

- 1 (a) The time, t minutes, spent on homework in one week by each of 200 students is recorded. The table shows the results.

Time (t minutes)	$40 < t \leq 60$	$60 < t \leq 80$	$80 < t \leq 90$	$90 < t \leq 100$	$100 < t \leq 150$
Frequency	6	10	70	84	30

Calculate an estimate of the mean.

..... min [4]

- 1 (b) A new table with different class intervals is completed.

Time (t minutes)	$40 < t \leq 90$	$90 < t \leq 150$
Frequency	86	114

On a histogram the height of the bar for the $40 < t \leq 90$ interval is 17.2 cm.

Calculate the height of the bar for the $90 < t \leq 150$ interval.

..... cm [2]

[Total: 6]

- 2 The table shows information about the mass, m grams, of each of 120 letters.

Mass (m grams)	$0 < m \leq 50$	$50 < m \leq 100$	$100 < m \leq 200$	$200 < m \leq 500$
Frequency	43	31	25	21

- (a) Calculate an estimate of the mean mass.

..... g [4]

- (b) Iraj draws a histogram to show this information.
He makes the height of the first bar 17.2 cm.

Calculate the height of each of the remaining bars.

height of bar for $50 < m \leq 100$ cm

height of bar for $100 < m \leq 200$ cm

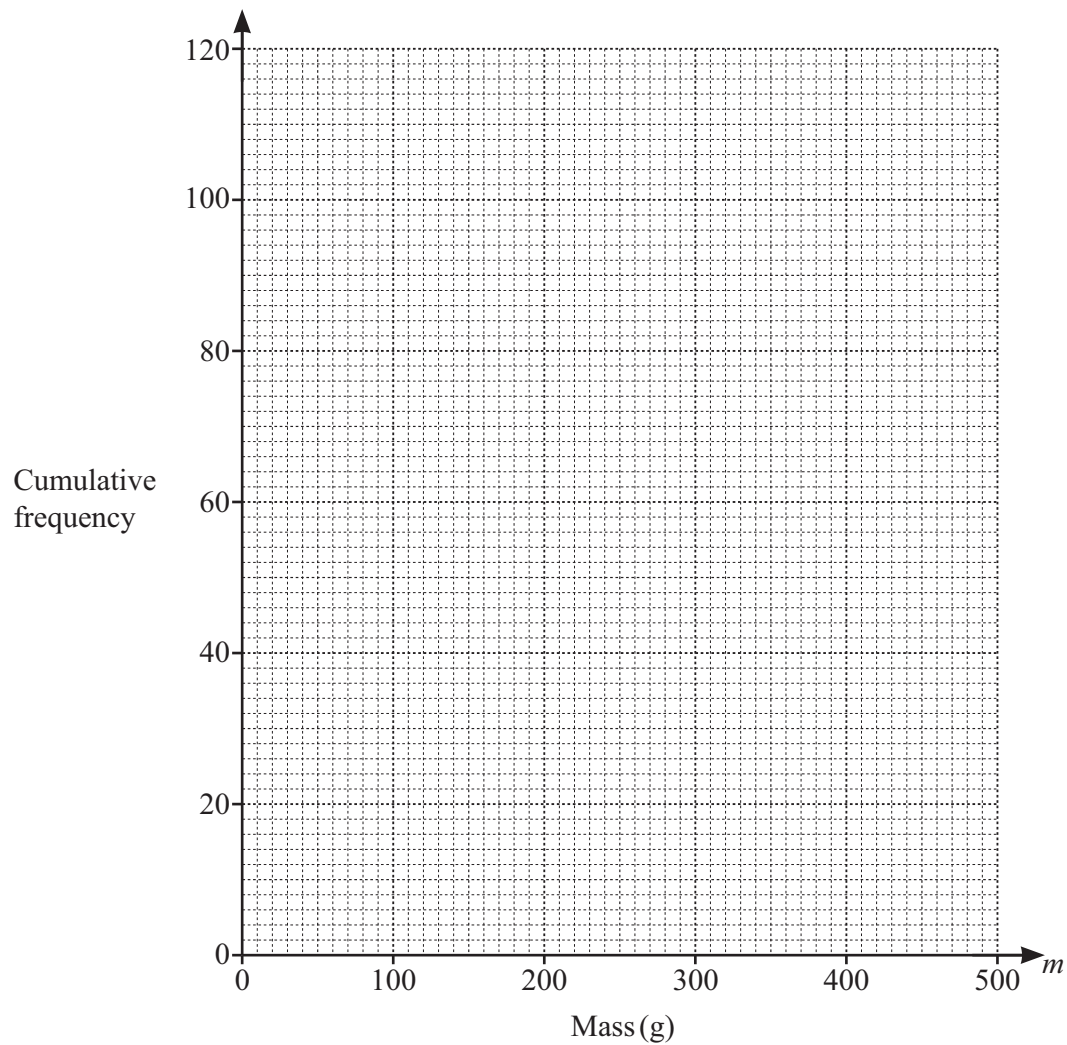
height of bar for $200 < m \leq 500$ cm [3]

- (c) Complete the cumulative frequency table.

Mass (m grams)	$m \leq 50$	$m \leq 100$	$m \leq 200$	$m \leq 500$
Cumulative frequency				

[2]

(d) Draw a cumulative frequency diagram.



[3]

(e) Use the cumulative frequency diagram to find an estimate for

(i) the median,

..... g [1]

(ii) the upper quartile,

..... g [1]

(iii) the 40th percentile,

..... g [2]

(iv) the number of letters with a mass m where $250 < m \leq 400$.

..... [2]

[Total: 18]

- 3 The heights, h metres, of the 120 boys in an athletics club are recorded.
The table shows information about the heights of the boys.

Height (h metres)	$1.3 < h \leq 1.4$	$1.4 < h \leq 1.5$	$1.5 < h \leq 1.6$	$1.6 < h \leq 1.7$	$1.7 < h \leq 1.8$	$1.8 < h \leq 1.9$
Frequency	7	18	30	24	27	14

- (a) (i) Write down the modal class.

..... $< h \leq$ [1]

- (ii) Calculate an estimate of the mean height.

..... m [4]

- (b) (i) One boy is chosen at random from the club.

Find the probability that this boy has a height greater than 1.8 m.

..... [1]

- (ii) Three boys are chosen at random from the club.

Calculate the probability that one of the boys has a height greater than 1.8 m and the other two boys each have a height of 1.4 m or less.

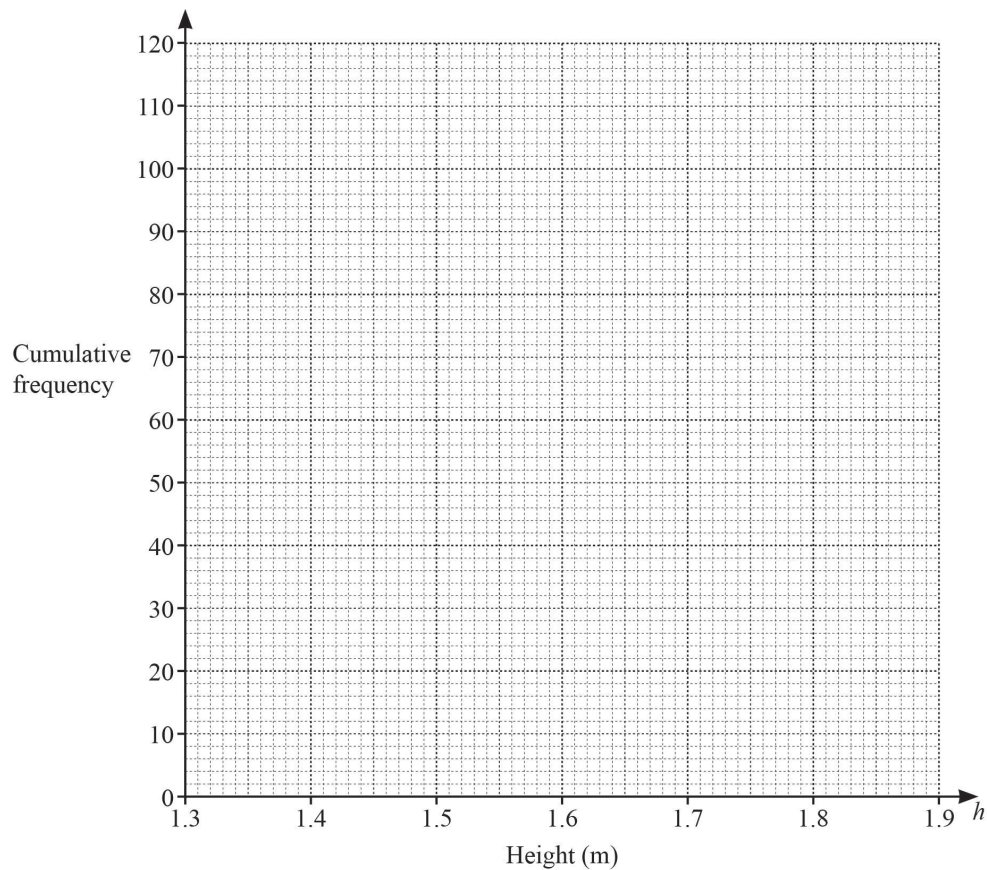
..... [4]

- (c) (i) Use the frequency table to complete the cumulative frequency table.

Height (h metres)	$h \leq 1.4$	$h \leq 1.5$	$h \leq 1.6$	$h \leq 1.7$	$h \leq 1.8$	$h \leq 1.9$
Cumulative frequency	7	25				

[2]

- (ii) On the grid, draw a cumulative frequency diagram to show this information.



[3]

- (d) Use your diagram to find an estimate for

- (i) the median height,

..... m [1]

- (ii) the 40th percentile.

..... m [2]

[Total: 18]

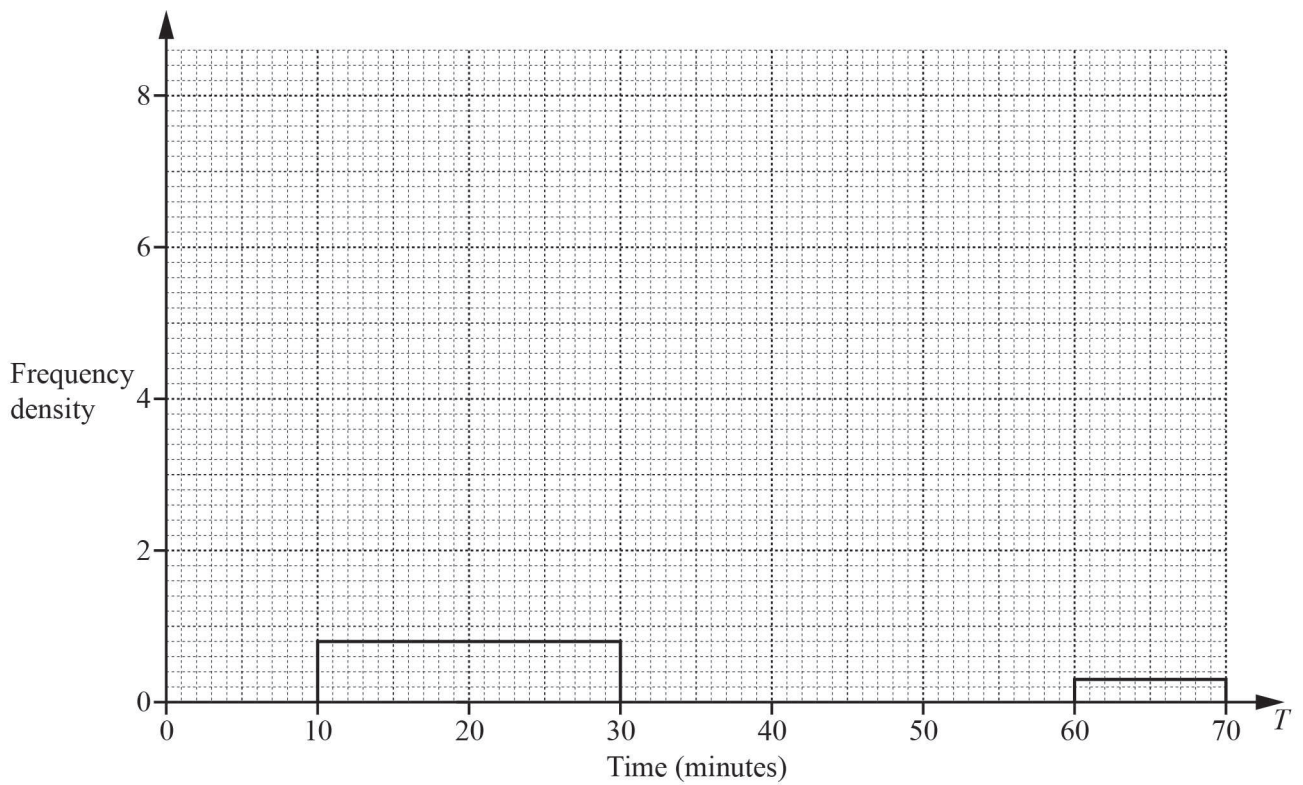
- 4 (a) The table shows the amount of time, T minutes, 120 people each spend in a supermarket one Saturday.

Time (T minutes)	Number of people
$10 < T \leq 30$	16
$30 < T \leq 40$	18
$40 < T \leq 45$	22
$45 < T \leq 50$	40
$50 < T \leq 60$	21
$60 < T \leq 70$	3

- (i) Use the mid-points of the intervals to calculate an estimate of the mean.

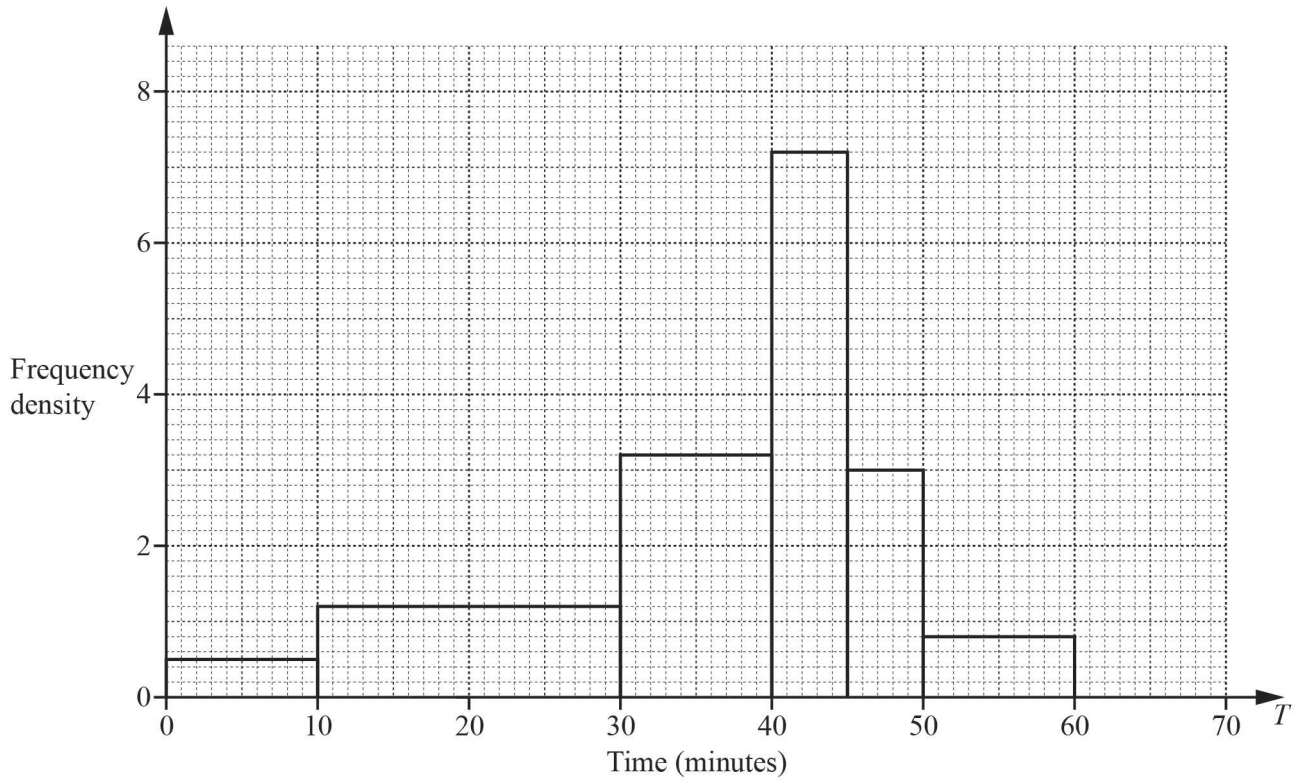
..... min [4]

- (ii) Complete this histogram to show the information in the table.



[4]

- 4 (b) This histogram shows the amount of time, T minutes, 120 people each spend in the supermarket one Wednesday.



Make a comment comparing the distributions of the times for the two days.

.....
 [1]

[Total: 9]

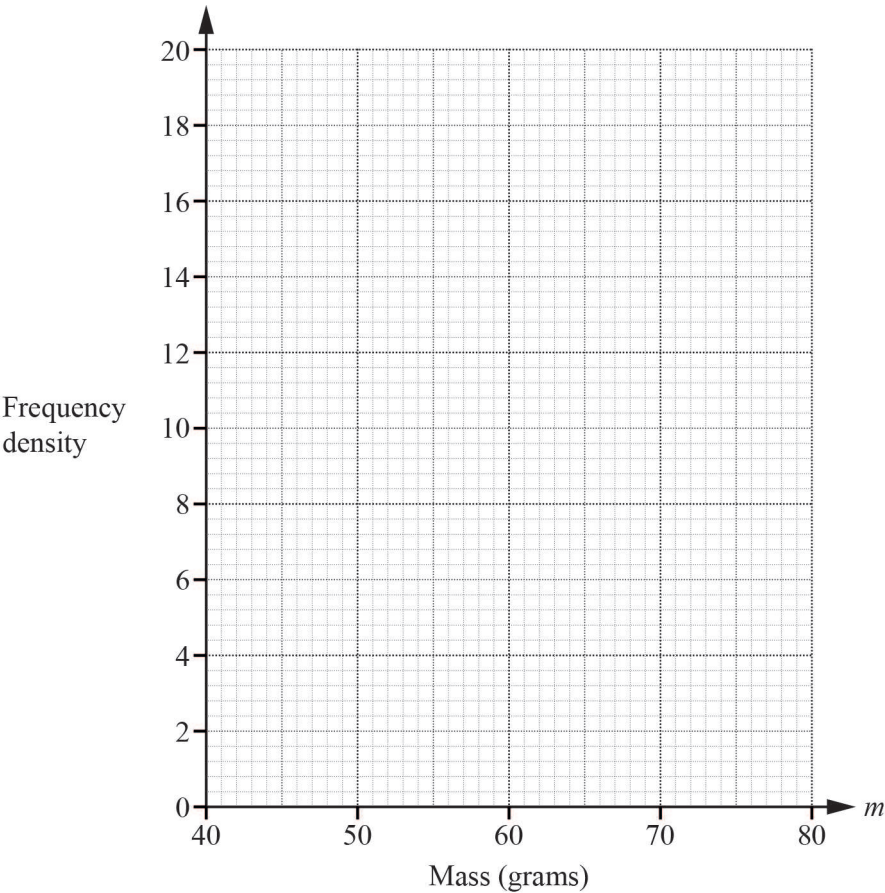
- 5 Three sizes of eggs are sold in a shop.
 The table shows the number of eggs of each size sold in one day.

Size	Small	Medium	Large
Mass (m grams)	$46 < m \leq 52$	$52 < m \leq 62$	$62 < m \leq 80$
Number of eggs sold	78	180	162

(a) Calculate an estimate of the mean mass.

..... g [4]

(b) On the grid, draw a histogram to show the information in the table.



[4]

[Total: 8]

6 The frequency table shows information about the time, m minutes, that each of 160 people spend in a library.

Time (m minutes)	$0 < m \leq 10$	$10 < m \leq 40$	$40 < m \leq 60$	$60 < m \leq 90$	$90 < m \leq 100$	$100 < m \leq 120$
Frequency	3	39	43	55	11	9

- (a) (i) Find the probability that one of these people, chosen at random, spends more than 100 minutes in the library.

..... [1]

- (ii) Calculate an estimate of the mean time spent in the library.

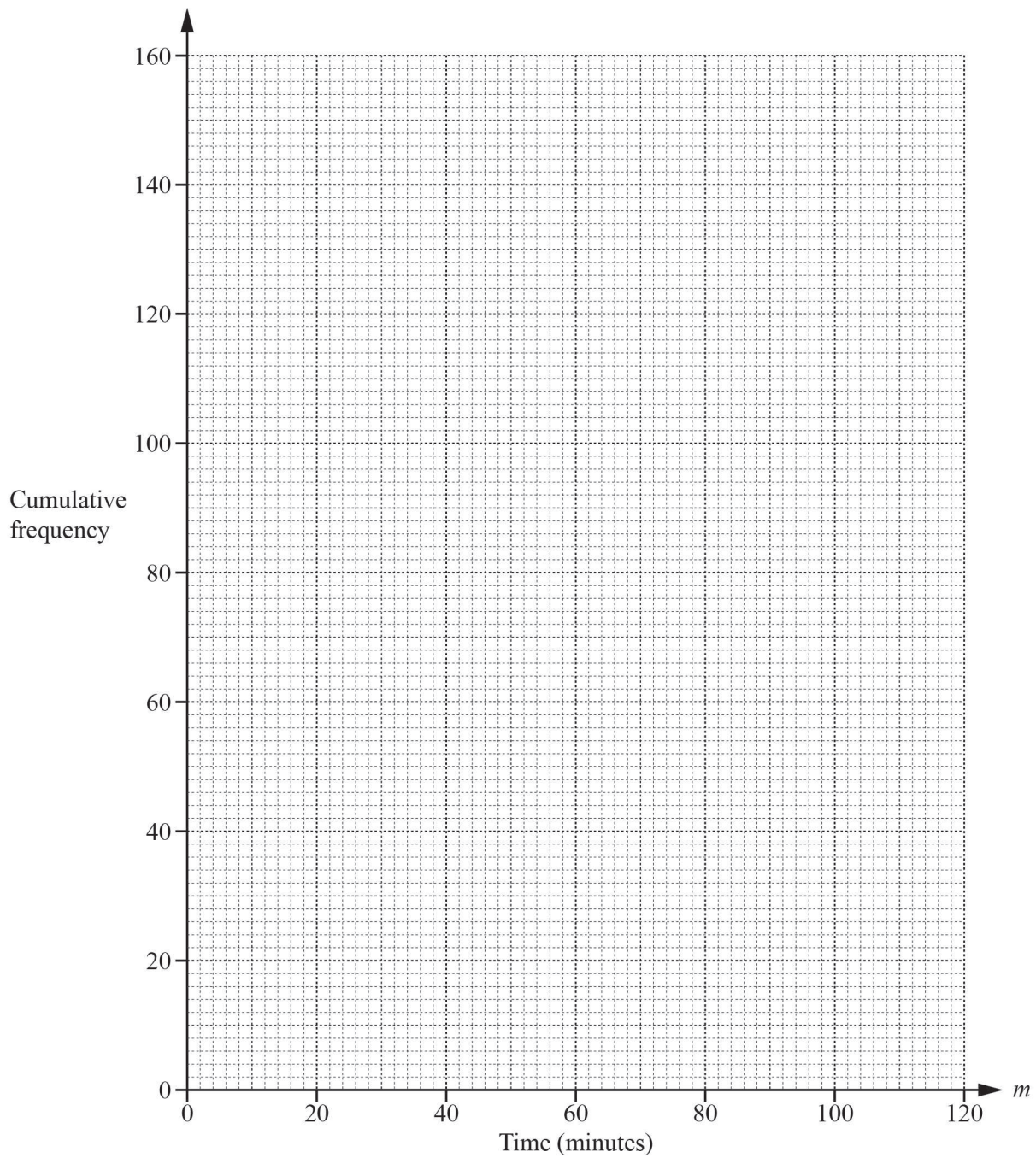
..... min [4]

- (b) Complete the cumulative frequency table below.

Time (m minutes)	$m \leq 10$	$m \leq 40$	$m \leq 60$	$m \leq 90$	$m \leq 100$	$m \leq 120$
Cumulative frequency	3	42				

[2]

(c) On the grid, draw the cumulative frequency diagram.



[3]

(d) Use your cumulative frequency diagram to find

(i) the median,

..... min [1]

(ii) the interquartile range,

..... min [2]

(iii) the 90th percentile,

..... min [2]

(iv) the number of people who spend more than 30 minutes in the library.

..... min [2]

[Total: 17]

7 Divide \$200 in the ratio 7 : 3.

\$, \$ [2]

[Total: 2]

8 Helga knits some squares.

Each square is either white, pink or blue.

The number of squares are in the ratio white : pink : blue = 5 : 3 : 2.

30 squares are blue.

Show that Helga knits 150 squares.

[2]

[Total: 2]

9 The angles of a triangle are in the ratio 3 : 5 : 7.

Find the size of the largest angle in this triangle.

..... [3]

[Total: 3]

- 10 A shop sells sun cream in bottles *A*, *B* and *C*.



Work out which bottle is the best value.
You must show all your working.

Bottle [3]

[Total: 3]

- 11 Mr Zhang's holiday expenses are in the ratio
hotel : car hire : food = 8 : 5 : 6.
The cost of the hotel is \$2400.

Show that the total of the holiday expenses is \$5700.

[2]

[Total: 2]

- 12** Ahmed employs three people, Budi, Citra and Dian.
Budi earns \$17 000, Citra earns \$13 600 and Dian earns \$6800.

Find the ratio of their earnings in its simplest form.

Budi : Citra : Dian = : : [2]

[Total: 2]

- 13** Alex, Bobbie and Chris share strawberries in the ratio Alex : Bobbie : Chris = 3 : 2 : 2.
Chris receives 12 strawberries.

Calculate the total number of strawberries shared.

..... [2]

[Total: 2]

- 14** On one journey, all 56 seats on a bus are filled.
The ratio of adults to children on this journey is adults : children = 5 : 3.
The cost for an adult ticket is \$2.80 .
The cost for a child ticket is $\frac{3}{4}$ of the adult cost.

Work out the total cost of the tickets for this journey.

\$ [4]

[Total: 4]

Painter	Plumber	Electrician
---------	---------	-------------

\$35 per hour	Fixed charge \$40 plus \$26.50 per hour	\$48 per hour for the first 2 hours then \$32 per hour
---------------	---	---

These are the rates charged by a painter, a plumber and an electrician who do some work for Mr Sharma.

- (a) The painter works for 7 hours.

Calculate the amount Mr Sharma pays the painter.

\$ [1]

- (b) Mr Sharma pays the plumber \$252.

Calculate how many hours the plumber works.

..... hours [2]

- (c) Mr Sharma pays the electrician \$224.

Calculate how many hours the electrician works.

..... hours [2]

- (d) Write down the ratio of the amount Mr Sharma pays to the painter, the plumber and the electrician.
Give your answer in its lowest terms.

painter : plumber : electrician = : : [2]

[Total: 7]

- 16** Arjun and Gretal each pay rent.

In 2018, the ratio of the amount each paid in rent was Arjun : Gretal = 5 : 7.

In 2019, the ratio of the amount each paid in rent was Arjun : Gretal = 9 : 13.

Arjun paid the same amount of rent in both 2018 and 2019.

Gretal paid \$290 more rent in 2019 than she did in 2018.

Work out the amount Arjun paid in rent in 2019.

\$ [4]

[Total: 4]

- 17** The visitors to a campsite today are in the ratio

men : women = 5 : 4 and women : children = 3 : 7.

- (a)** Calculate the ratio men : women : children in its simplest form.

..... : : [2]

- (b)** Today there are 224 children at the campsite.

Calculate the total number of men and women.

..... [3]

[Total: 5]