1 200 people recorded the time they spent on social media one day.

The table shows the results.

Time, t (mins)	Frequency	Midpoint	
$0 \leqslant t < 30$	24	15	360
$30 \leqslant t < 50$	76	40	3040
$50 \leqslant t < 60$	52	55	2860
$60 \leqslant t < 90$	48	75	3600
	Total = 200		

(1)

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

[3 marks]

$24 \times 15 = 360$ $52 \times 55 = 2860$

$76 \times 40 = 3040$ $48 \times 75 = 3600$

$$\text{mean} = \frac{360 + 3040 + 2860 + 3600}{200}$$

$$= \frac{9860}{200}$$ (1)

$$= 49.3$$

Answer 49.3 (1) mins

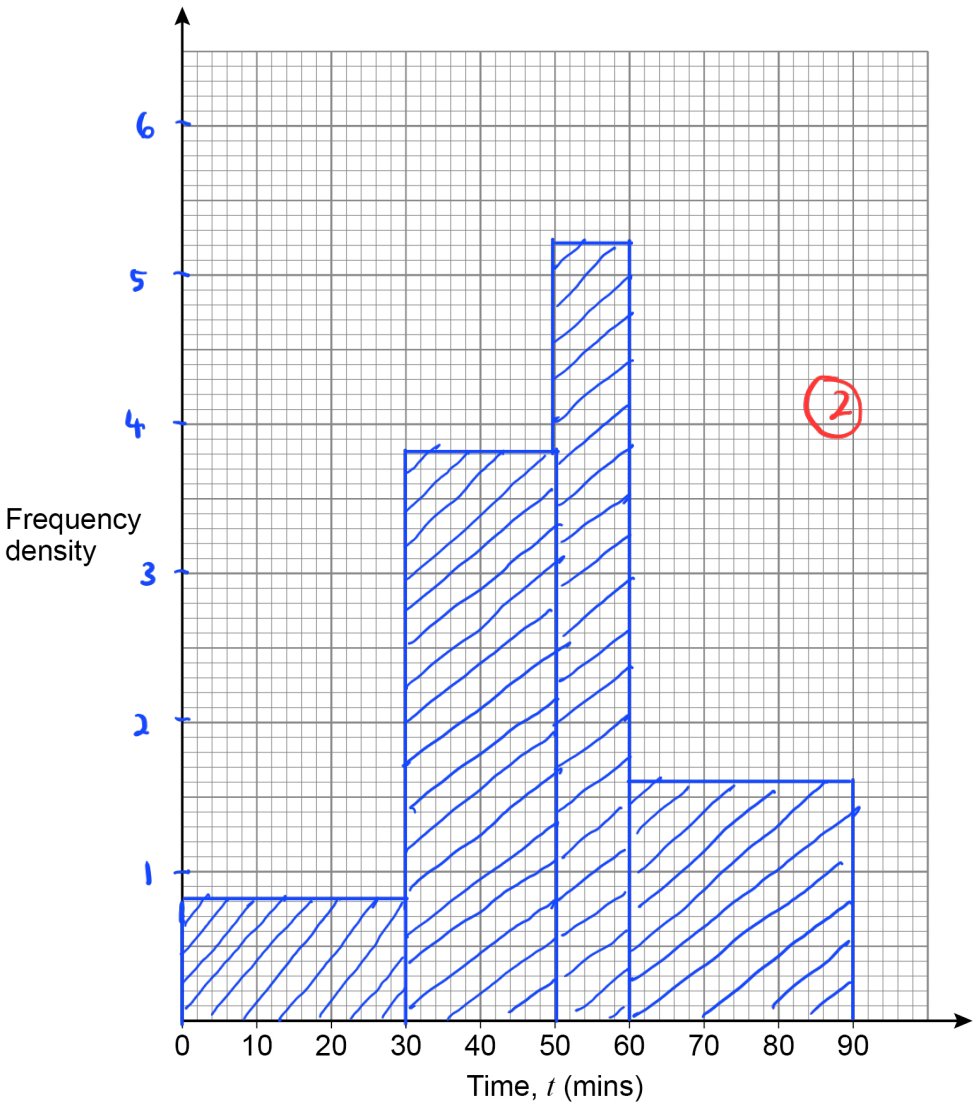
1 (b) Draw a histogram to represent the results.

[4 marks]

Time, t (mins)	Frequency	Class width	Frequency density
$0 \leqslant t < 30$	24	30	0.8
$30 \leqslant t < 50$	76	20	3.8
$50 \leqslant t < 60$	52	10	5.2
$60 \leqslant t < 90$	48	30	1.6

(1)

(1)



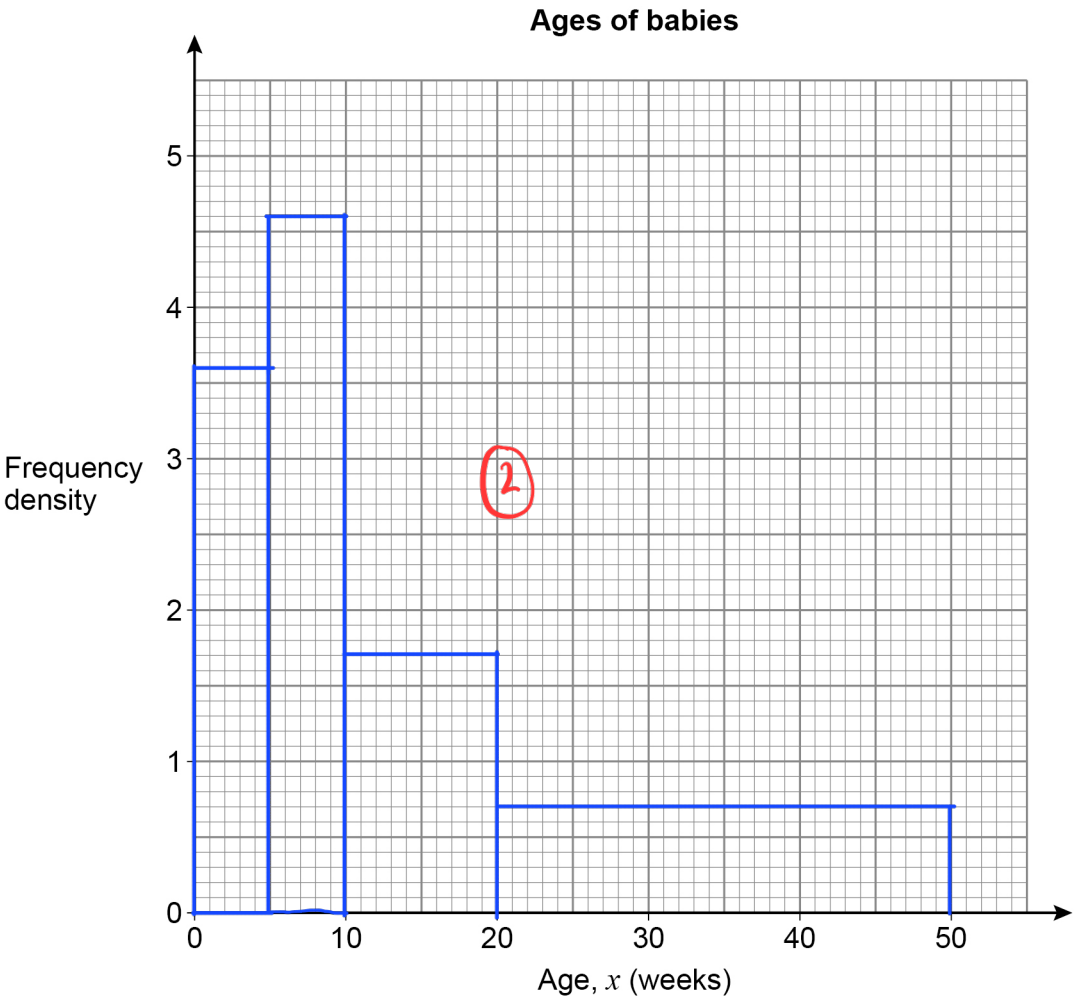
(2)

2 Here is some information about the ages of babies at a clinic.

Age, x (weeks)	Frequency	class width	frequency density
$0 \leqslant x < 5$	18	5	3·6
$5 \leqslant x < 10$	23	5 (1)	4.6
$10 \leqslant x < 20$	17	10	1·7 (1)
$20 \leqslant x < 50$	21	30	0.7

Draw a histogram to represent the information.

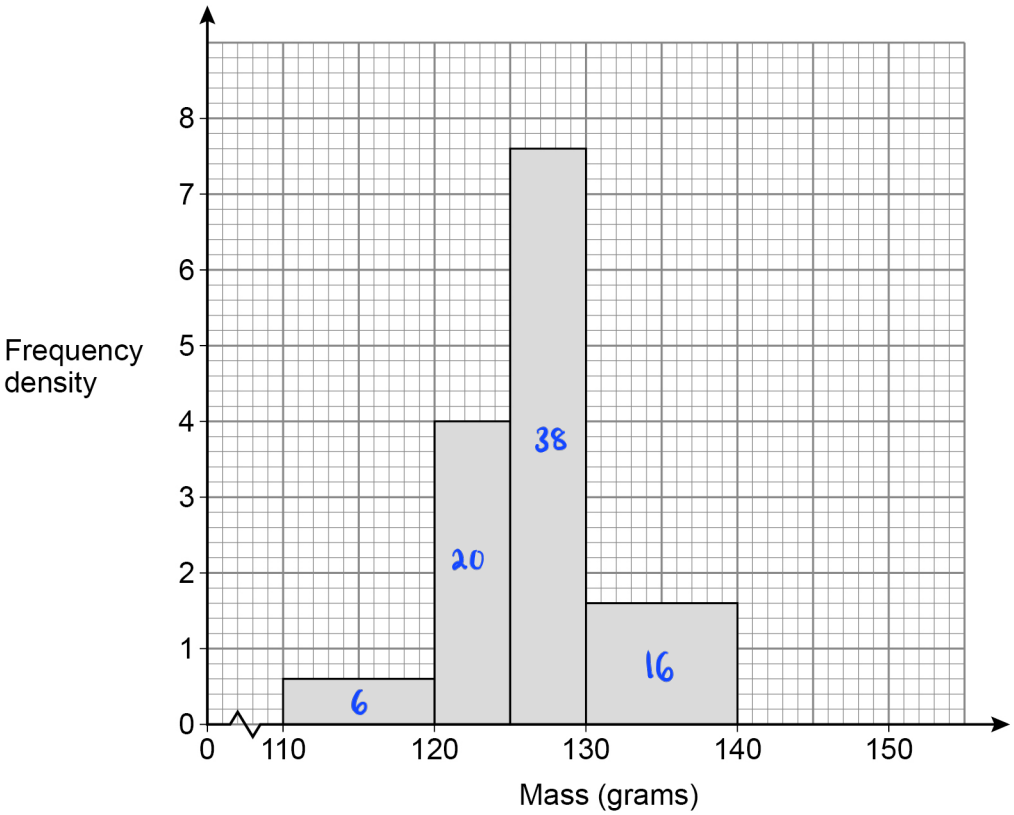
[4 marks]



3 A company makes tubes of toothpaste.

The masses of 80 tubes are checked.

A histogram is drawn to represent the data.



The company makes 28 000 tubes each day.

Estimate how many tubes each day have a mass **less than** 122 grams.

[4 marks]

$10 \times 0.6 = 6$ (1)

$2 \times 4 = 8$

$6 + 8 = 14$ (1)

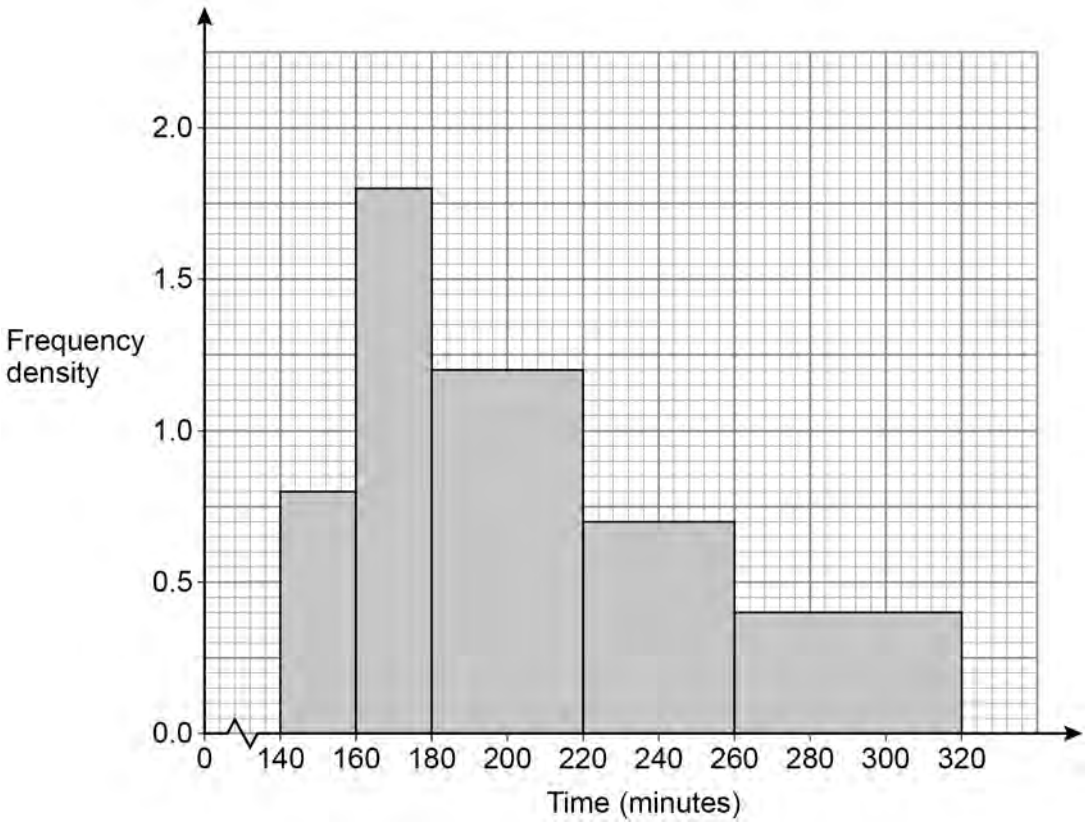
$\frac{14}{80} \times 28\,000 = 4900$ (1)

Answer 4900 (1)

4 180 runners **started** a marathon.

Some of the runners did not complete it.

4 (a) The histogram represents the times of the runners who did complete the marathon.



How many runners did **not** complete the marathon?

[3 marks]

$(20 \times 0.8) + (20 \times 1.8) + (40 \times 1.2) + (40 \times 0.7) + (60 \times 0.4)$ (1)

$= 16 + 36 + 48 + 28 + 24$

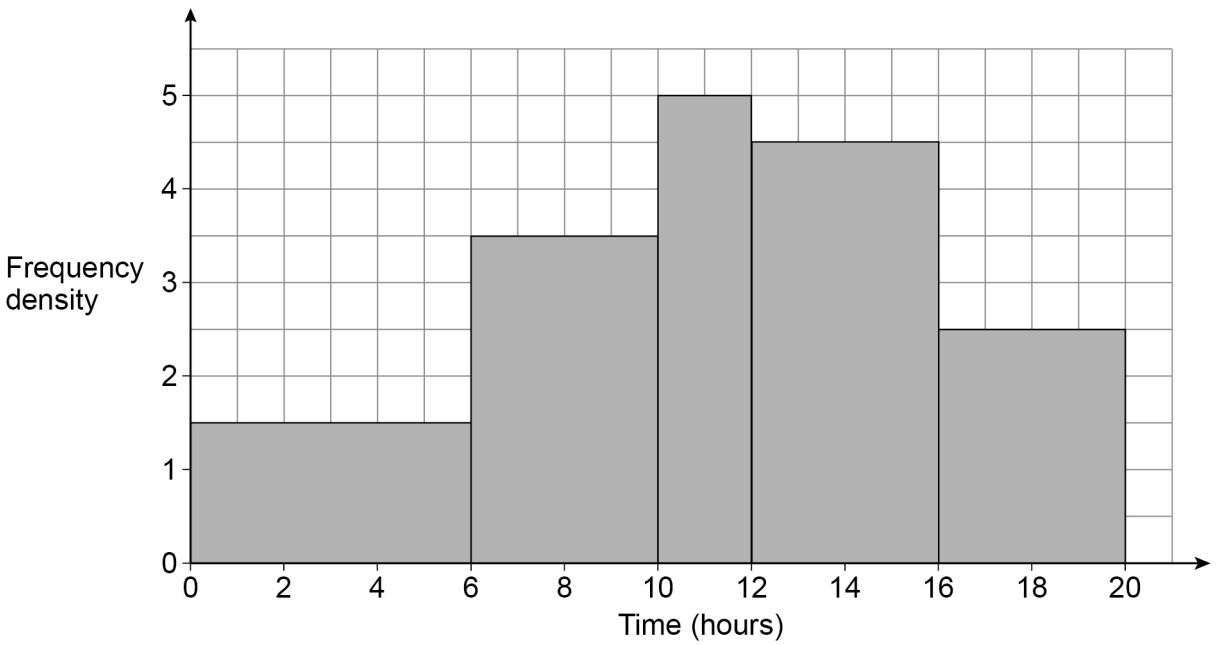
$= 152$ (1)

$180 - 152 = 28$ (1)

Answer 28

5 61 students recorded how many hours they spent revising for a test.

The histogram represents the results.



5 (a) Work out an estimate of the mean time the 61 students spent revising.

You may use the table to help you.

[4 marks]

	A	B	A × B
Time, x (hours)	**Frequency**	**Midpoint**	
$0 \leqslant x < 6$	9	3	27
$6 \leqslant x < 10$	14	8	112 (1)
$10 \leqslant x < 12$	10	11	110
$12 \leqslant x < 16$	18	14	252
$16 \leqslant x < 20$	10	18	180

$6 \times 1.5 = 9$, $4 \times 3.5 = 14$, $2 \times 5 = 10$, $4 \times 4.5 = 18$, $4 \times 2.5 = 10$ (1)

$$\text{mean} = \frac{27 + 112 + 110 + 252 + 180}{61}$$

$$= \frac{681}{61} \text{ (1)} = 11.16 \text{ (1)}$$

Answer 11.16 hours

5 (b) Give a reason why the answer to part (a) is an estimate.

[1 mark]

The midpoints are estimates (1)