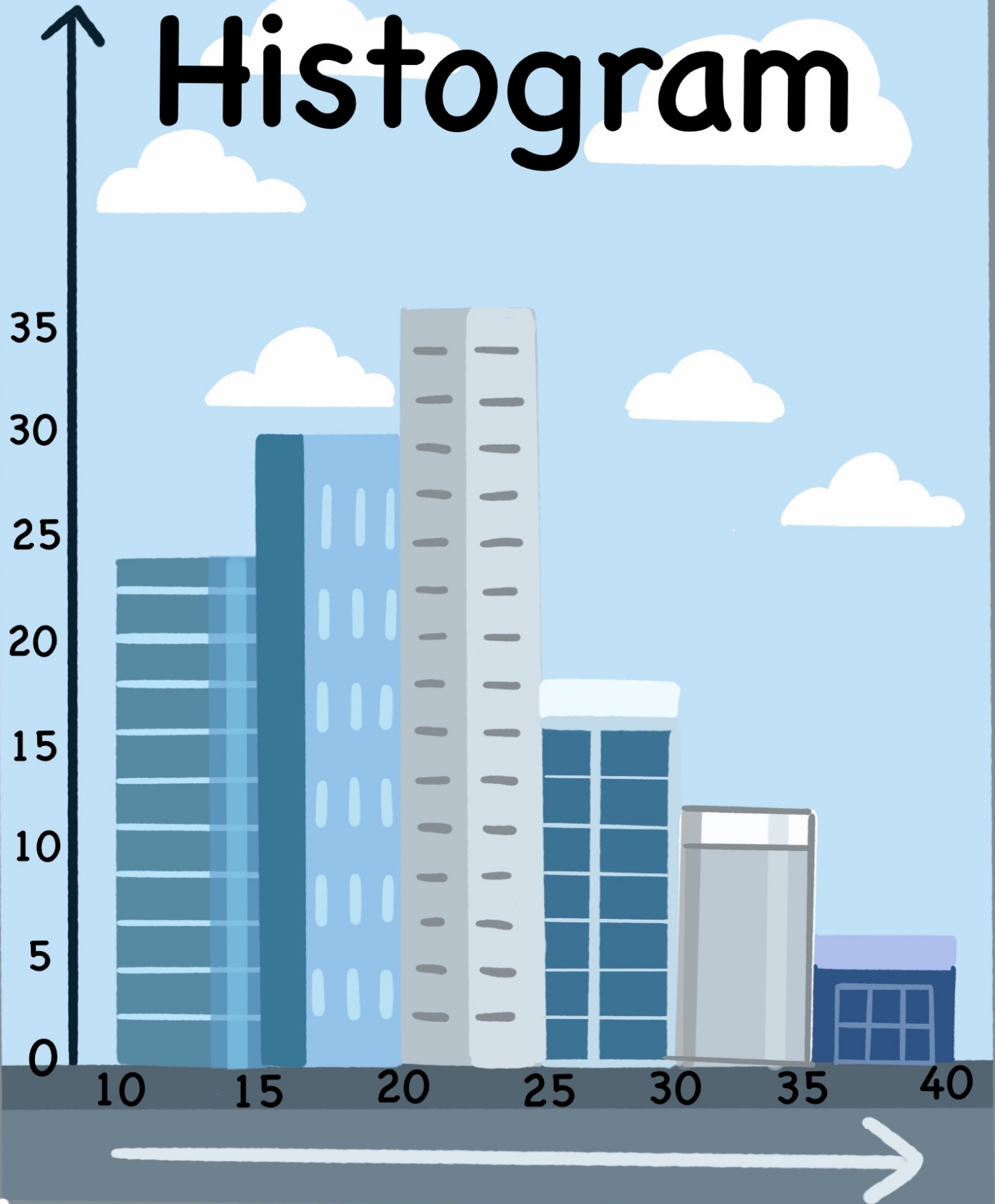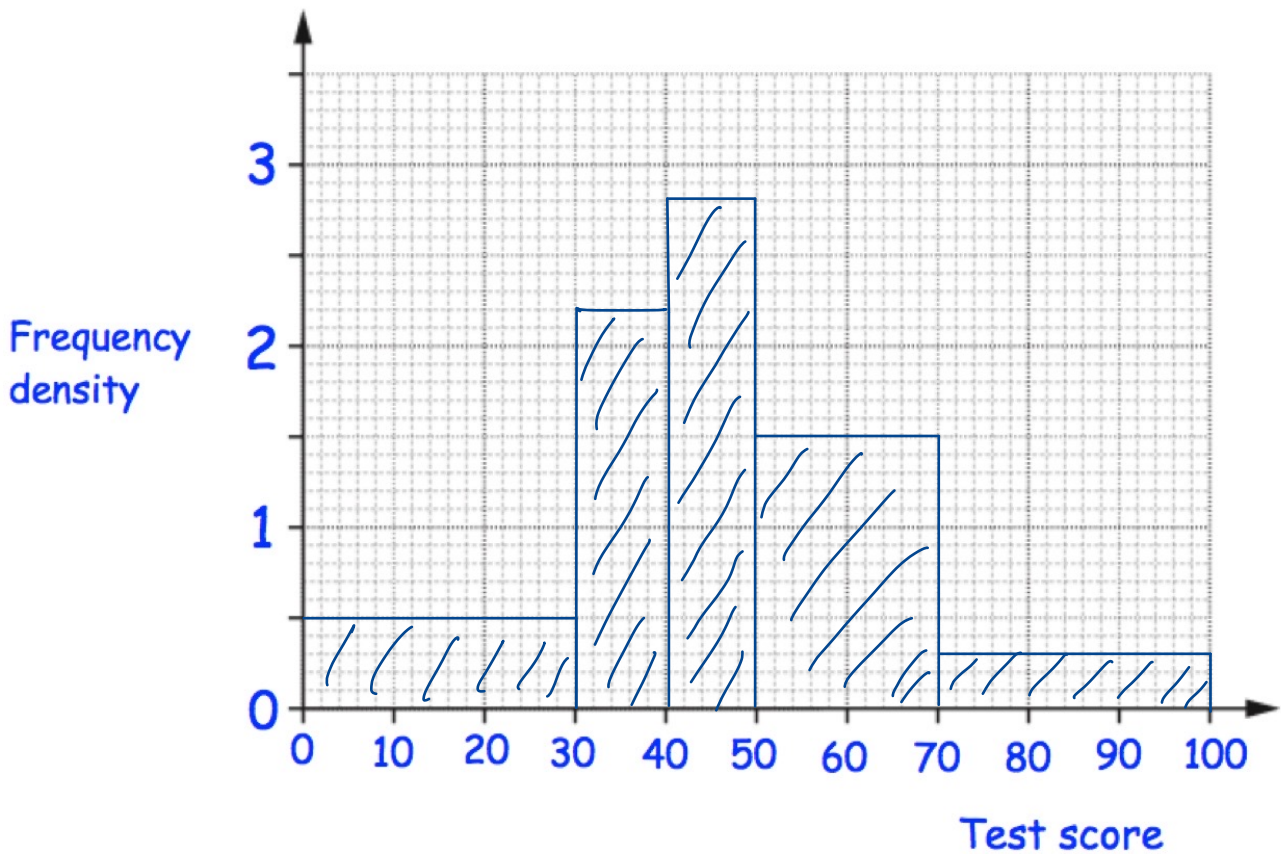# Histogram

1. The test scores from the students in a school are summarised in the table.

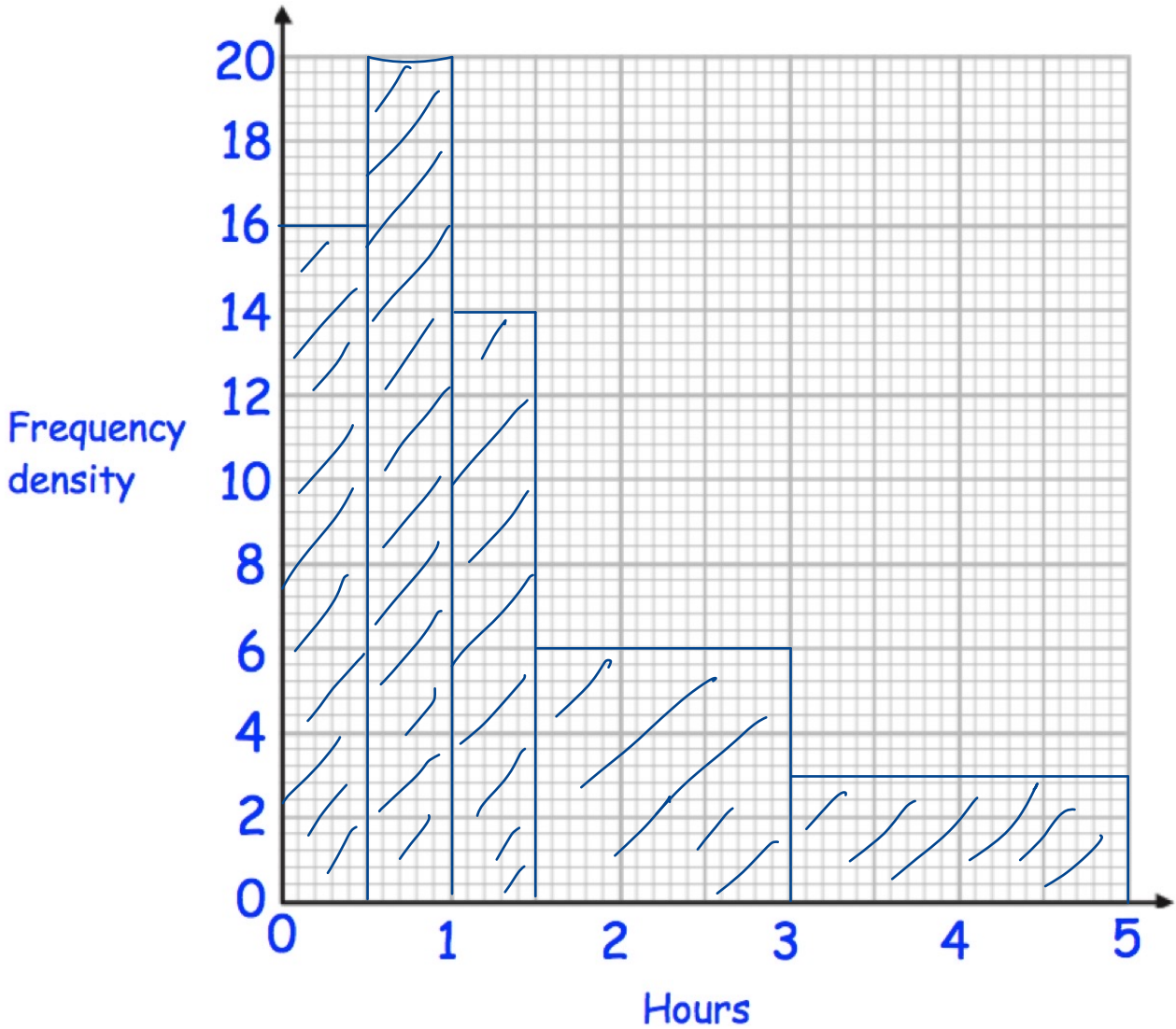| Test score, x	Frequency	
0 < x ≤ 30	15	0.5
30 < x ≤ 40	22	2.2
40 < x ≤ 50	28	2.8
50 < x ≤ 70	30	1.5
70 < x ≤ 100	9	0.4

Draw a histogram for this data.

(3)

2.   The waiting times, *h* hours, for 40 patients at an accident and emergency department in one evening is shown below.

Waiting time, h	Frequency	
$0 < h \le 0.5$	8	16
$0.5 < h \le 1$	10	20
$1 < h \le 1.5$	7	14
$1.5 < h \le 3$	9	6
$3 < h \le 5$	6	3

Draw a histogram for this data.

(3)

3. The salaries, p pounds, of 10950 people in a town is shown below.

Salary, p	Frequency	
0 < p ≤ 8000	1200	0.15
8000 < p ≤ 15000	1750	0.25
15000 < p ≤ 25000	4500	0.45
25000 < p ≤ 40000	1500	0.1
40000 < p ≤ 80000	2000	0.05

Draw a histogram for this data.

(3)

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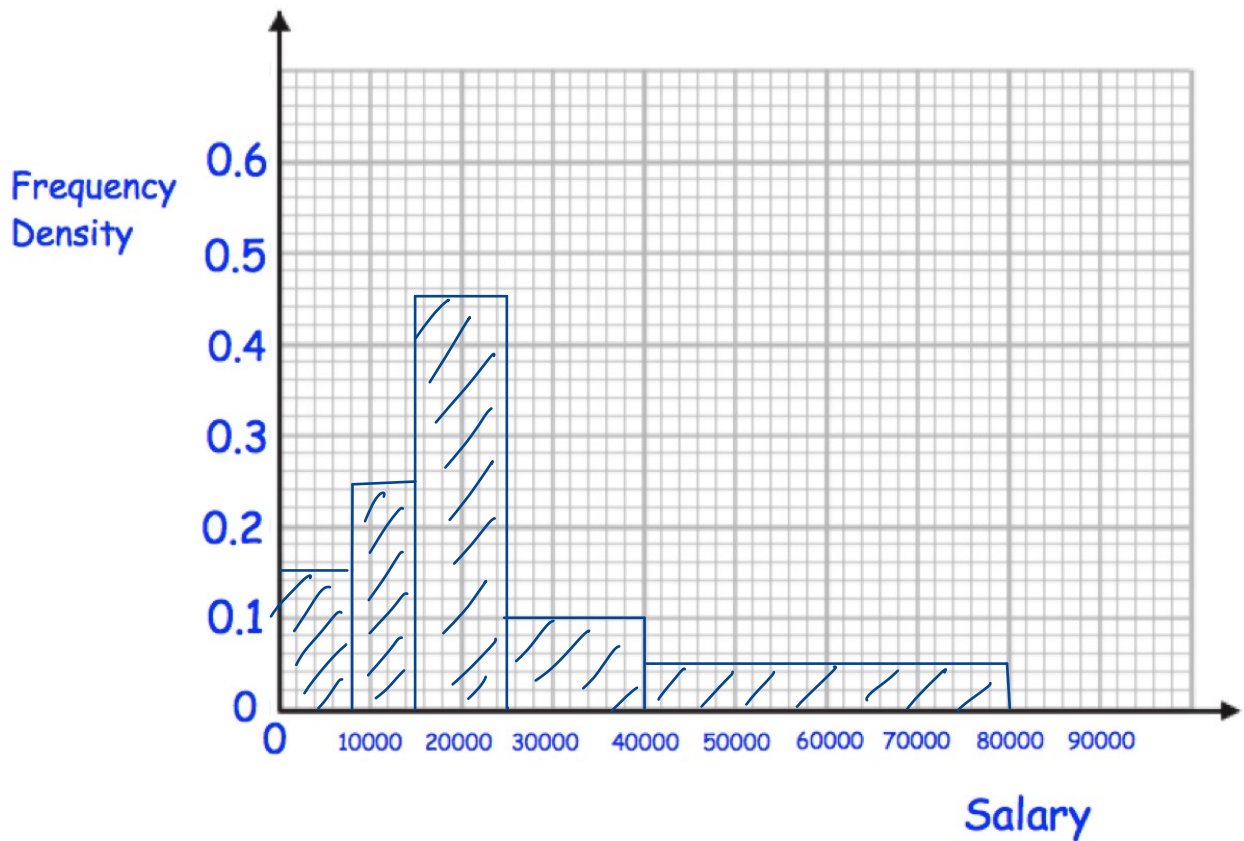
4.   The lengths of 200 fish in a pond, *l* centimetres, are recorded below.

Length, l	Frequency	
0 < l ≤ 4	36	4
4 < l ≤ 6	40	20
6 < l ≤ 8	48	24
8 < l ≤ 12	44	11
12 < l ≤ 20	32	4

Draw a histogram for this data.

(3)

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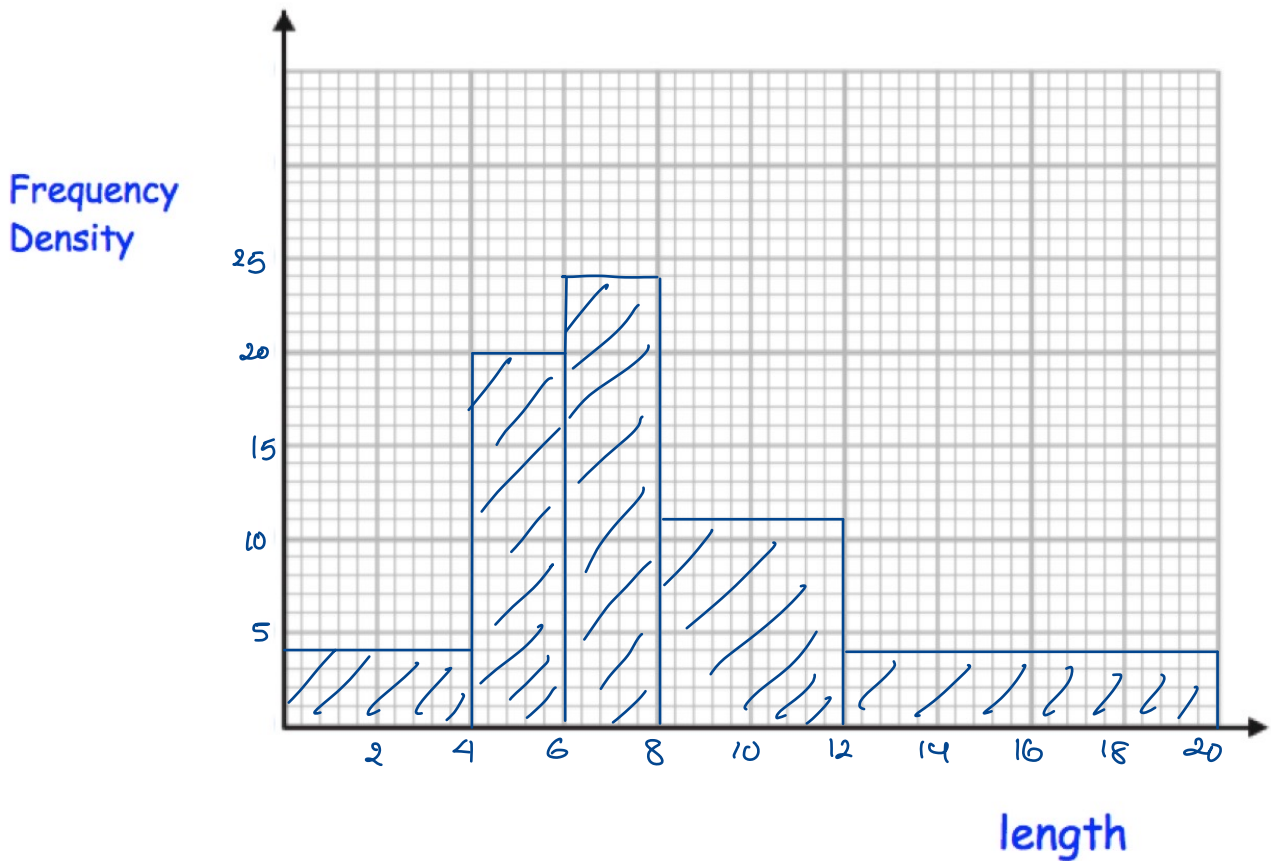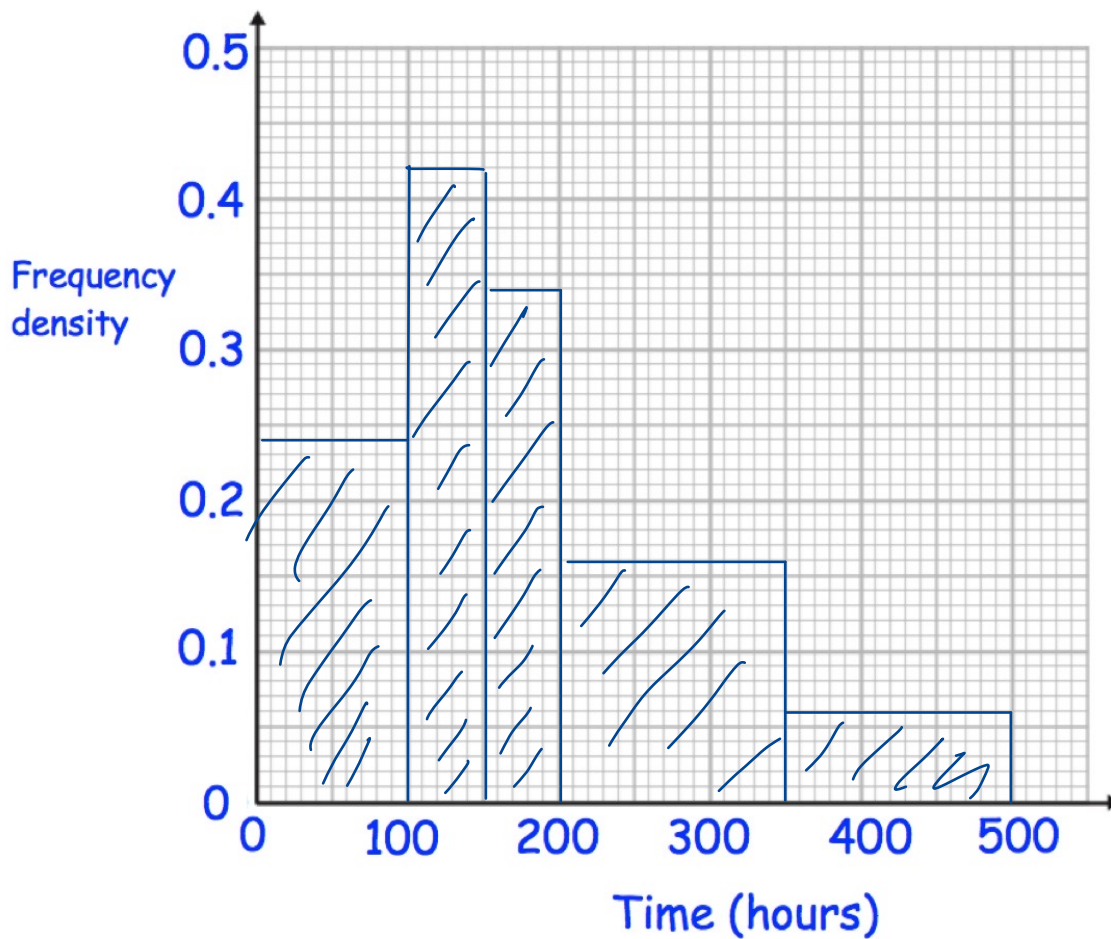
5. The table gives information about the hours Easyair pilots have spent flying, *t* hours.

Time (t hours)	Frequency	
0 < t ≤ 100	24	0.24
100 < t ≤ 150	21	0.42
150 < t ≤ 200	17	0.34
200 < t ≤ 350	24	0.16
350 < t ≤ 500	9	0.06

(a) Draw a histogram to show this information.

(3)

(b) Estimate the number of Easyair pilots who have flown under 50 hours.

24 ÷ 2

12

(1)

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The histogram shows the distribution of time spent flying by Ryanjet pilots.

Frequency Density

70

8

200
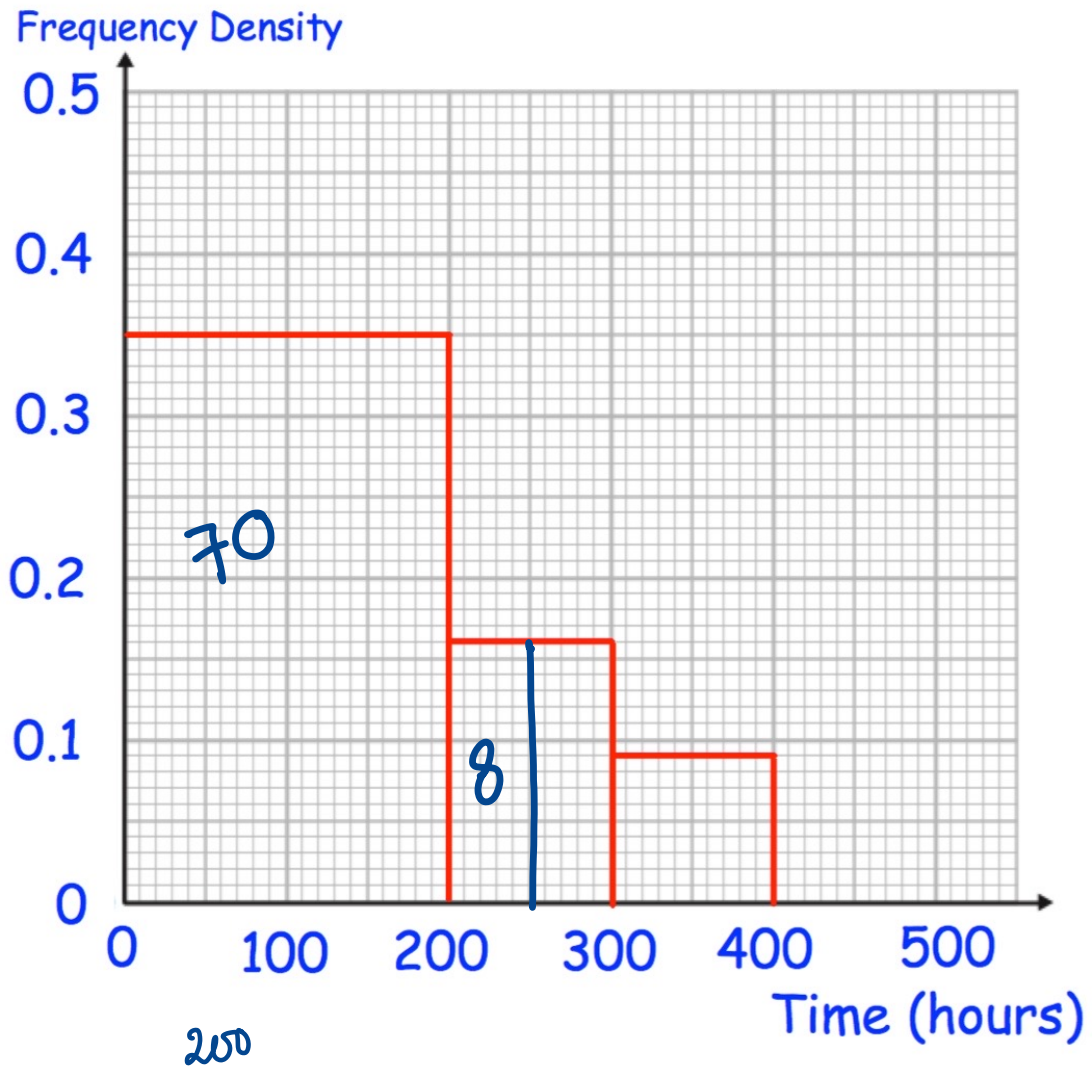
(c) Estimate the number of pilots who have flown under 250 hours.

.... 78 ....

(2)

(d) Make one comparison between the distribution of time spent flying by pilots from <u>Easyair</u> and Ryanjet.

.... Is spent more time flying as they fly over
400 hrs ....

....

(1)

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6.   The table gives information about the lengths, *l* metres, of fish in a pond.

length (l cm)	Frequency	
0 < l ≤ 8	16	2
8 < l ≤ 10	7	3.5
10 < l ≤ 12	9	4.5
12 < l ≤ 16	6	1.5
16 < l ≤ 20	2	0.5

Draw a histogram to show this information.

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(3)
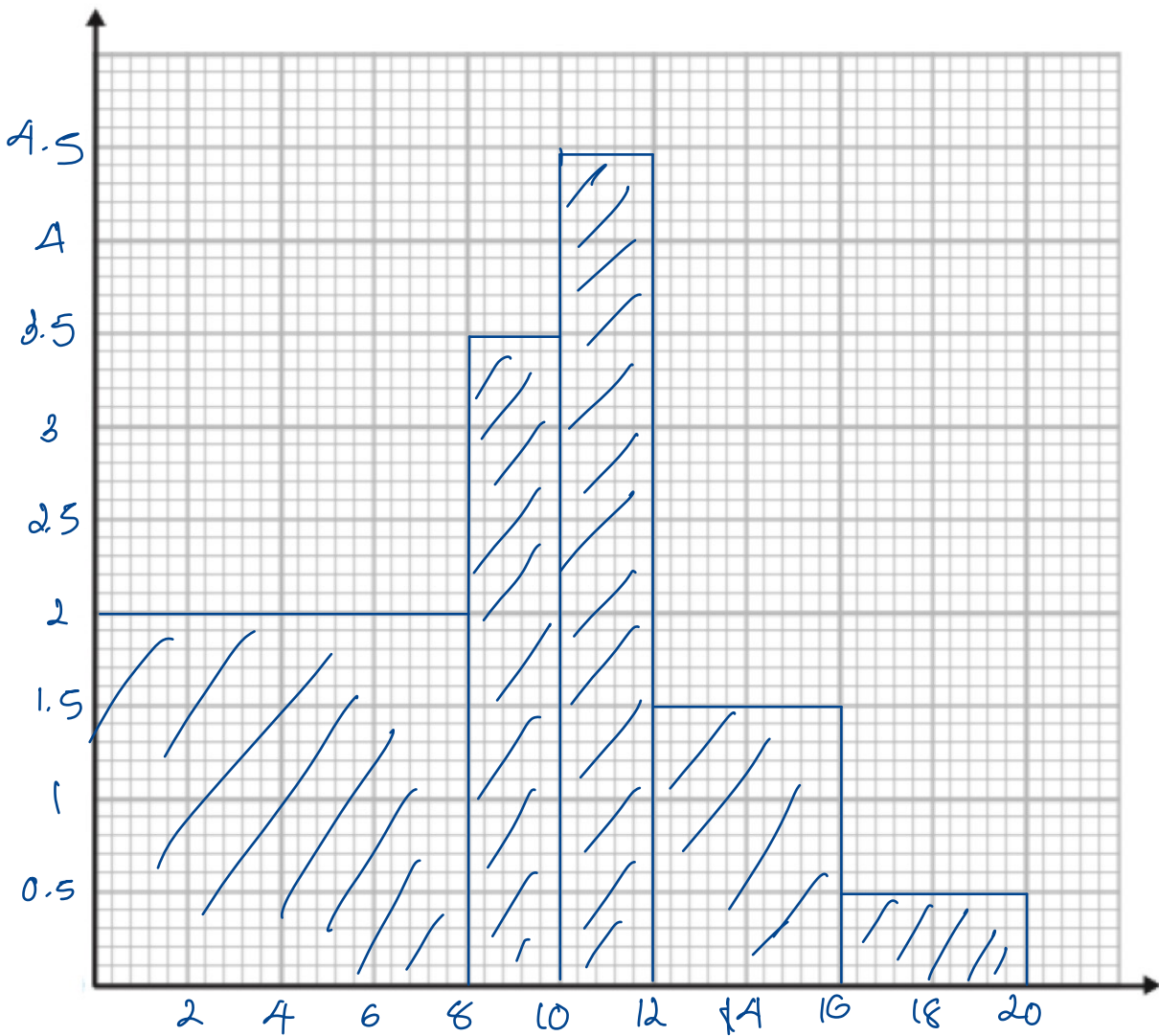
7. Below is a histogram showing information about the weight of parcels.
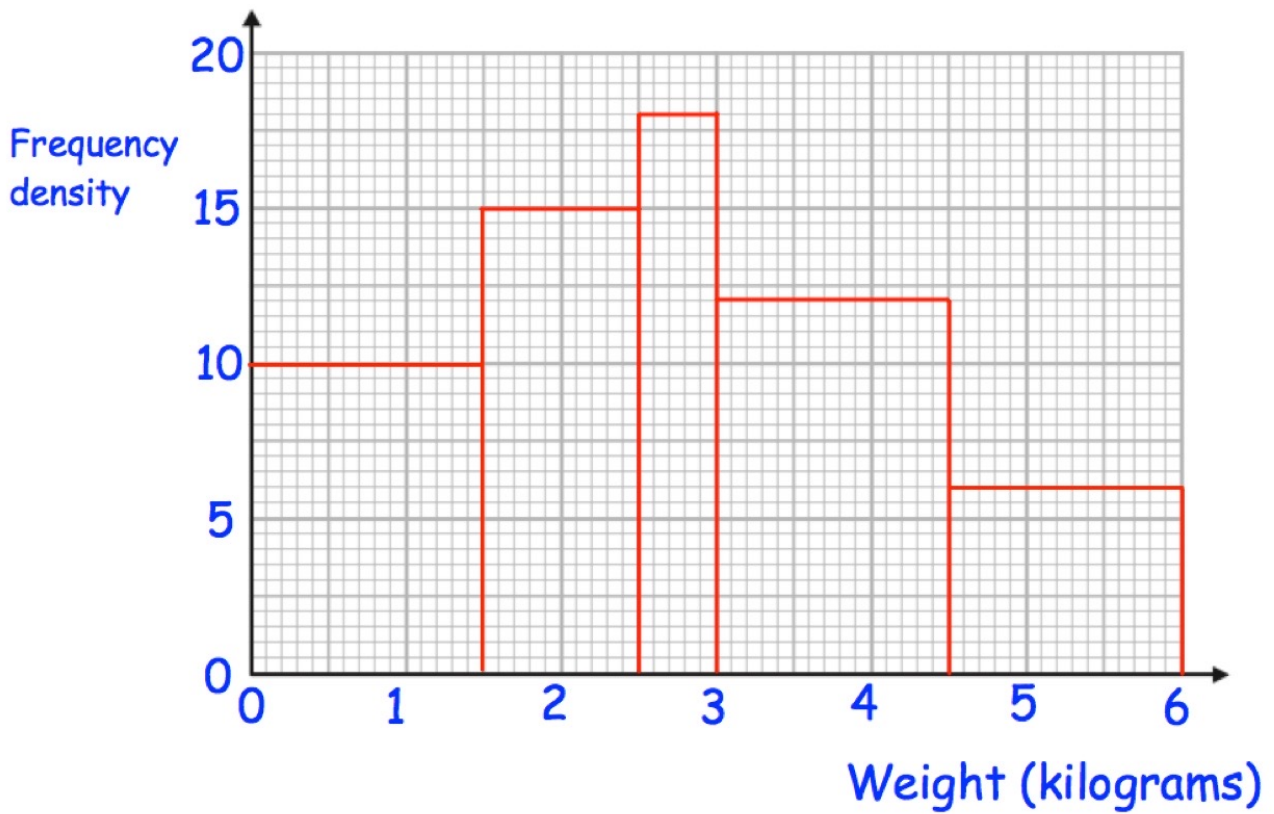
Use the histogram to complete the frequency table.

Weight, w	Frequency
0 < w ≤ 1.5	15
1.5 < w ≤ 2.5	15
2.5 < w ≤ 3	9
3 < w ≤ 4.5	18
4.5 < w ≤ 6	9

0.5 × 18

1.5 × 12

1.5 × 6

(3)

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8. Below is a histogram showing information about the value of antiques.
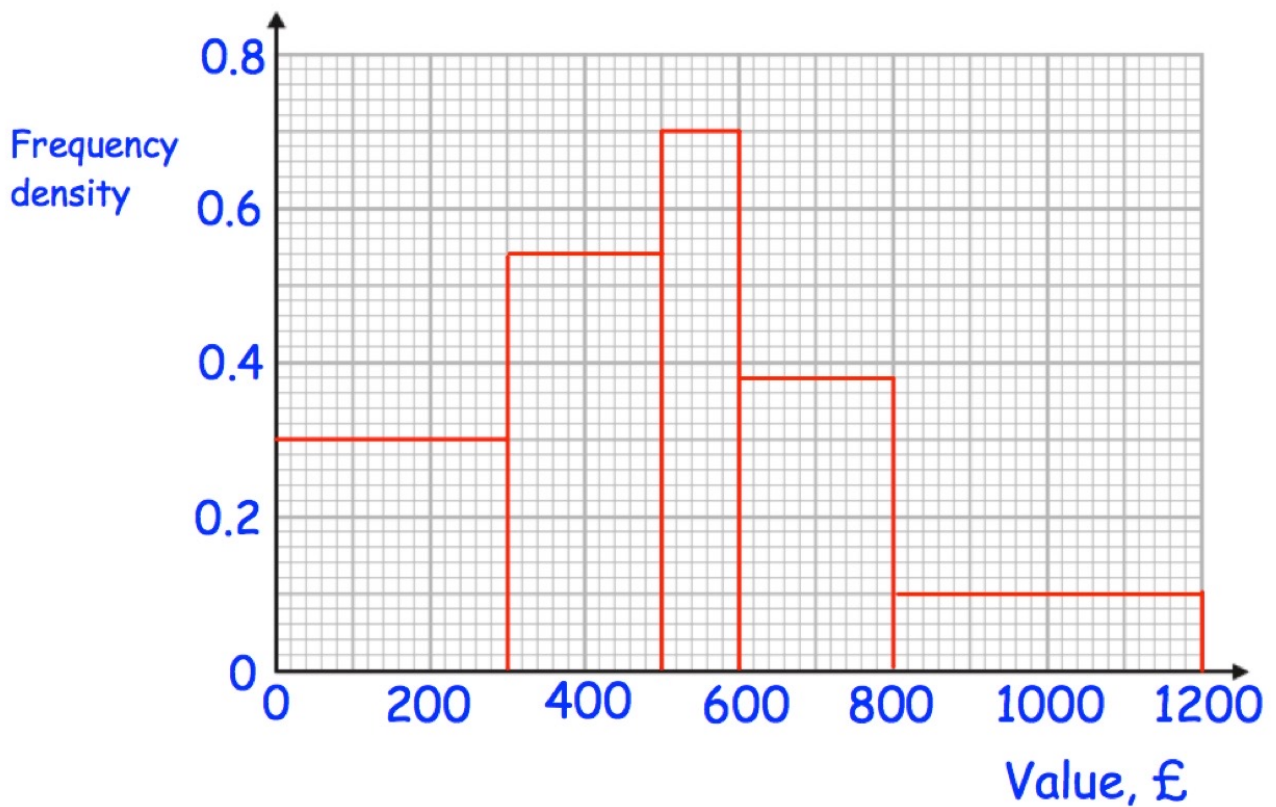
Use the histogram to complete the frequency table.

Values, v	Frequency
0 < v ≤ 300	90
300 < v ≤ 500	108
500 < v ≤ 600	70
600 < v ≤ 800	76
800 < v ≤ 1200	40

(3)

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9. A group of students were asked to complete a puzzle.
The histogram shows the distribution of the times taken.
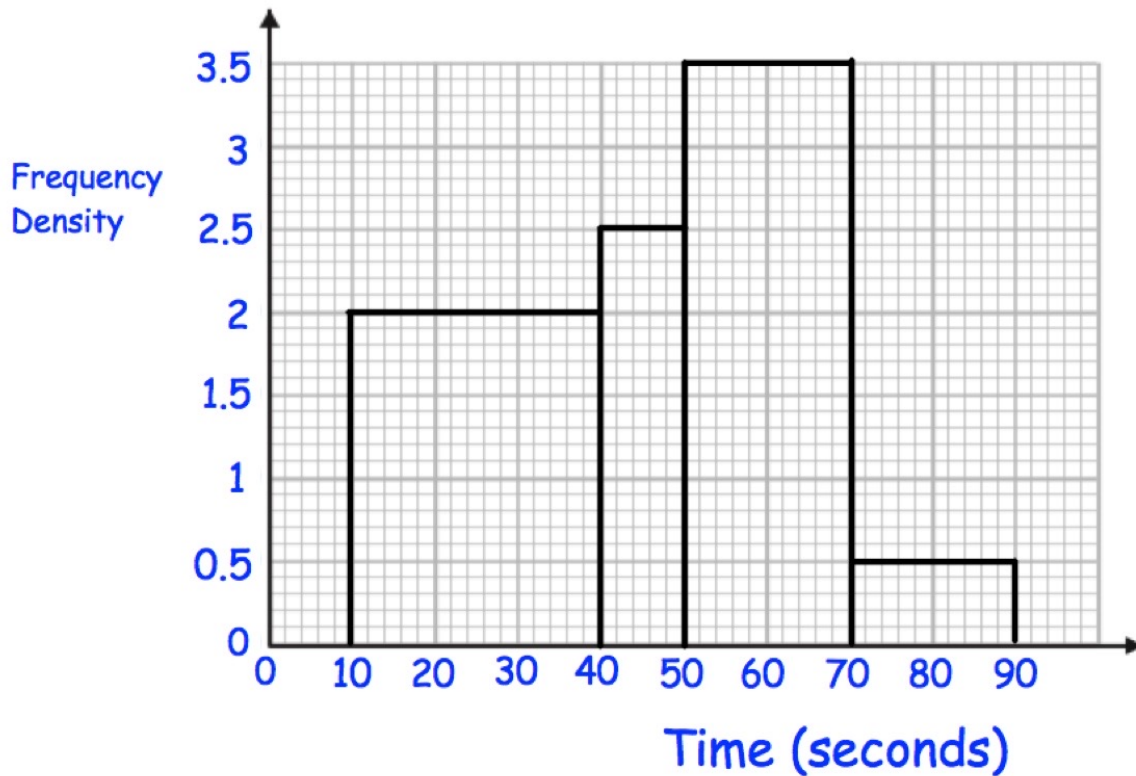
(a) Work out how many students took between 50 and 70 seconds to complete the puzzle.

............70............
(1)

(b) Calculate an estimate of the number of students who took under 30 seconds to complete the puzzle.

............40............
(2)

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10. The histogram shows information about the speeds, in miles per hour, that cars travelled through a village. The speed limit is 60mph.

Speed (miles per hour)
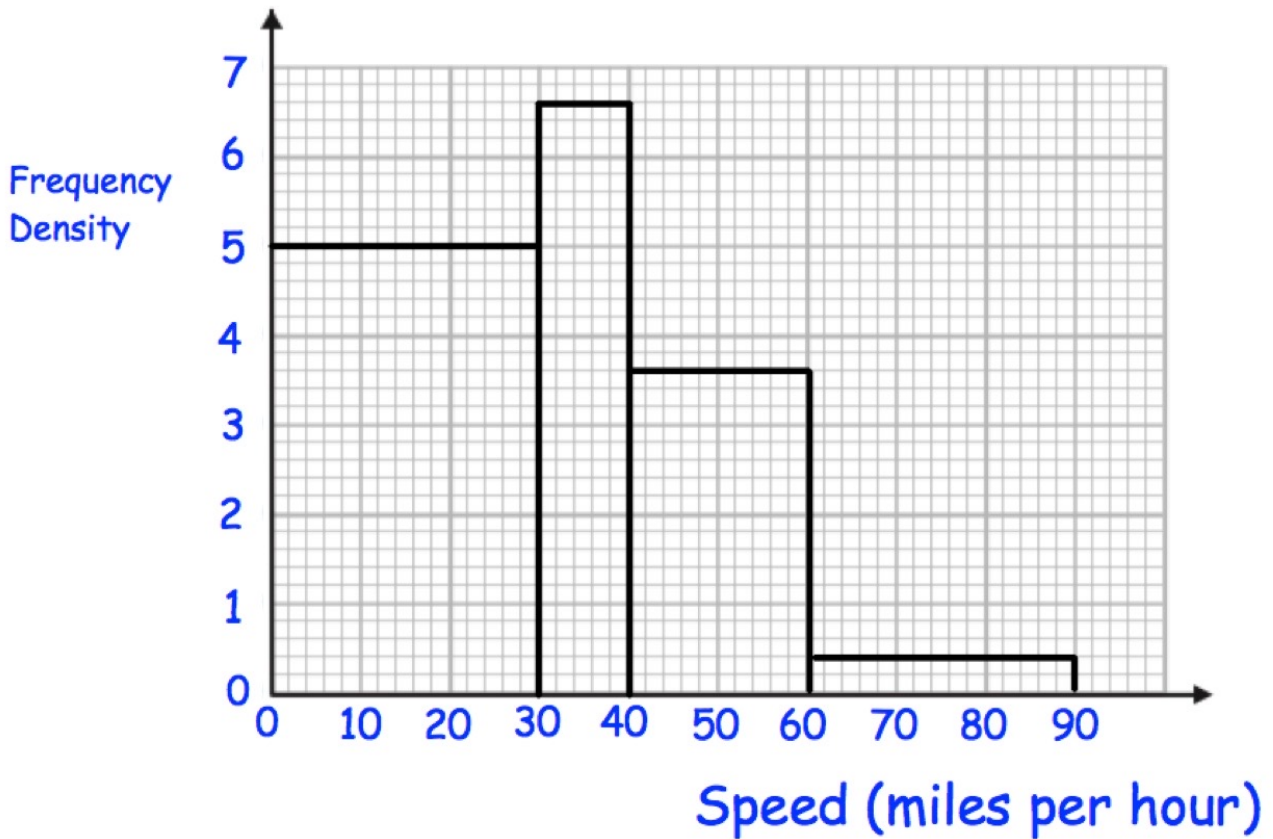
Work out the percentage of cars that were under the speed limit of 60mph.

$5 \times 30 = 150$

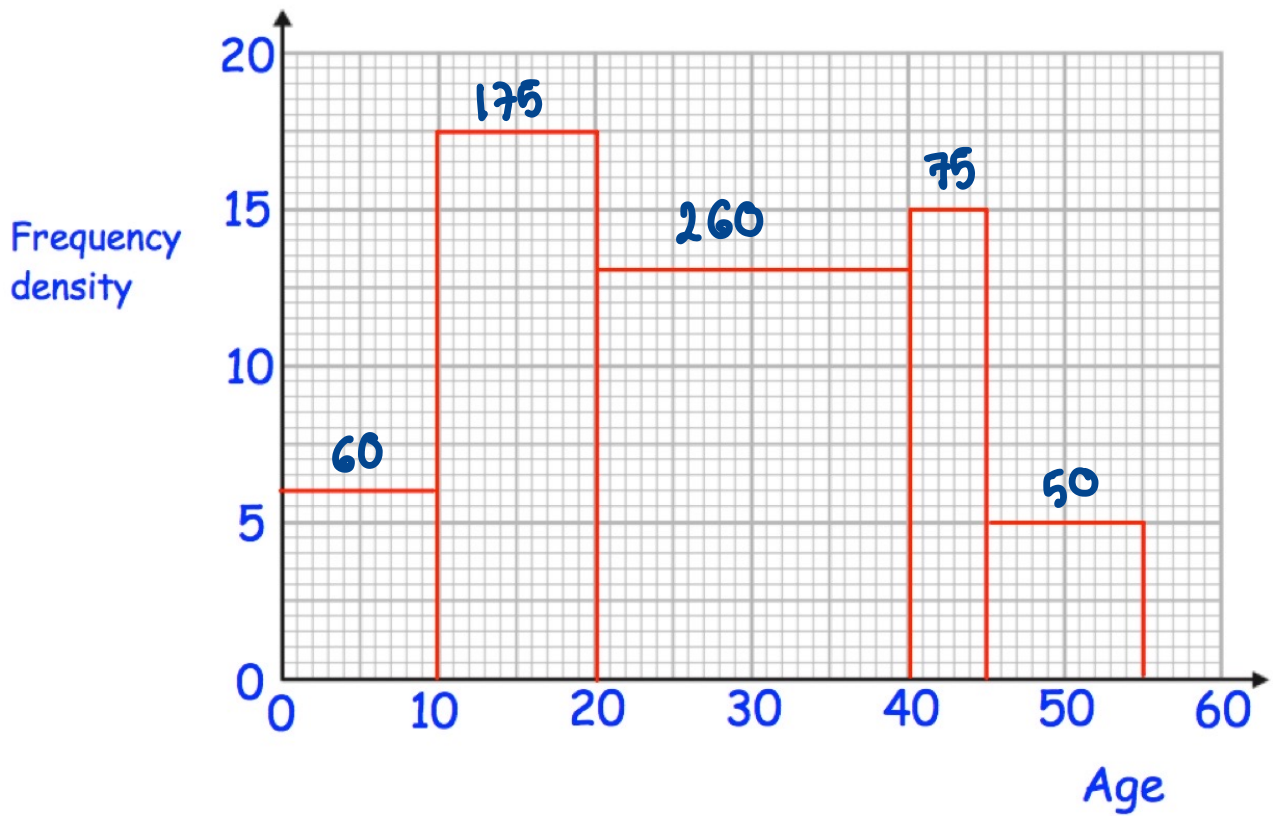$6.6 \times 10 = 66$

$3.6 \times 20 = 72$

$0.40 \times 30 = 12$

$\dfrac{288}{300} \times 100\% = 96\%$

..........96%..........

(3)

The Maths Society

11. The histogram shows the ages of visitors to a library on one morning.

20

175

75

15 Frequency density

260

60

10

50

5

0
0   10   20   30   40   50   60
Age

What percentage of visitors were over 40 years old?

$$\frac{125}{620} \times 100\%$$

20.16%

(3)

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12. The incomplete table and histogram give some information about the weights of dogs.
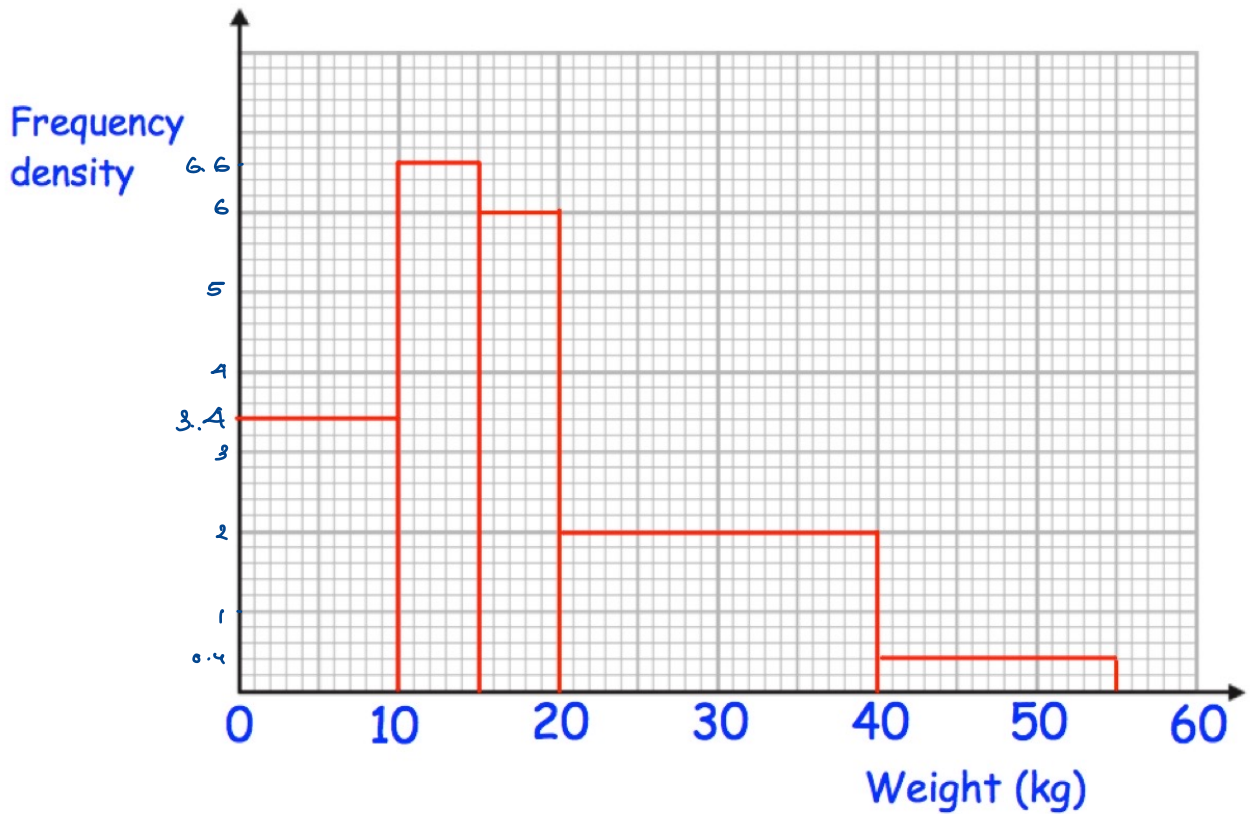
Use the information in the histogram to complete the frequency table.

weight (w kg)	Frequency
0 < w ≤ 10	34
10 < w ≤ 15	33
15 < w ≤ 20	30
20 < w ≤ 40	40
40 < w ≤ 55	6

(2)

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

Frequency density vs height (cm)
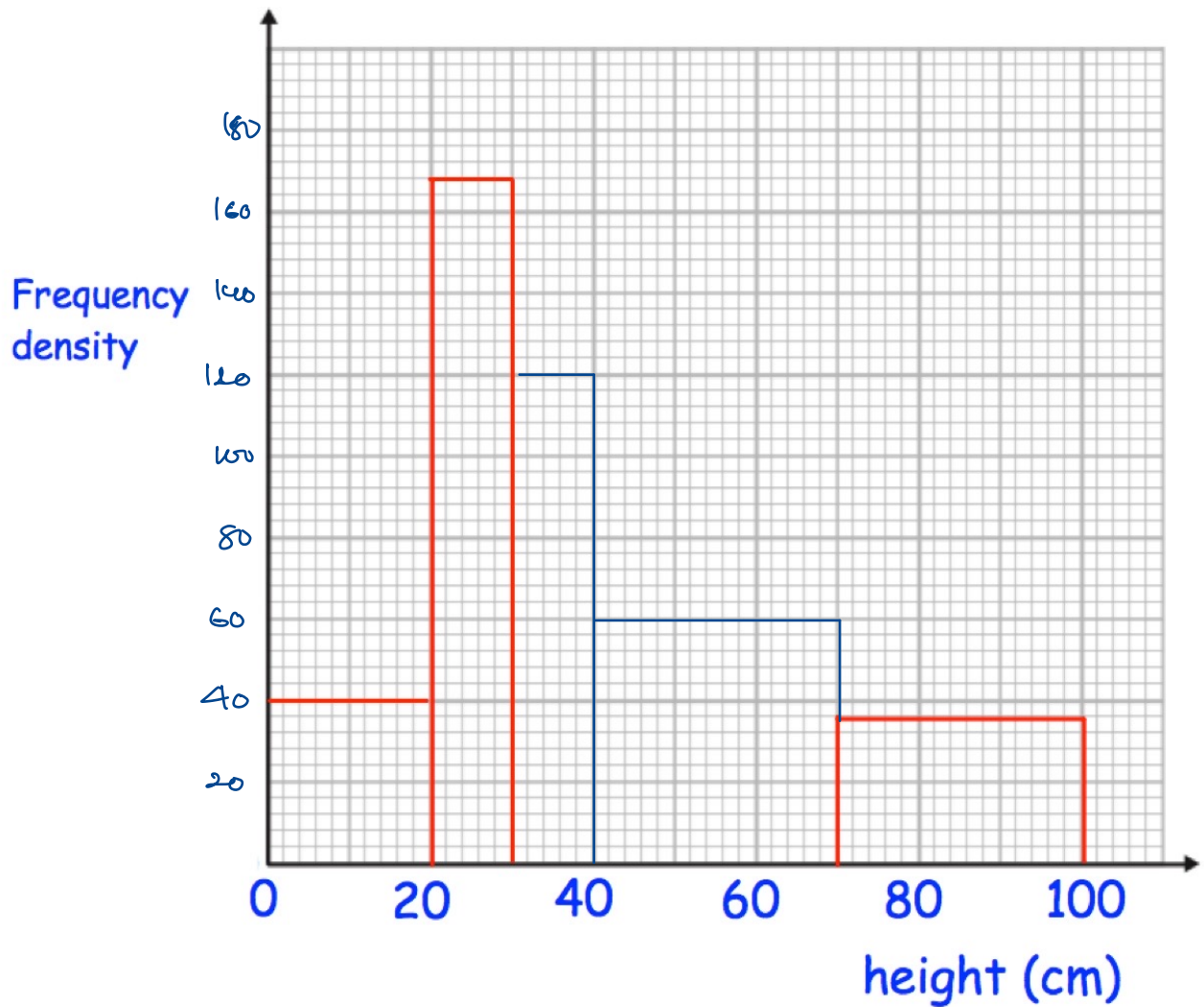
(a) Use the histogram to complete the frequency table.

Height (h cm)	Frequency
0 < h ≤ 20	800
20 < h ≤ 30	1680
30 < h ≤ 40	1200
40 < h ≤ 70	1800
70 < h ≤ 100	1080

(2)

(b) Use the table to complete the histogram.

(2)

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14. The histogram shows information about how far 150 children swam, when trying to get their swimming certificates.
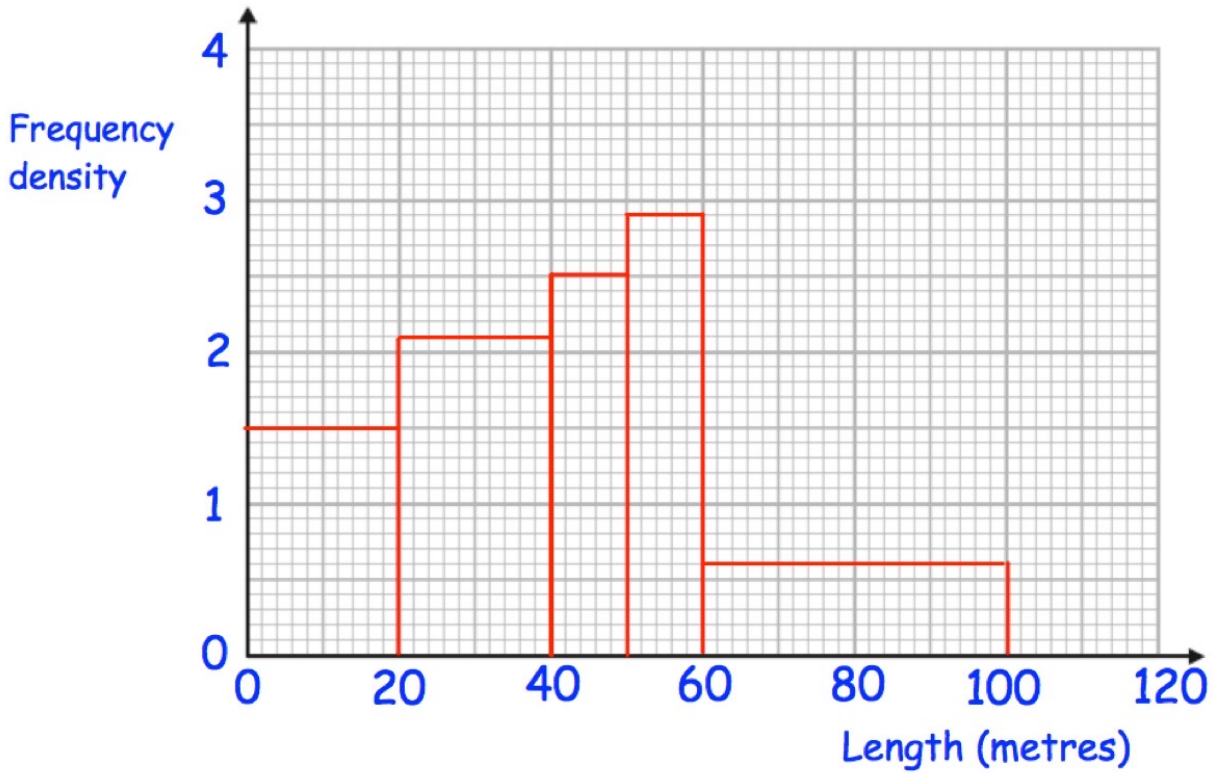
(a) Complete this frequency table.

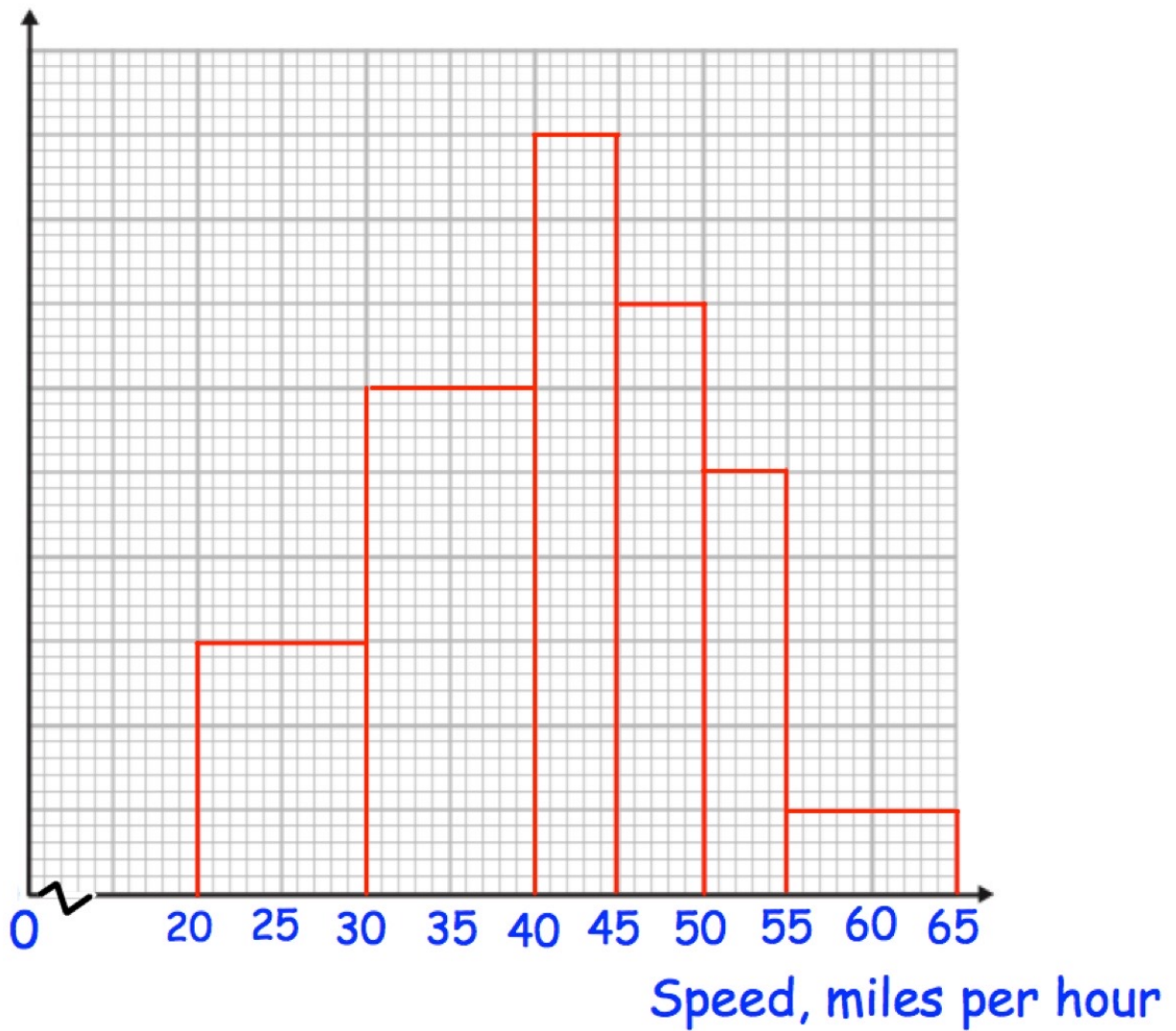| Length, l metres	Frequency
0 < l ≤ 20	30
20 < l ≤ 40	42
40 < l ≤ 50	25
50 < l ≤ 60	29
60 < l ≤ 100	24

(2)

(b) 10% of the swimmers swam further than y metres.
    Calculate an estimate of y.

....

(2)

15. The histogram shows the speeds in miles per hour of 82 cars on a road.

14 cars were travelling over 50 mph.

Calculate an estimate of the number of cars that were travelling between 42 and 49 mph.
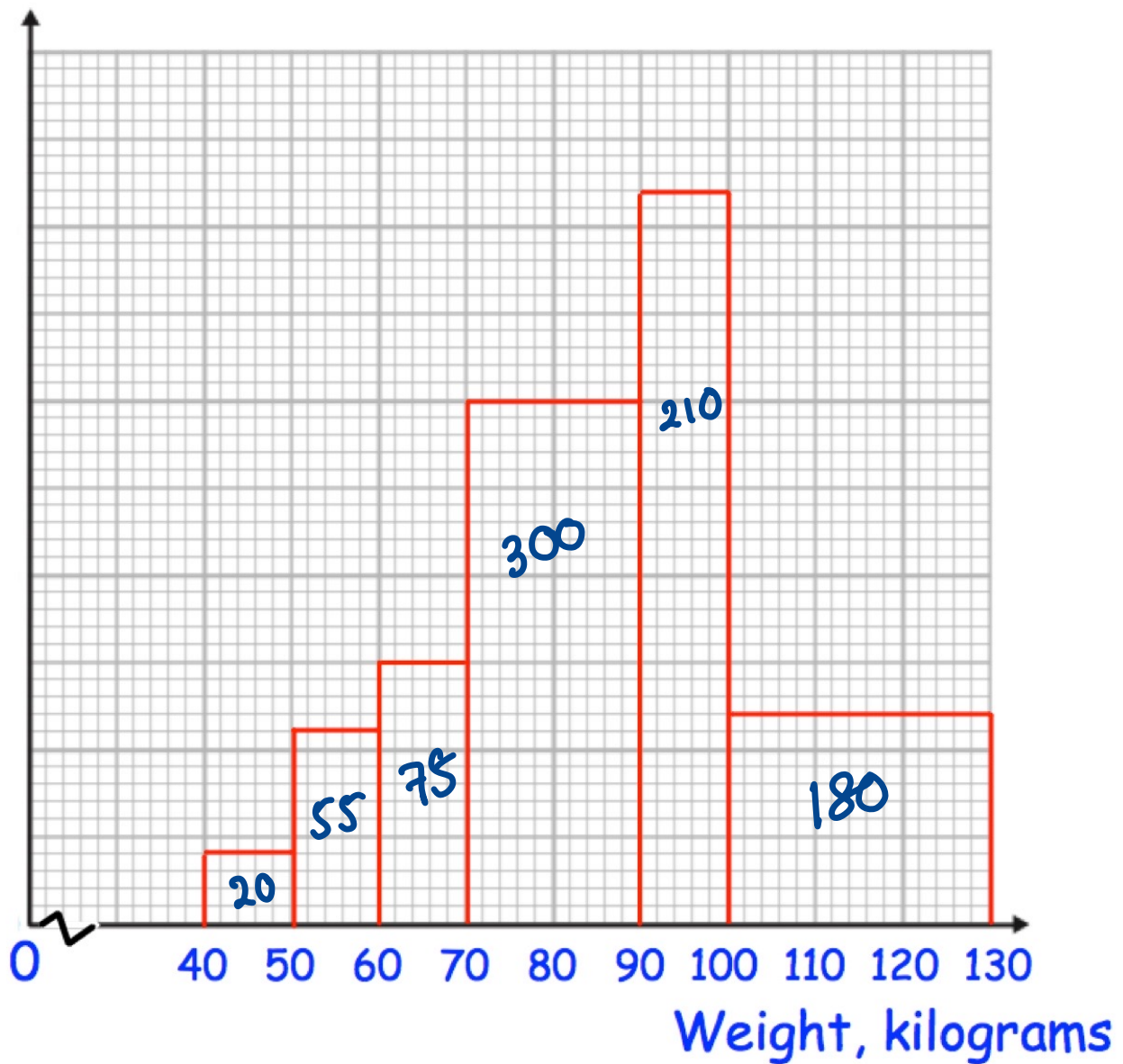
175 squares = 14 cars

12.5 sq   = 1 cars

$\frac{275}{12.5}$ = 22

........22 cars........

(4)

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16. The histogram shows the weights in kilograms of 504 athletes.

210

300

75

55

20

180

Weight, kilograms

45 athletes weigh under 60kg.
Calculate an estimate of the number of athletes between 70 and 95kg.

$\overline{300}$ $\overline{105}$

405 square = ?
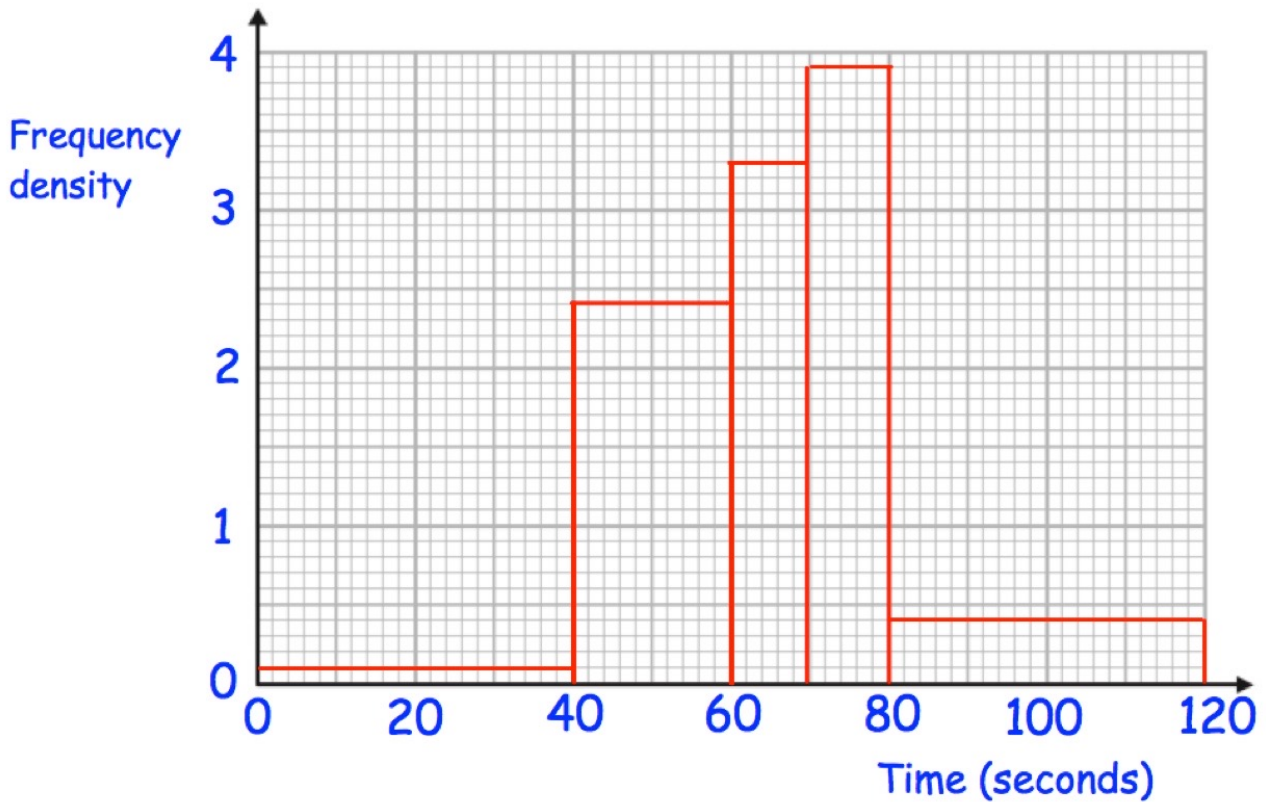
840   = 504

1   = $\frac{504}{840}$

.....243.....

(4)

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17.   The histograms shows information about the time taken by 140 students to complete a puzzle.

(a) Complete this frequency table.

Time, t seconds	Frequency
0 < t ≤ 40	4
40 < t ≤ 60	48
60 < t ≤ 70	33
70 < t ≤ 80	39
80 < t ≤ 120	16

(2)

(b) Calculate an estimate of the median.

60 < t < 70
....

(3)

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18. The histogram shows the weights of 700 dogs.
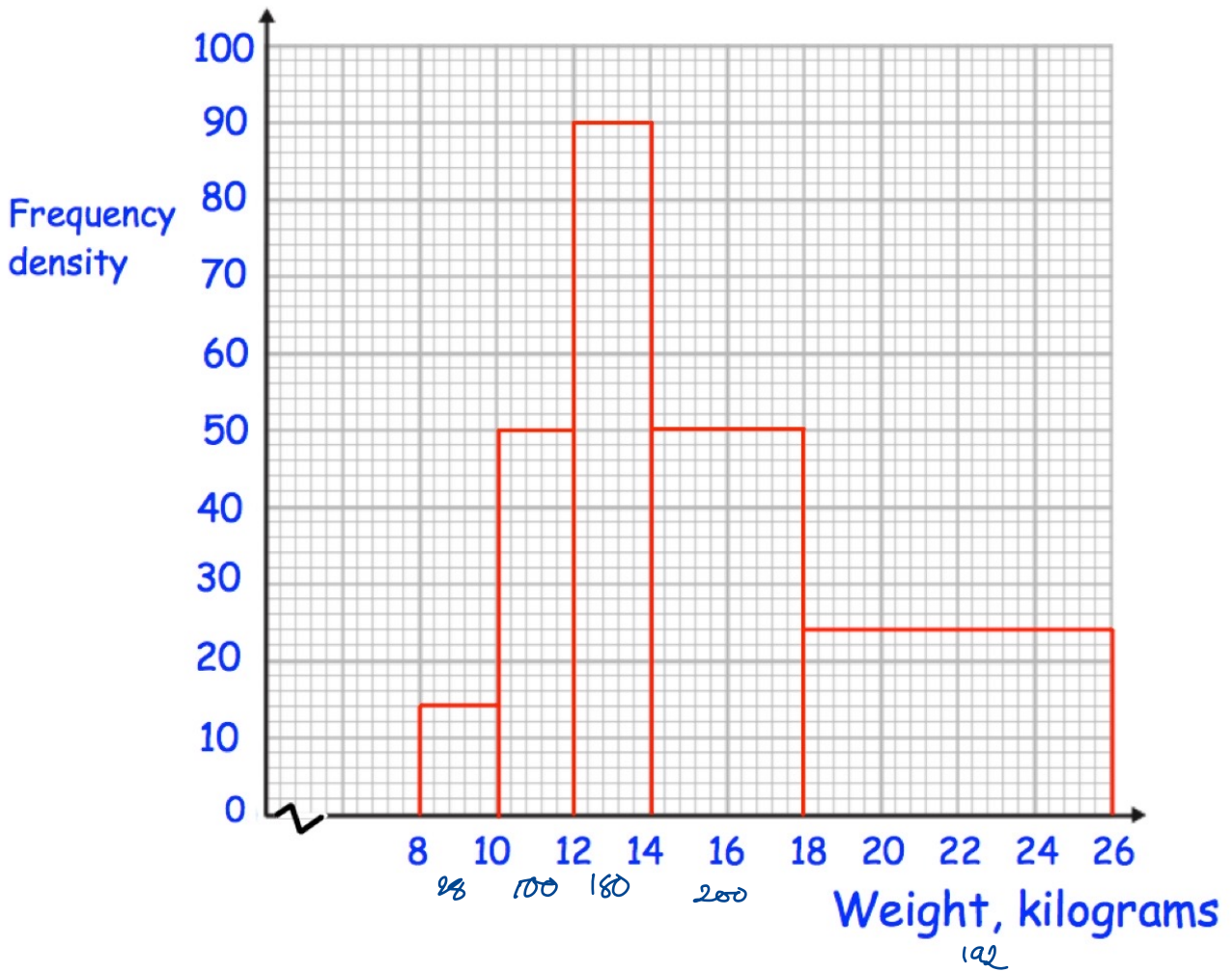
(a) Calculate an estimate of the median.

$14 < w \leqslant 18$
....
(3)

(b) Calculate an estimate of the upper quartile.

$18 < w \leqslant 26$
....
(3)

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