 is 9 marks)**</div>

4 A pub has 64 customers one evening.
The table gives information about the lengths, in minutes, of the time the customers stayed for.

Length (x) minutes	Frequency
$0 < x \leqslant 5$	1
$5 < x \leqslant 15$	10
$15 < x \leqslant 30$	17
$30 < x \leqslant 40$	21
$40 < x \leqslant 45$	15

Draw a histogram for this information.


Length (minutes)

(Total for Question 4 is 4 marks)

5 The incomplete histogram and table show information about the weights of some vehicles.

Weight (w) in kg	Frequency
$0 < w \leqslant 1000$	16
$1000 < w \leqslant 2000$	
$2000 < w \leqslant 4000$	
$4000 < w \leqslant 6000$	14
$6000 < w \leqslant 8000$	
$8000 < w \leqslant 12000$	4

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

(2)

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

(2)

Weight (w) in kg
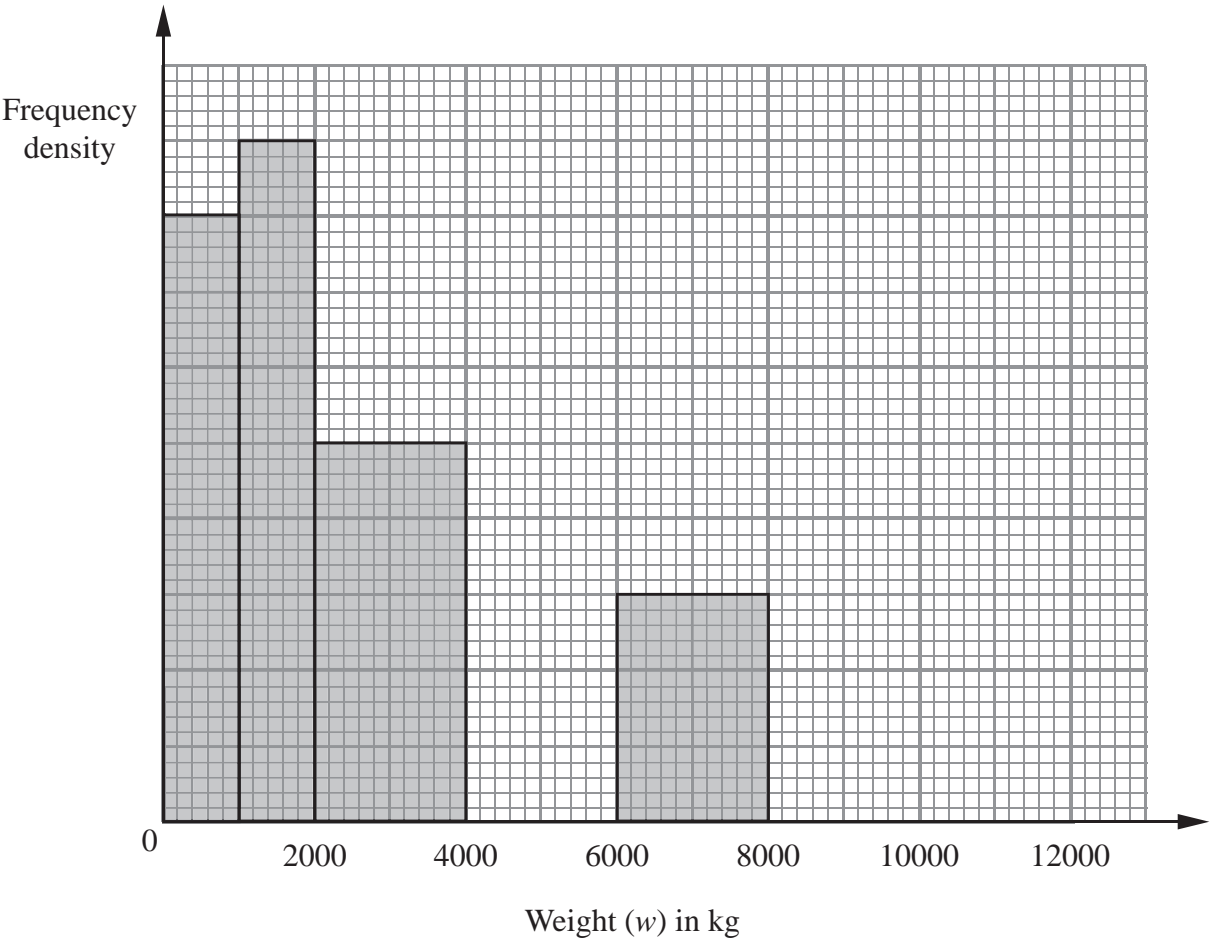
(Total 4 marks)

6 One hundred hikers went for a walk. The times taken by the hikers to complete the walk are summarised in the table.

Time (t)	Number of hikers
$0 \leqslant t < 25$	15
$25 \leqslant t < 35$	11
$35 \leqslant t < 40$	27
$40 \leqslant t < 60$	15
$60 \leqslant t < 90$	15
$90 \leqslant t < 100$	12

(a) Use the information given in the table to calculate an estimate for the mean time taken, to one decimal place.
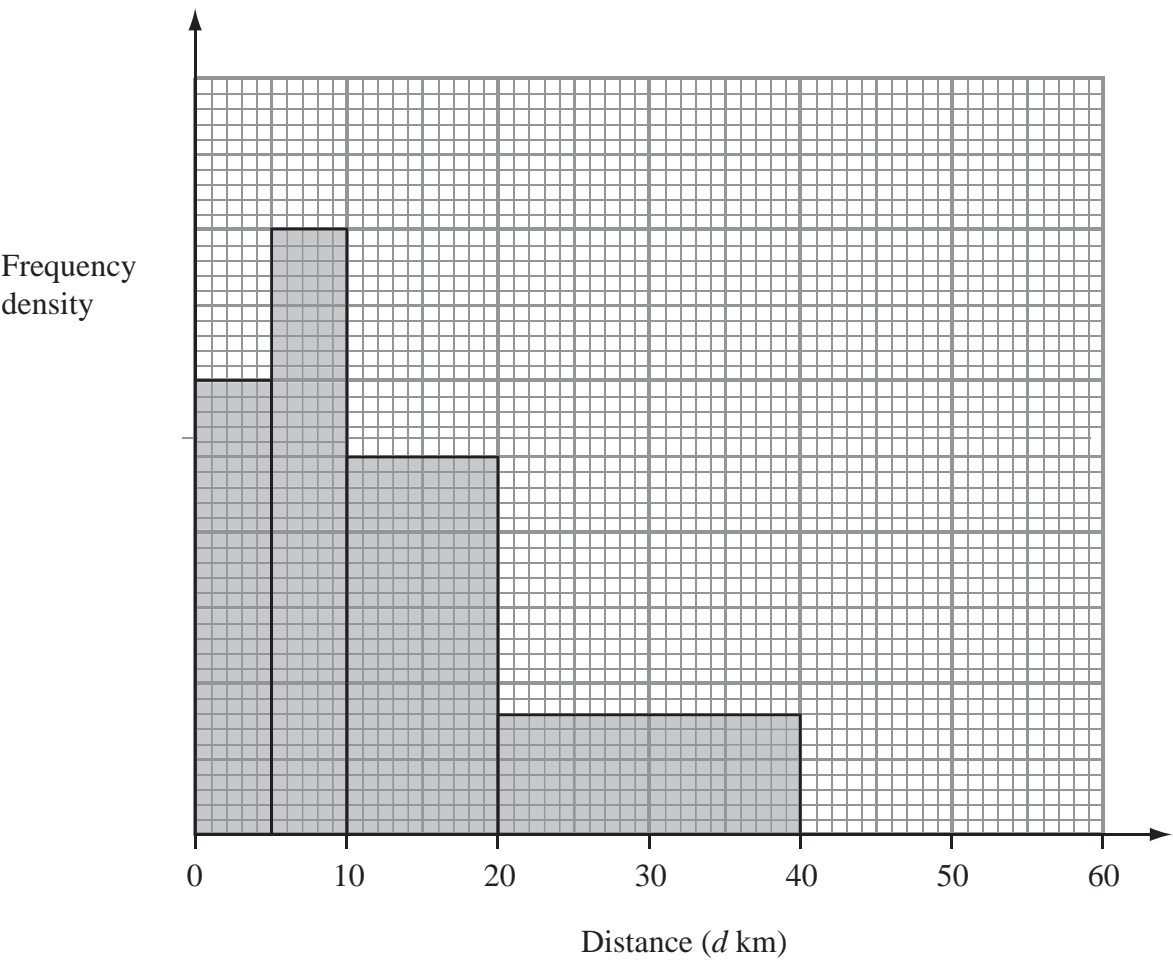
(3)

(b) Given that the frequency density for the $40 \leqslant t < 60$ time interval is 0.75, complete the histogram to represent this information on the graph paper.
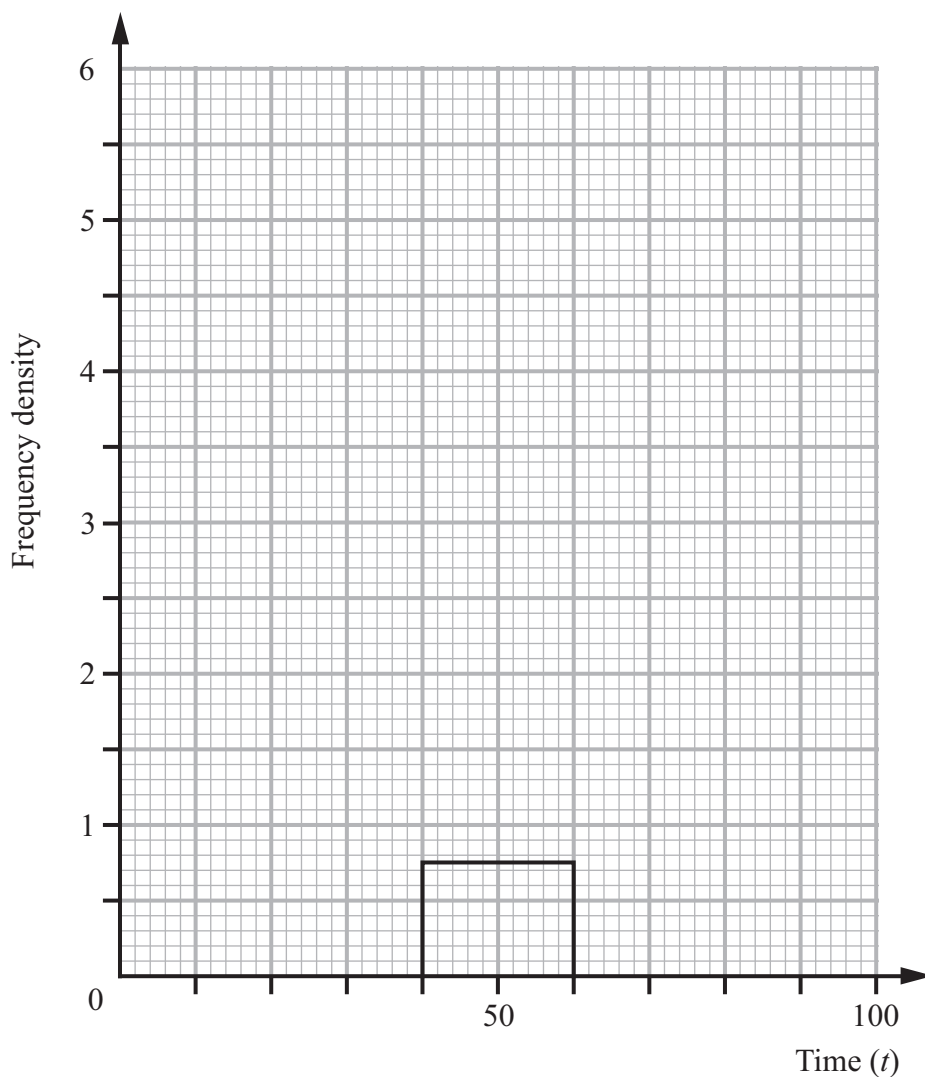
(Total for Question 6 is 7 marks) **(4)**

7 The incomplete histogram and table give some information about the distances some cyclists travel each day.

Frequency density

Distance (*d* km)

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

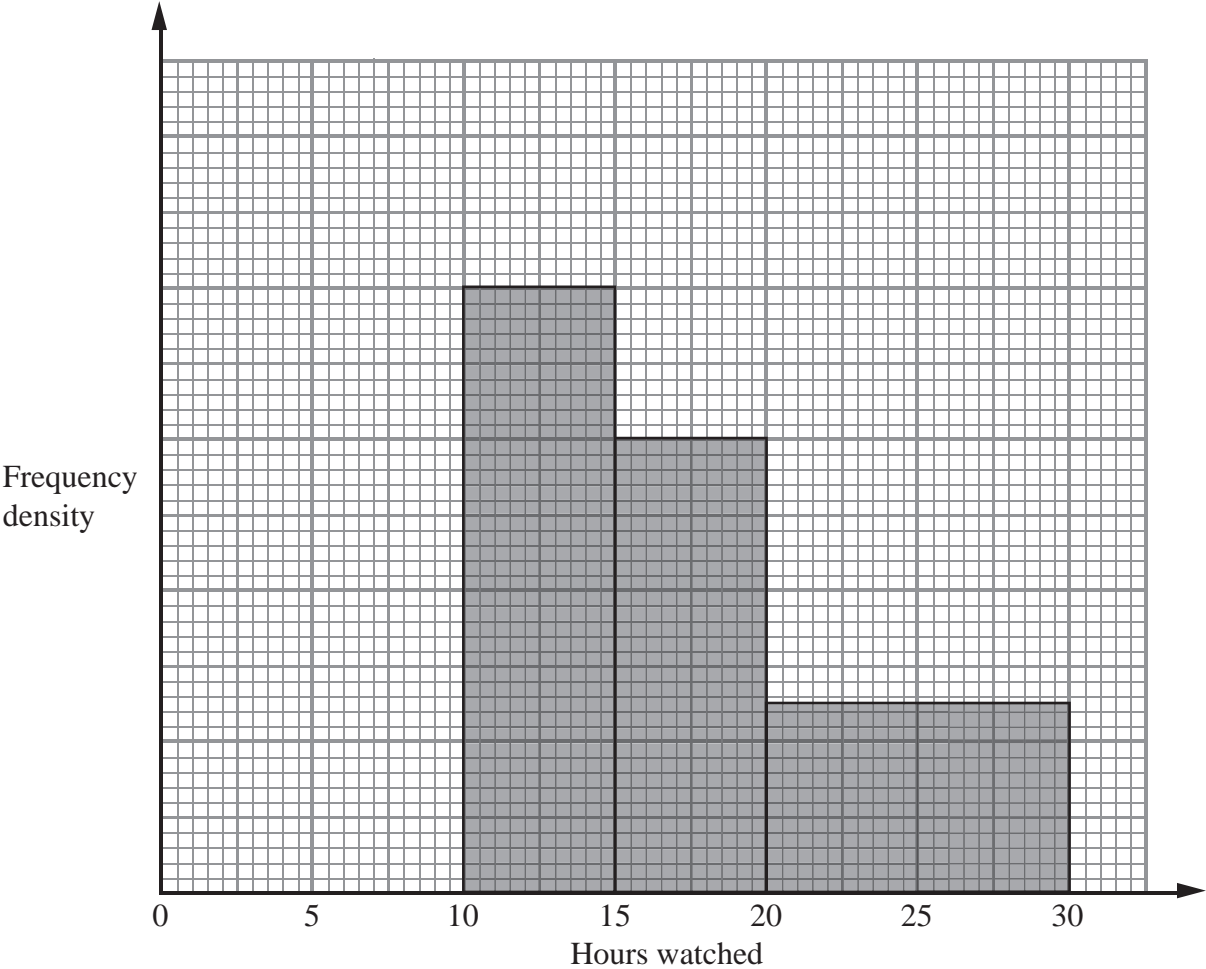| Distance (*d* km)	Frequency
$0 < d \leqslant 5$	15
$5 < d \leqslant 10$	20
$10 < d \leqslant 20$	
$20 < d \leqslant 40$	
$40 < d \leqslant 60$	15

(2)

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

(1)

(Total for Question 7 is 3 marks)

8   Terry asked the students in his class how many hours they played on computers last week.

The incomplete histogram was drawn using his results.

Eight students played for between 10 and 15 hours. Six students

played for between 0 and 10 hours.

(a) Use this information to complete the histogram.

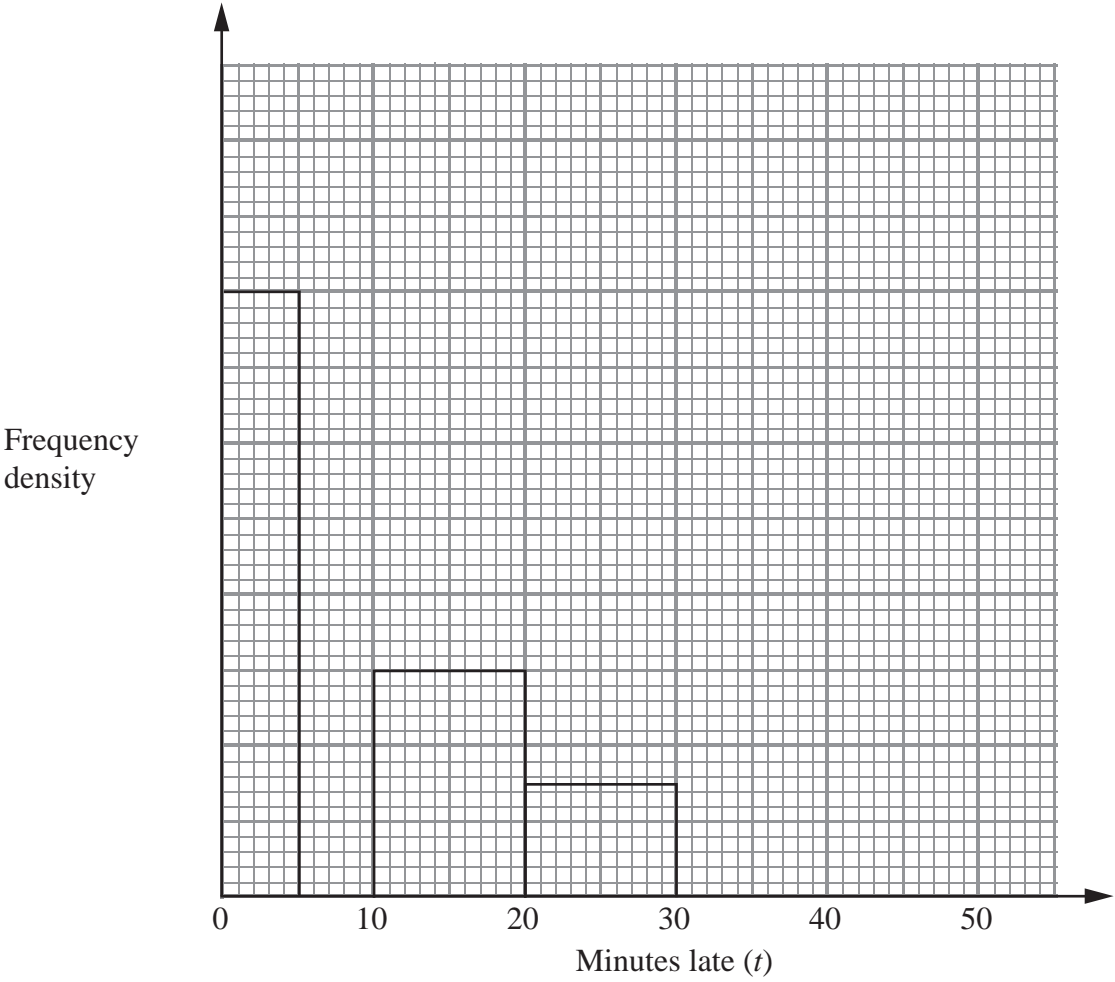(2)

No students watched television for more than 30 hours.

(b) Work out how many students Terry asked.

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(2)

(Total for Question 8 is 4 marks)

9 Some trains from London to Birmingham were late.
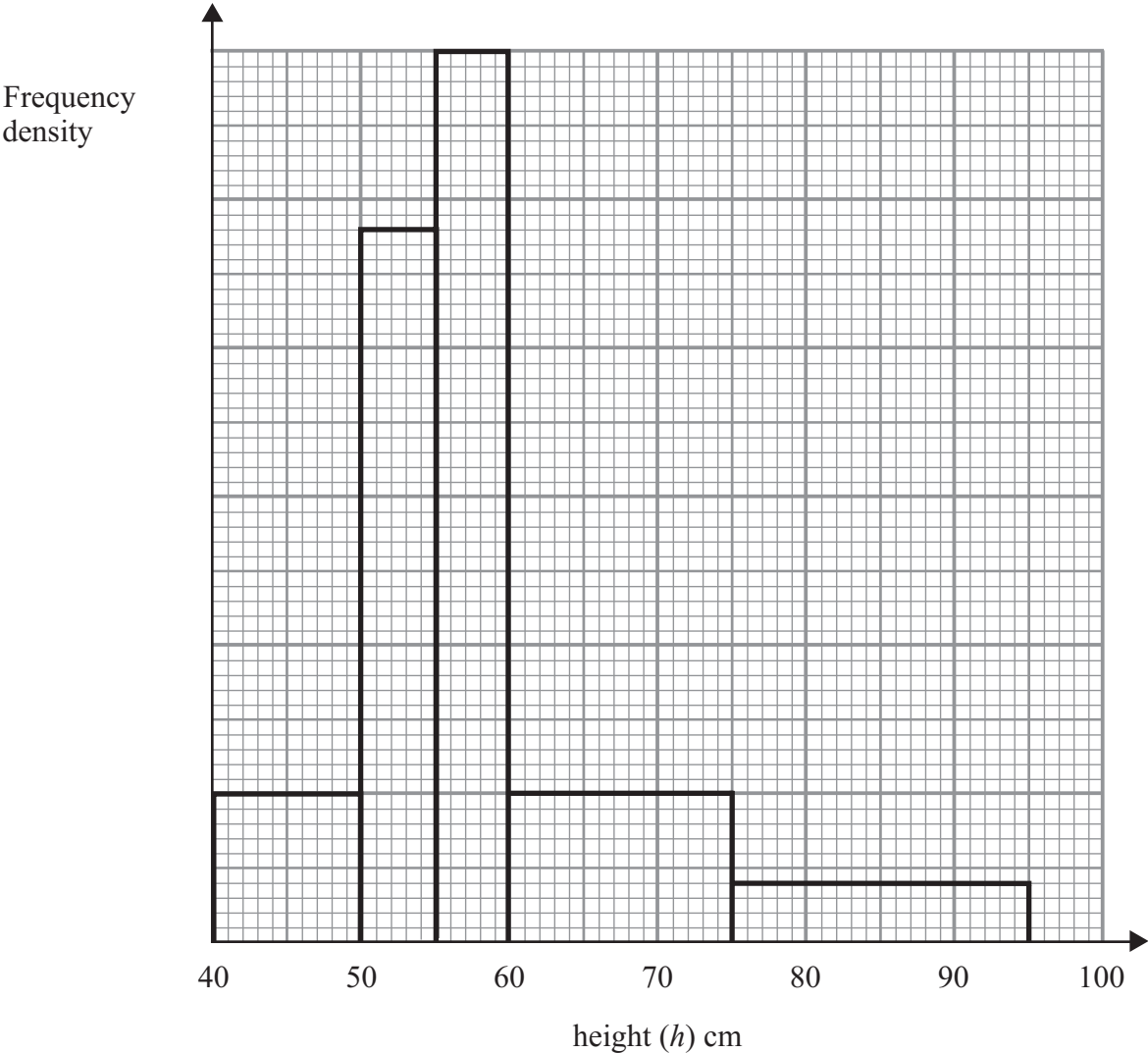The incomplete table and histogram gives some information about how late the trains were.

Minutes late (*t*)	Frequency
$0 < t \leqslant 5$	16
$5 < t \leqslant 10$	10
$10 < t \leqslant 20$	
$20 < t \leqslant 30$	
$30 < t \leqslant 50$	6

Frequency density

Minutes late (*t*)

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

(2)

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

(2)

(Total for Question 9 is 4 marks)

10

The incomplete table and histogram give some information about the heights of some tomato plants in a greenhouse.

height (*h*) cm

Use the information in the histogram to complete the frequency table.

Height (*h*) cm	Frequency
$40 \leqslant h < 50$	10
$50 \leqslant h < 55$	
$55 \leqslant h < 60$	
$60 \leqslant h < 75$	15
$75 \leqslant h < 95$	8

(Total for Question 10 is 2 marks)

11 The incomplete table and histogram give some information about the weights (in kg) of some boxes.

Weight (*w* kg)	Frequency
$100 < w \leqslant 130$	30
$130 < w \leqslant 150$	
$150 < w \leqslant 160$	
$160 < w \leqslant 180$	40
$180 < w \leqslant 210$	18
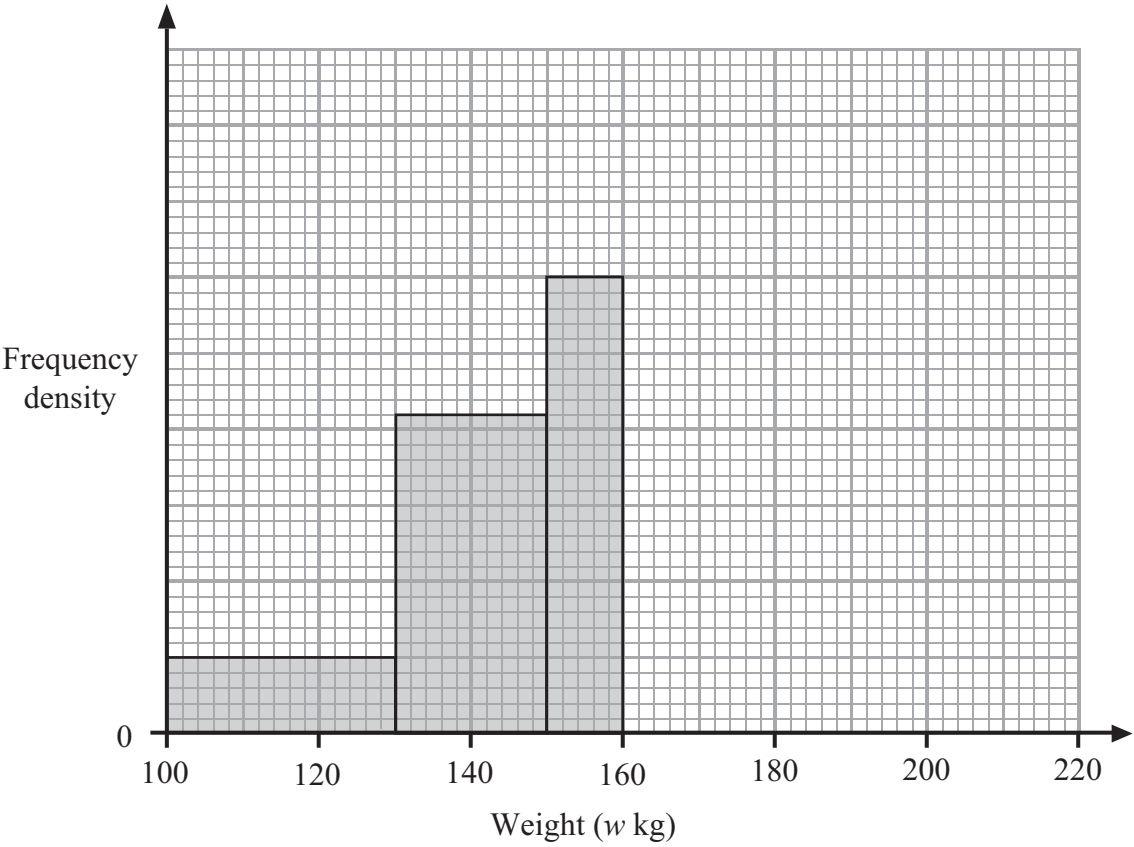
(a) Use the histogram to complete the table.

(2)

(b) Use the table to complete the histogram.

(2)

(Total for Question 11 is 4 marks)

12 The table and histogram show information about the length of time it took 165 adults to drink some water.

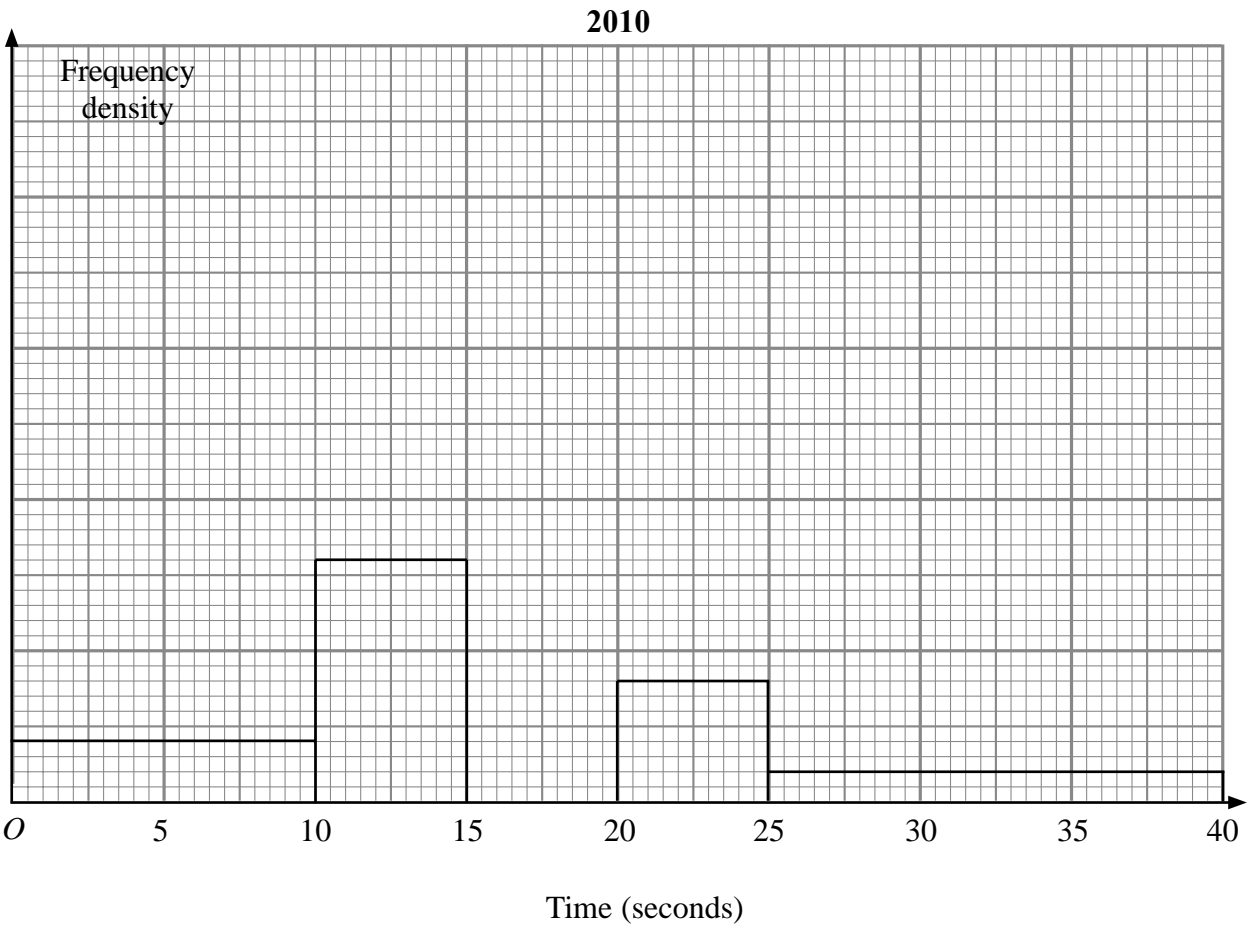| Time (t seconds)	Frequency
$0 < t \leqslant 10$	20
$10 < t \leqslant 15$	
$15 < t \leqslant 17.5$	30
$17.5 < t \leqslant 20$	40
$20 < t \leqslant 25$	
$25 < t \leqslant 40$	

None of the adults took more than 40 seconds to drink the water

(a) Use the table to complete the histogram.

(2)

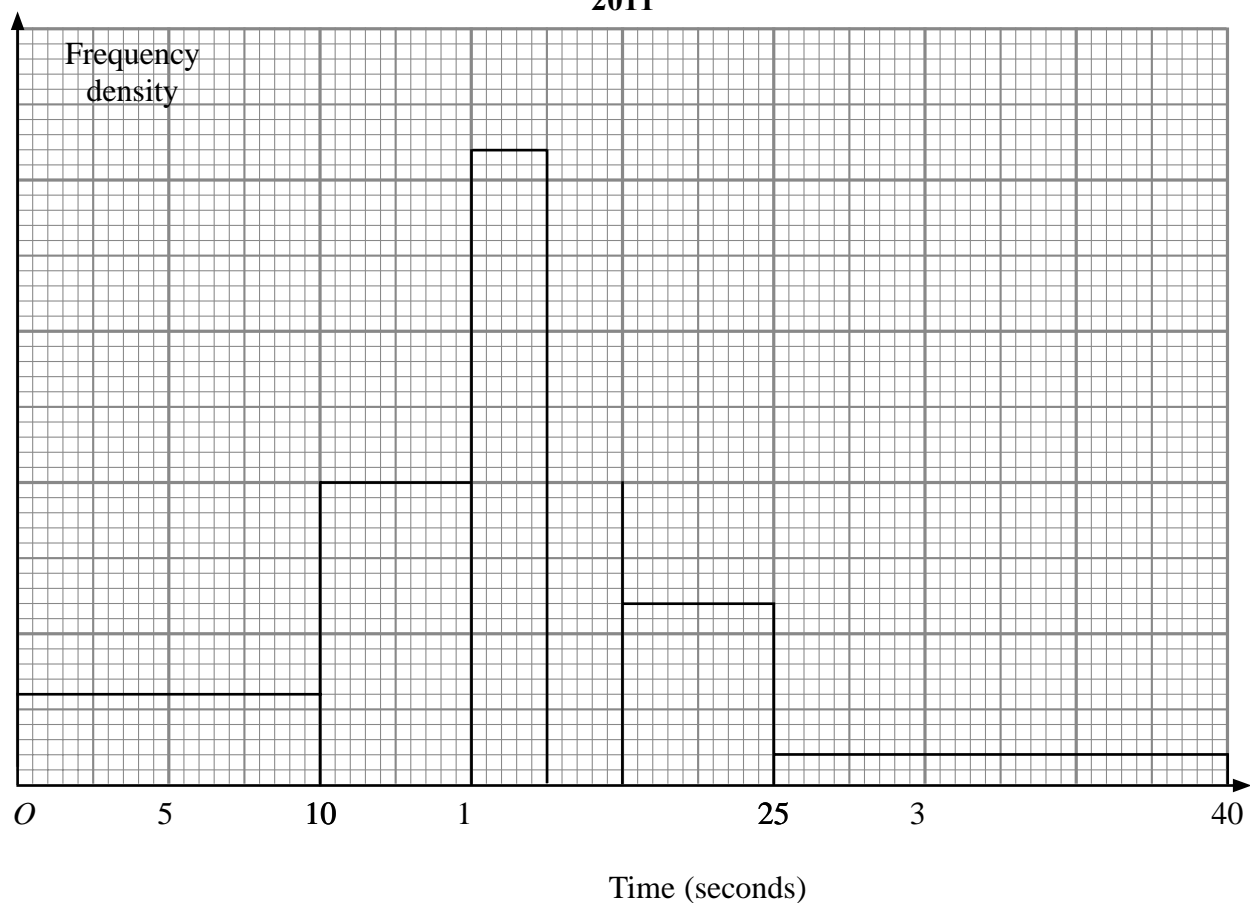(b) Use the histogram to complete the table.

(2)

2010

Time (seconds)

2011

Time (seconds)

The histogram shows information about the time it took some children to drink the water None of the children took more than 40 seconds to drink the water.

110 children took up to 12.5 seconds to drink the water.

(c) Work out an estimate for the number of children who took 21 seconds or more to drink the water.

....

(3)

(Total for Question 12 is 7 marks)

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

The table shows information about his 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

David made some mistakes when he drew a histogram for this information.
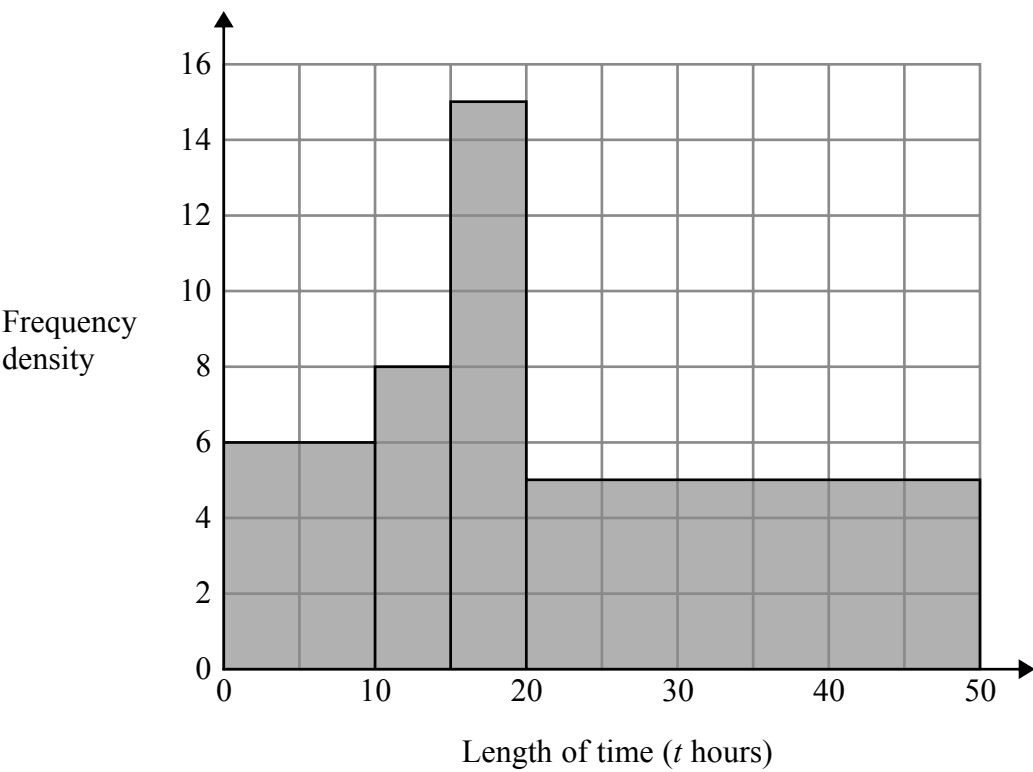
Write down **two** mistakes David made.

1 ....

....

2 ....

....

(Total for Question 13 is 2 marks)

14 The histogram shows the ages, in years, of members of a chess club.
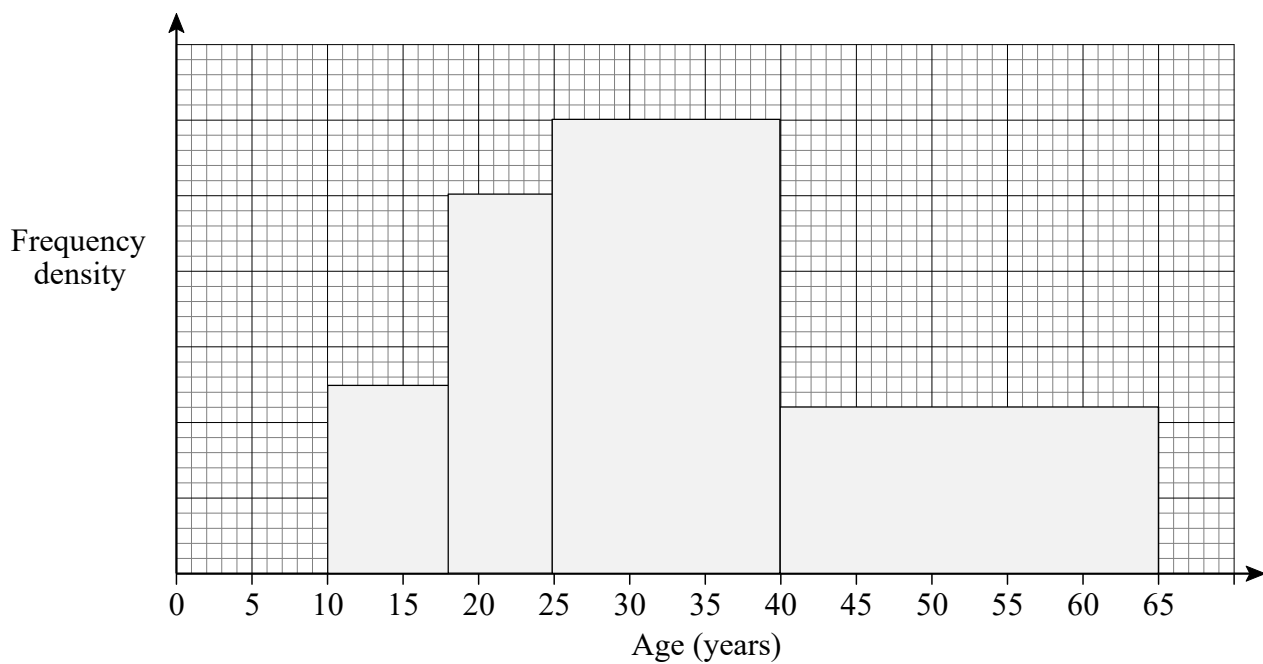
There are 22 members with ages in the range $40 \leqslant \text{age} < 65$

Work out the number of members with ages in the range $25 \leqslant \text{age} < 40$

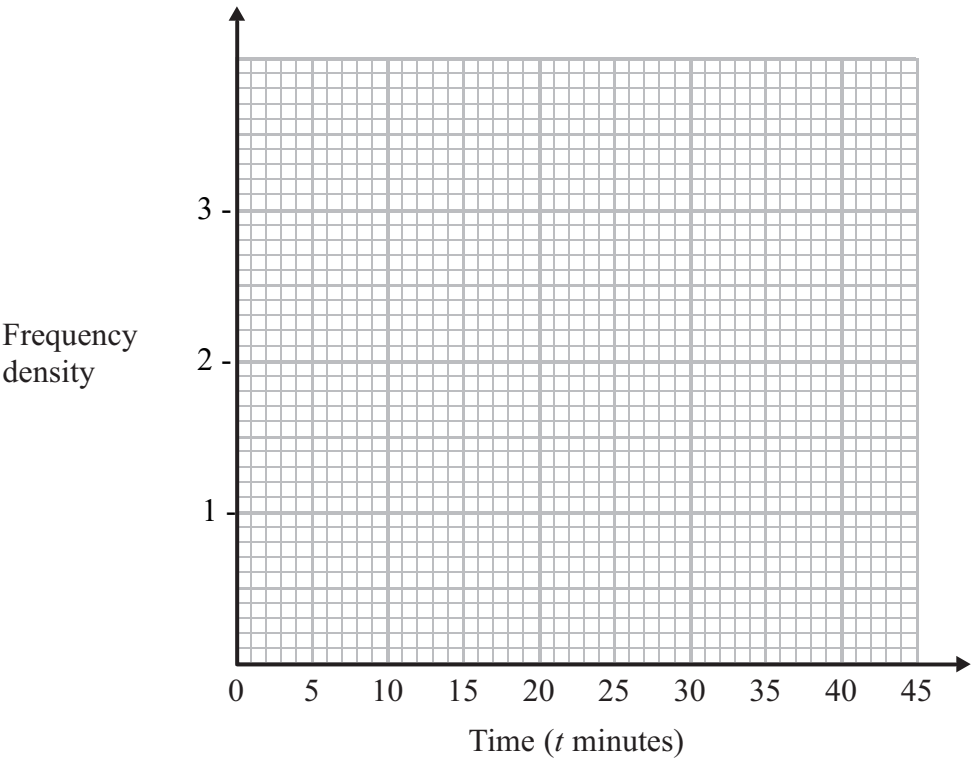.....................................

(4)

(Total for Question 14 is 4 marks)

15 Joe works for a computer service centre.

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

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

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

(Total for Question 15 is 3 marks)