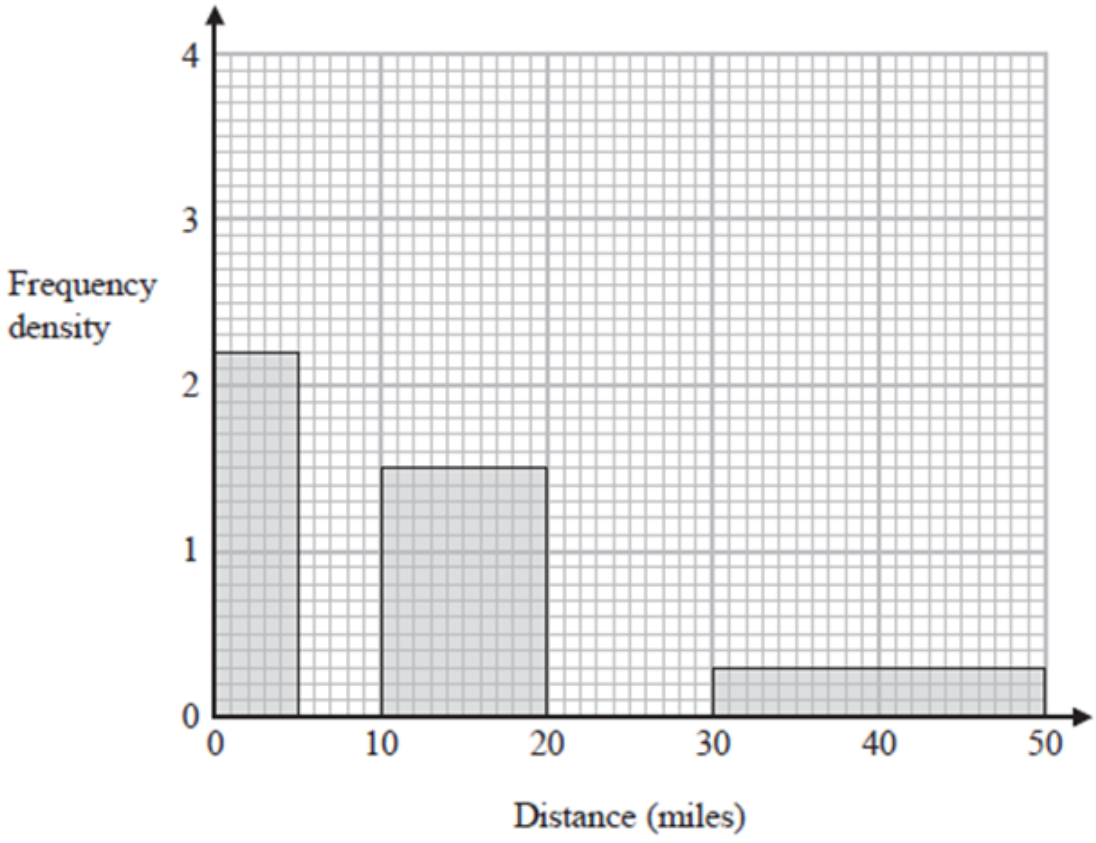
ELIJAH MATHS
GCSE and A Level Maths

STATISTICAL GRAPHS

QUESTION 1

The histogram gives information about the distances that 60 nurses travelled to work on Tuesday.
The histogram is incomplete.



11 of the nurses travelled between 0 miles and 5 miles.
None of the nurses travelled a distance greater than 50 miles.

The number of nurses who travelled between 20 miles and 30 miles is twice the number of nurses who travelled between 30 miles and 50 miles.

Complete the histogram.

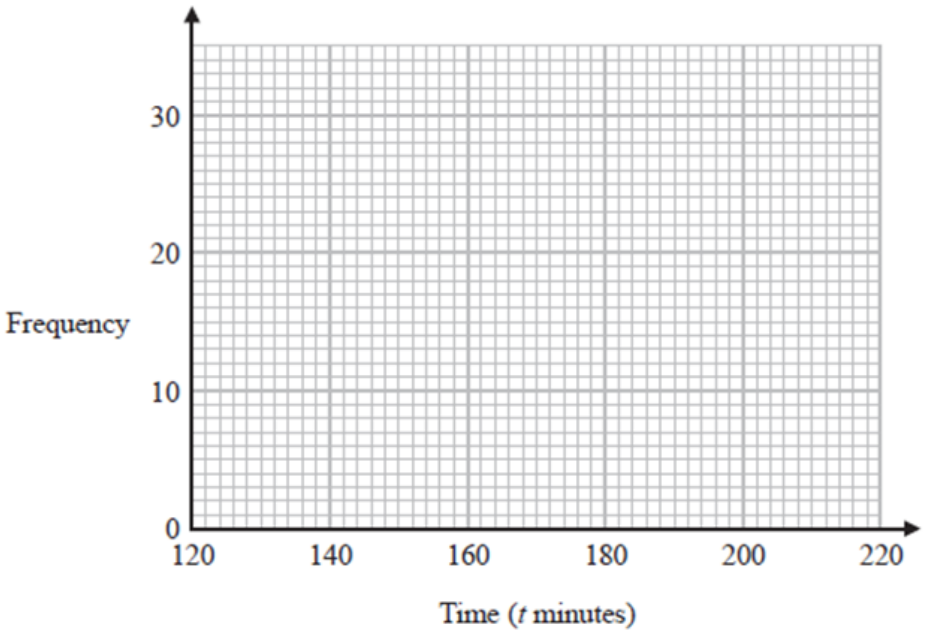
(4 marks)

QUESTION 2

The table shows information about the times, in minutes, 150 competitors took to complete a marathon race.

Time (t minutes)	Frequency
$120 \leq t < 140$	22
$140 \leq t < 160$	32
$160 \leq t < 180$	30
$180 \leq t < 200$	24
$200 \leq t < 220$	19

On the grid below, draw a frequency polygon for this information.



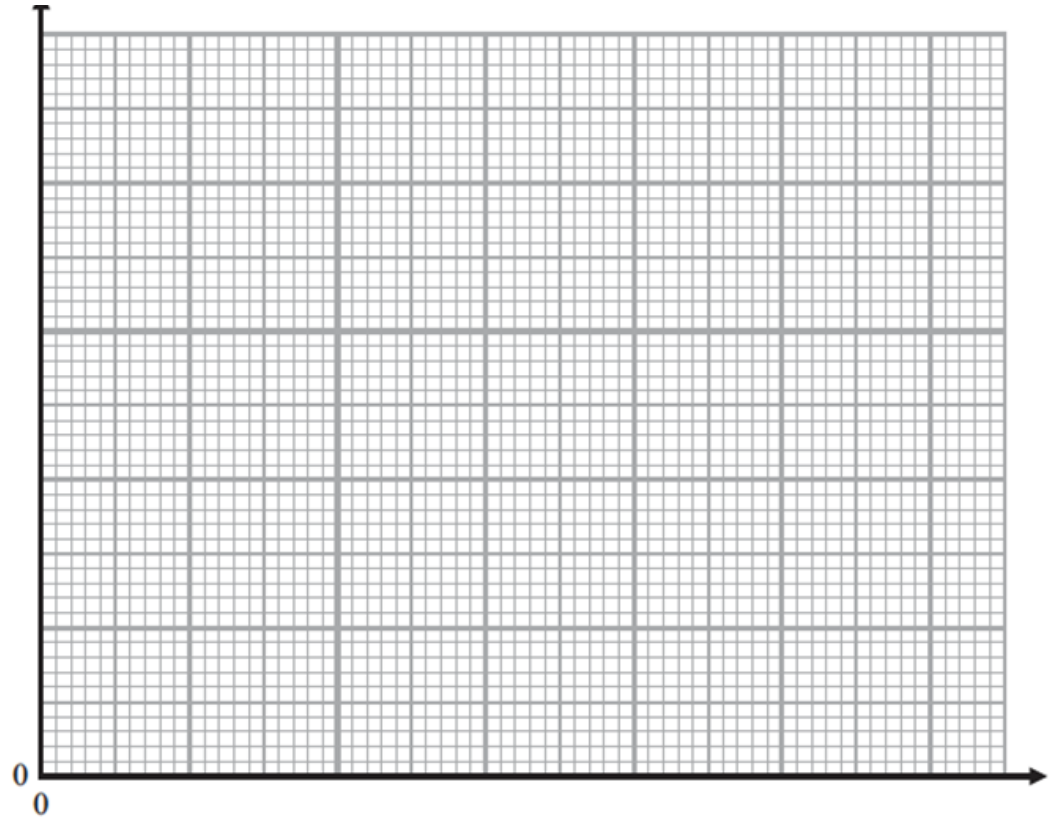
(2 marks)

QUESTION 3

The table gives information about the amount of time that each of 150 people were in an art gallery.

Time (t minutes)	Frequency
$0 < t \leq 10$	10
$10 < t \leq 30$	80
$30 < t \leq 35$	23
$35 < t \leq 50$	30
$50 < t \leq 60$	7

(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 art gallery for between 15 minutes and 45 minutes.

.....

(2)

QUESTION 4

The frequency table gives information about the weights of 60 packages.

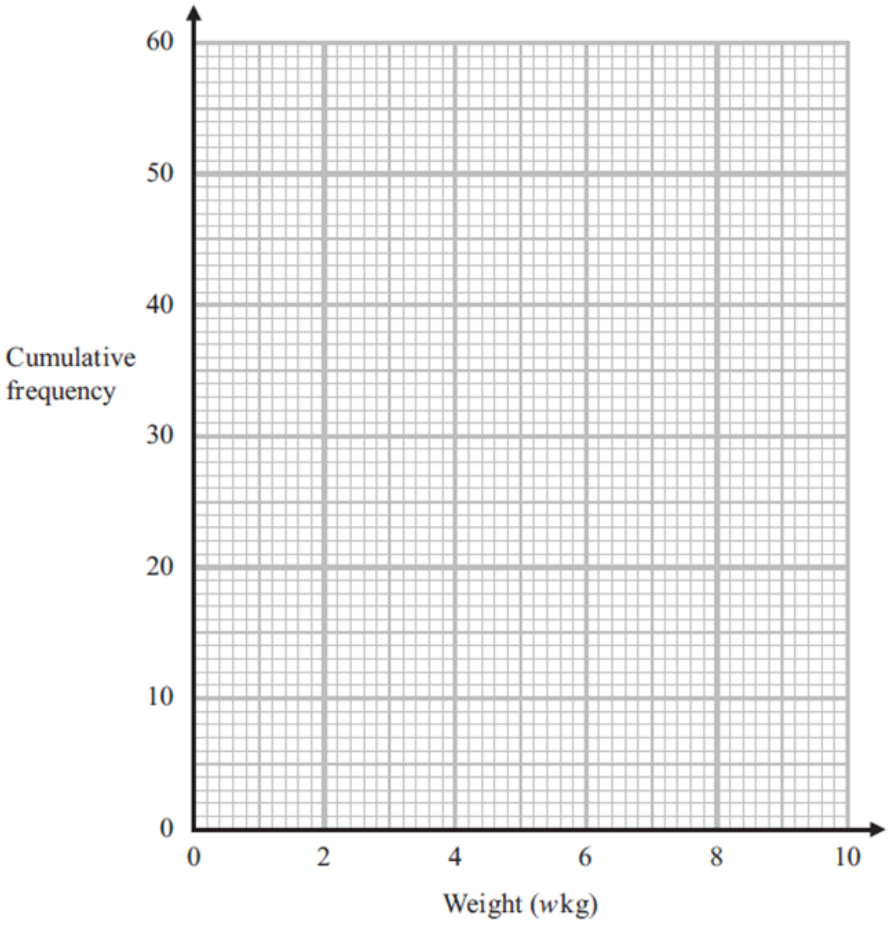
Weight (w kg)	Frequency
$0 < w \leq 2$	9
$2 < w \leq 4$	20
$4 < w \leq 6$	15
$6 < w \leq 8$	10
$8 < w \leq 10$	6

(a) Complete the cumulative frequency table.

Weight (w kg)	Cumulative frequency
$0 < w \leq 2$	
$0 < w \leq 4$	
$0 < w \leq 6$	
$0 < w \leq 8$	
$0 < w \leq 10$	

draw a cumulative frequency graph for your table.

(2)



(c) Use your graph to find an estimate for the interquartile range.

..... kg
(2)

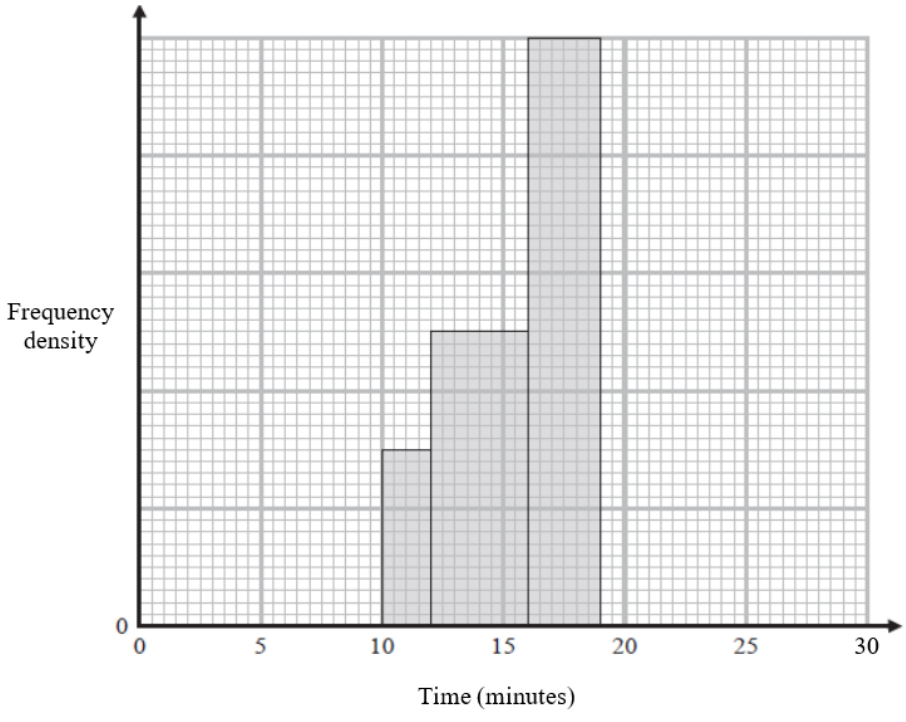
(d) Use your graph to find an estimate for the number of these packages with a weight greater than 5.6 kg.

.....
(2)

Question 5

The incomplete table and the incomplete histogram give information about the times taken by some students to complete a puzzle.

Time (t minutes)	Frequency
$10 < t \leq 12$	
$12 < t \leq 16$	20
$16 < t \leq 19$	30
$19 < t \leq 21$	18
$21 < t \leq 26$	15
$26 < t \leq 30$	8



None of these students had a time for the puzzle such that $t \leq 10$ or $t > 30$

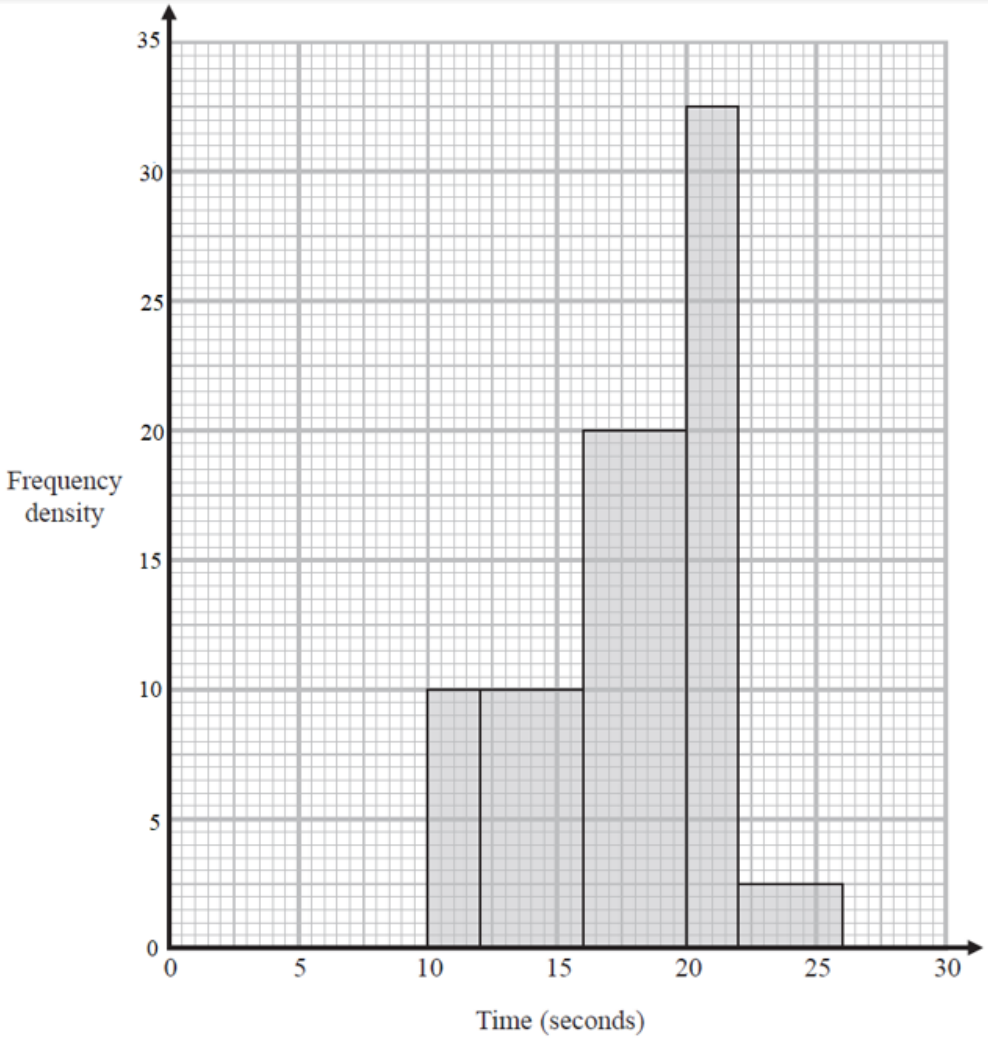
(a) Use the histogram to complete the table.

(1)

(b) Use the table to complete the histogram.

(2)

The histogram below gives information about the times taken by 215 runners to complete a park run.



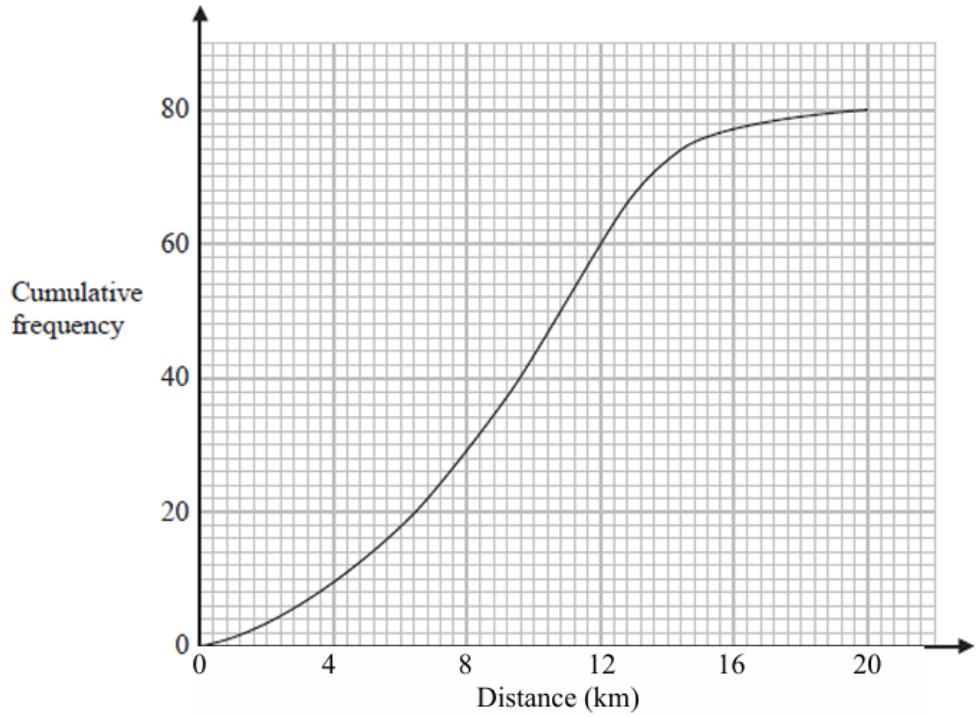
(c) Work out an estimate for the median of the times taken by these 215 runners to complete the park run.

..... seconds

(3)

Question 6

Alan compiled a list of 80 country walks for a guidebook.
The cumulative frequency graph shows information about the distances, in km, of the walks.



One of the walks is chosen at random from the guidebook.

(a) Find an estimate for the probability that this walk will be of a distance greater than 14 km.

.....

(2)

(b) Use the graph to find an estimate for the median distance.

..... km

(1)

(c) Use the graph to find an estimate for the interquartile range of the distances.

..... km
(2)

Alan also compiled a guidebook of city walks.

The interquartile range of the distance of these walks is 4 km.

(d) Give one comparison between the distribution of the distances of the city walks with the distribution of the distances of the country walks.

.....

.....

.....

.....
(1)

Question 7

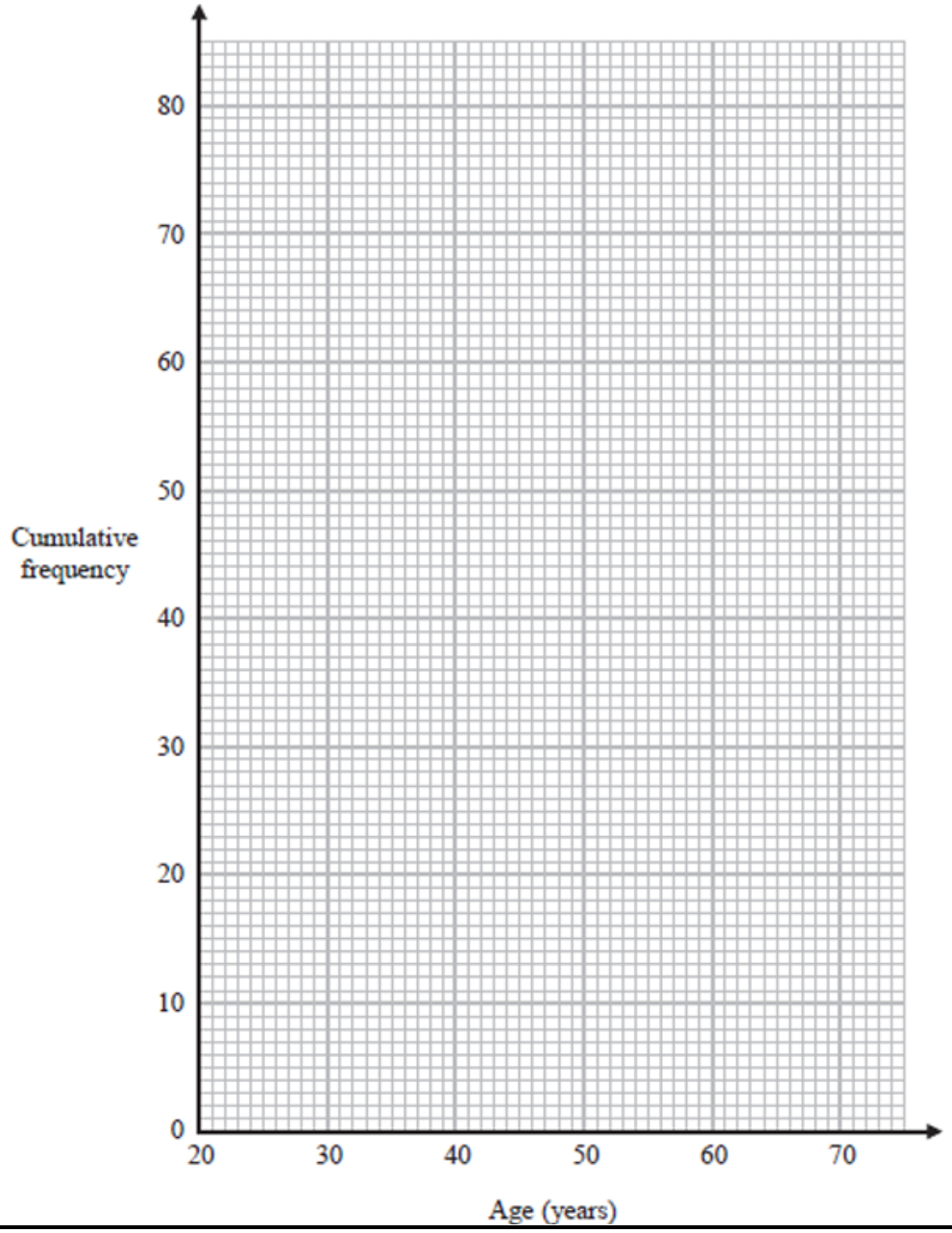
The cumulative frequency table gives information about the ages of 78 people going on a cruise.

Age (a years)	Cumulative frequency
$20 < a \leq 30$	18
$20 < a \leq 40$	36
$20 < a \leq 50$	57
$20 < a \leq 60$	72
$20 < a \leq 70$	78

(*a*) On the grid on the next page, draw a cumulative frequency graph for this information.
(2)

(*b*) Use your graph to find an estimate for the median age.

(1)

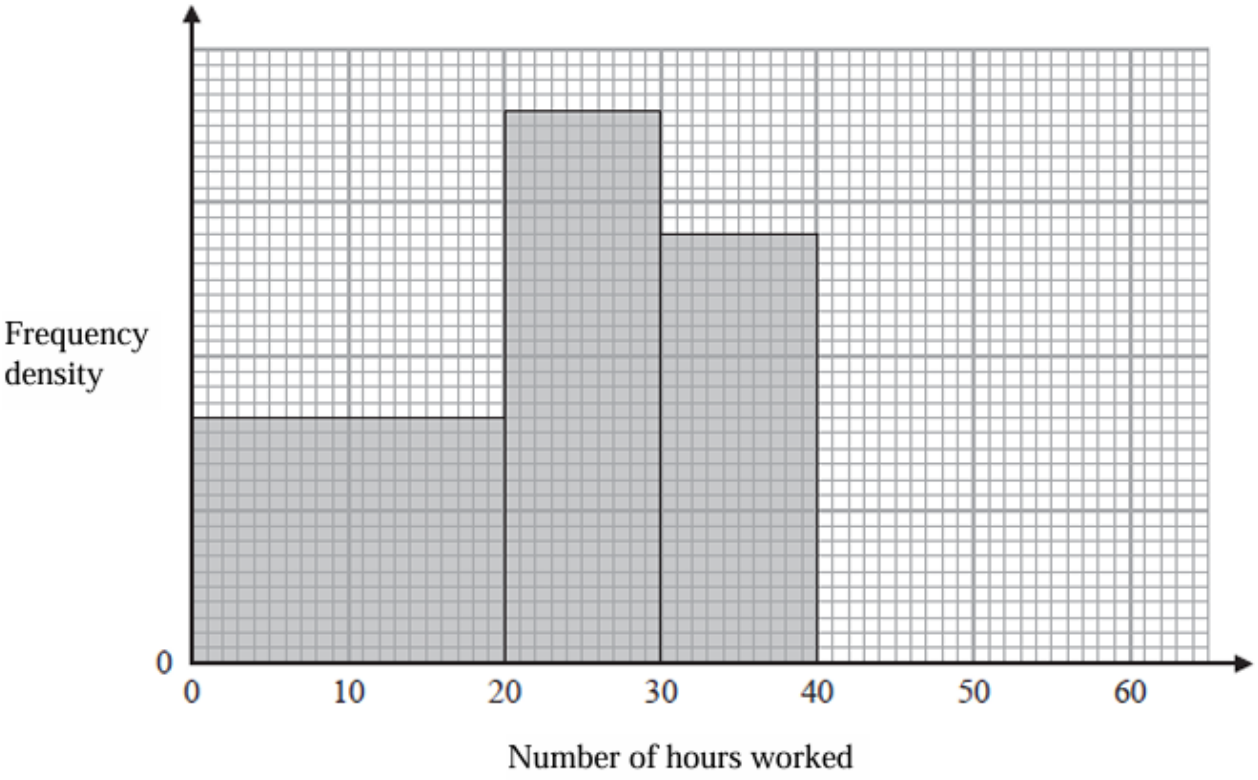


QUESTION 8

The histogram gives information about the number of hours some nurses spent at work last week in a hospital.

The histogram is incomplete.

14 nurses worked between 30 and 40 hours.
12 nurses worked between 40 and 60 hours.



(*a*) Use this information to complete the histogram.

(2)

No nurse worked for more than 60 hours.

(*b*) Work out the total number of nurses in the hospital.

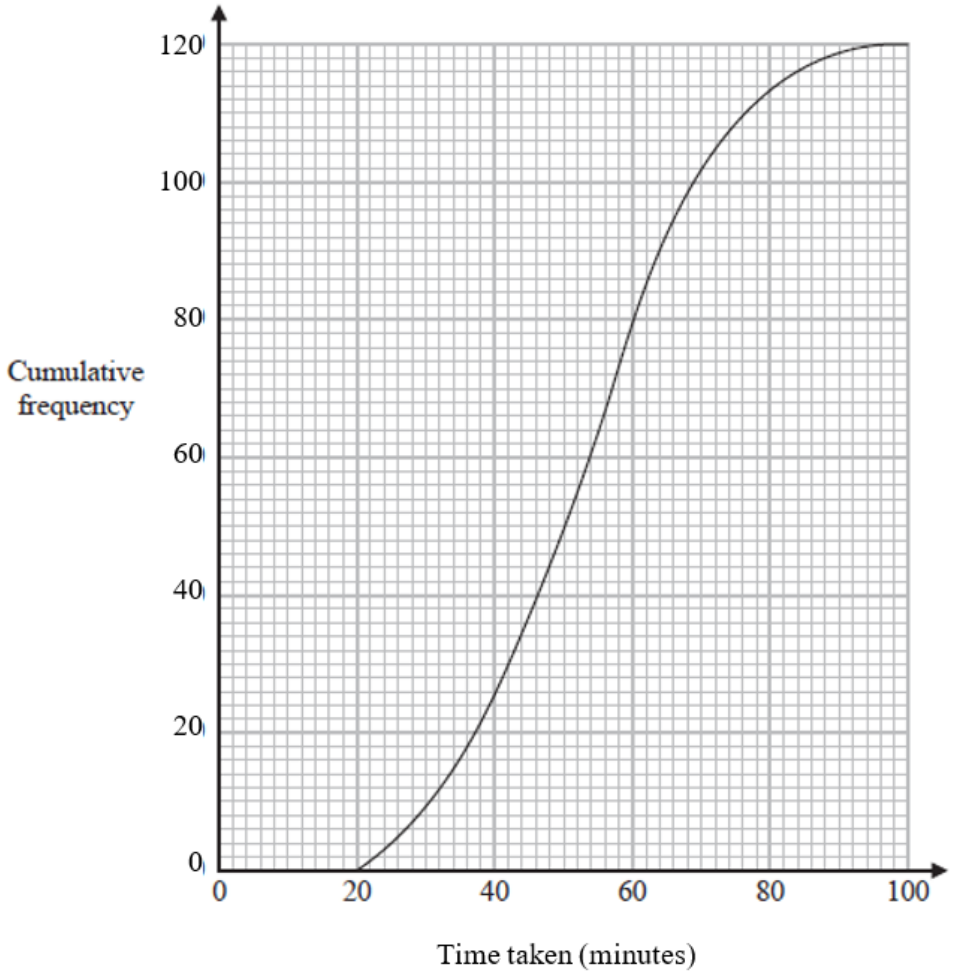
.....

(2)

Question 9

In an experiment, 120 students each took a test.

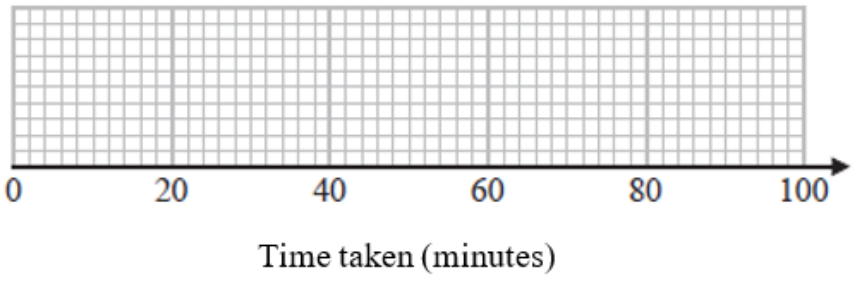
The cumulative frequency graph shows information about the times taken for the 120 students to complete the test.



For these 120 students,

the least time taken was 24 minutes
the greatest time taken was 96 minutes.

On the grid below, draw a box plot for the distribution of the times taken by the students.



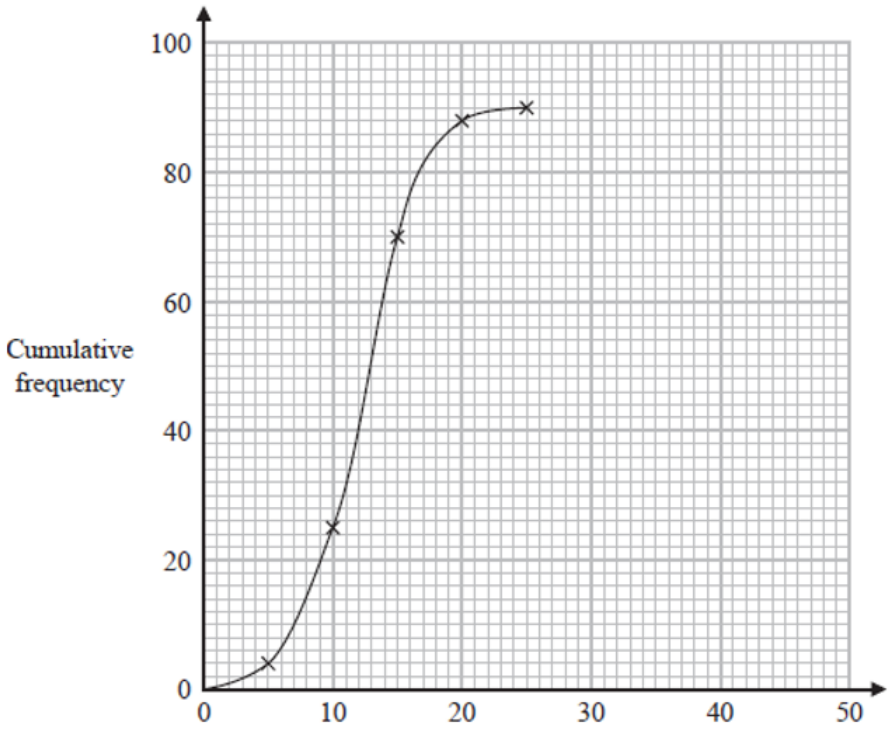
(3 marks)

Question 10

Stephen has this information about the time that it took an operator at a call centre to answer each of 90 calls.

Time (t seconds)	Cumulative frequency
$0 < t \leq 10$	4
$0 < t \leq 20$	25
$0 < t \leq 30$	70
$0 < t \leq 40$	88
$0 < t \leq 50$	90

Stephen draws this cumulative frequency graph for the information in the table.



Write down two different things that are wrong with this graph.

1.....

.....

2.....

.....

(2 marks)

Question 11

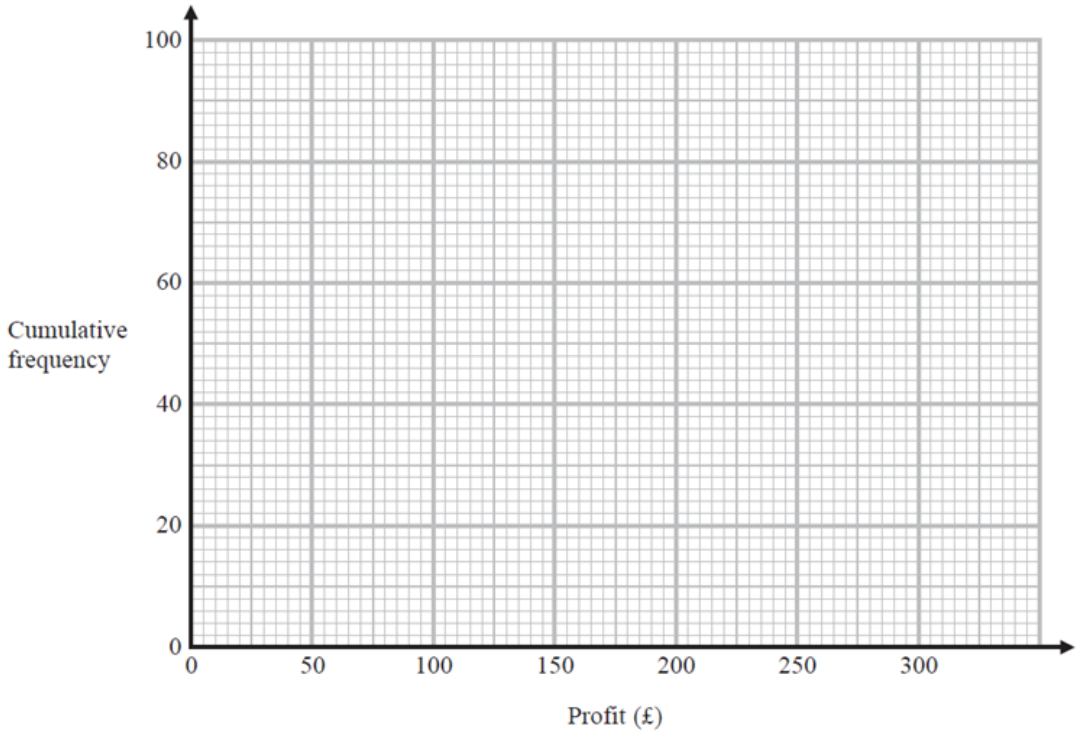
The table shows some information about the profit made each day at a nail salon on 100 days.

Profit (£x)	Frequency
$0 \leq x < 50$	20
$50 \leq x < 100$	30
$100 \leq x < 150$	20
$150 \leq x < 200$	16
$200 \leq x < 250$	8
$250 \leq x < 300$	6

(a) Complete the cumulative frequency table.

Profit (£x)	Cumulative frequency
$0 \leq x < 50$	
$0 \leq x < 100$	
$0 \leq x < 150$	
$0 \leq x < 200$	
$0 \leq x < 250$	
$0 \leq x < 300$	

(b) On the grid, draw a cumulative frequency graph for this information.



(2)

(c) Use your graph to find an estimate for the number of days on which the profit was less than £160

..... days

(1)

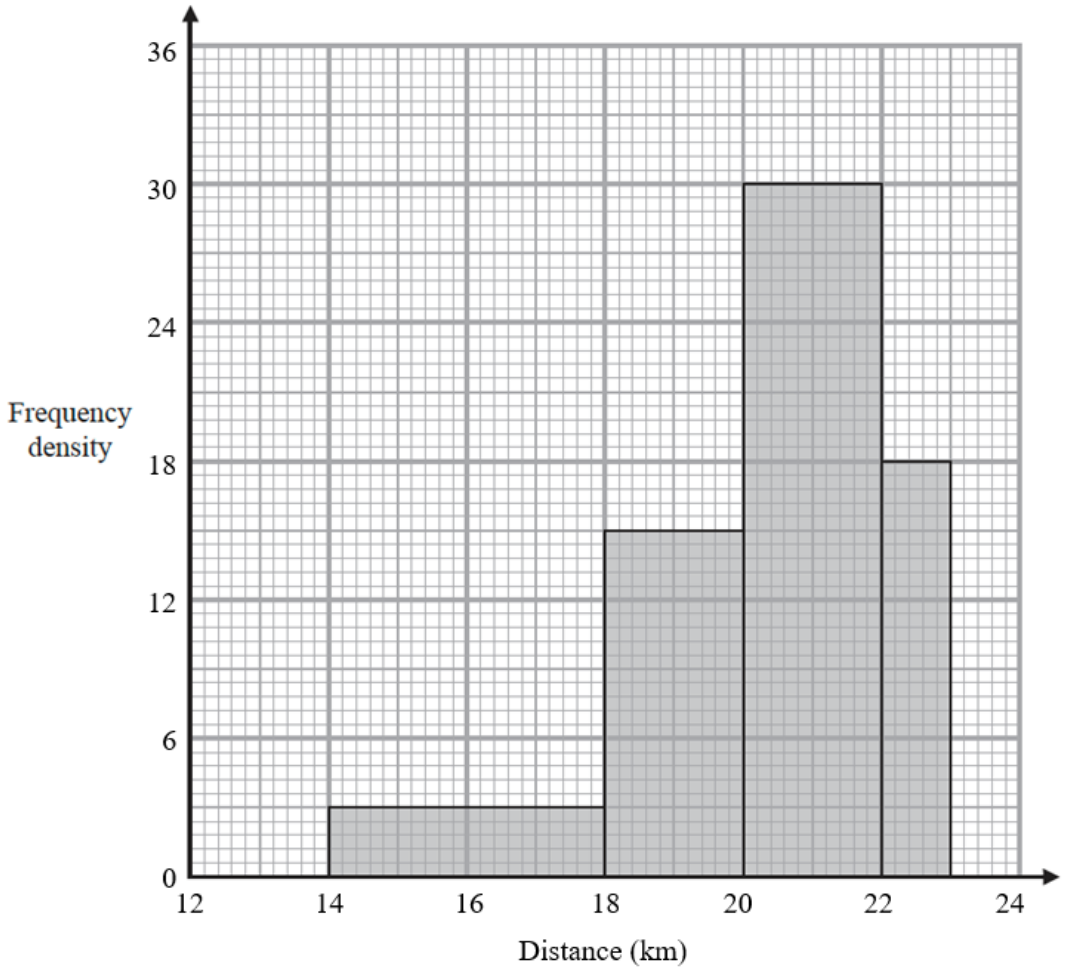
(*d*) Use your graph to find an estimate for the interquartile range.

£.....

(2)

Question 12

The histogram gives information about the distances 120 ramblers walked one weekend.



Calculate an estimate for the mean distance walked.

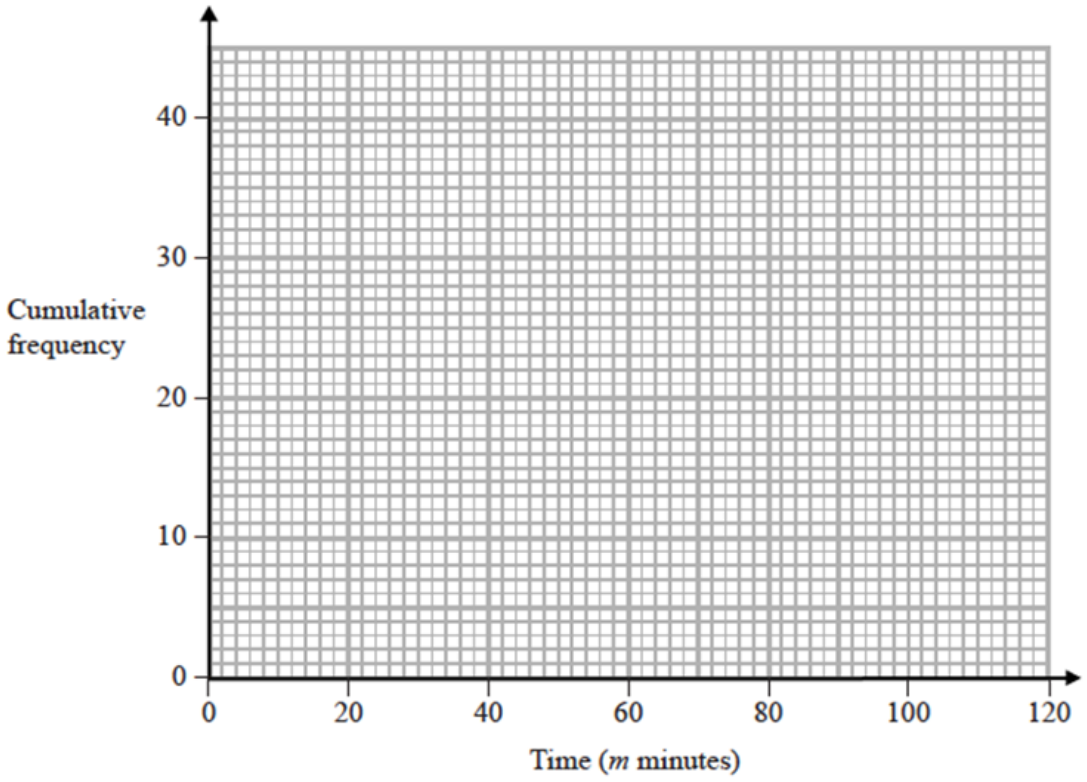
(4)

Question 13

The cumulative frequency table shows information about the times, in minutes, taken by 40 people to complete a puzzle.

Time (m minutes)	Cumulative frequency
$20 < m \leq 40$	5
$20 < m \leq 60$	25
$20 < m \leq 80$	35
$20 < m \leq 100$	38
$20 < m \leq 120$	40

(a) On the grid below, draw a cumulative frequency graph for this information.



(2)

(b) Use your graph to find an estimate for the interquartile range.

..... minutes

(2)

One of the 40 people is chosen at random.

(*c*) Use your graph to find an estimate for the probability that this person took between 50 minutes and 90 minutes to complete the puzzle.

.....

(2)