

Cumulative Frequency

For Pearson Edexcel GCSE Mathematics (1MA1) • Higher tier

Name _____

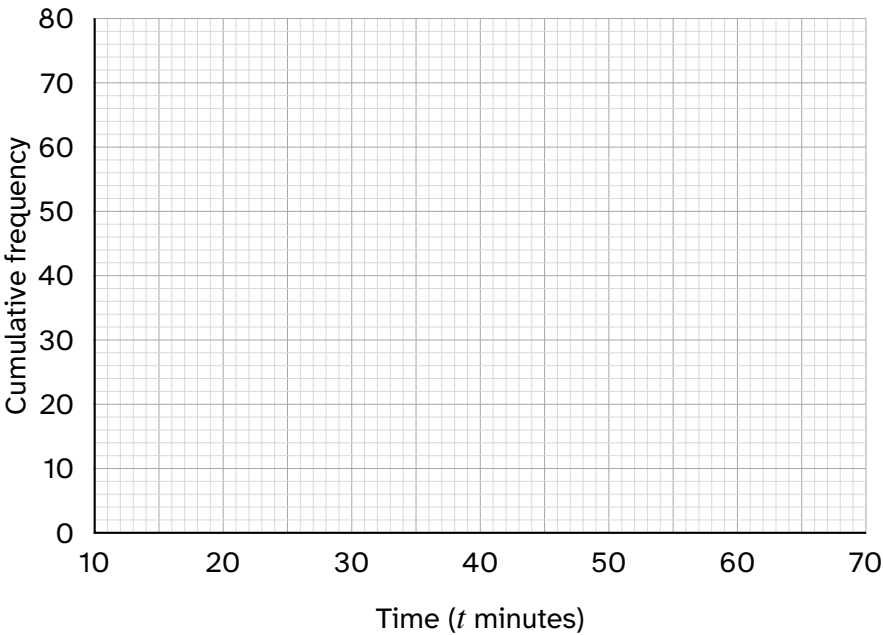
Total marks: **25**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

- 1** The cumulative frequency table gives information about the journey times, in minutes, of 80 commuters.

Time (t minutes)	Cumulative frequency
$10 < t \leq 20$	5
$10 < t \leq 30$	18
$10 < t \leq 40$	42
$10 < t \leq 50$	61
$10 < t \leq 60$	74
$10 < t \leq 70$	80

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



(2)

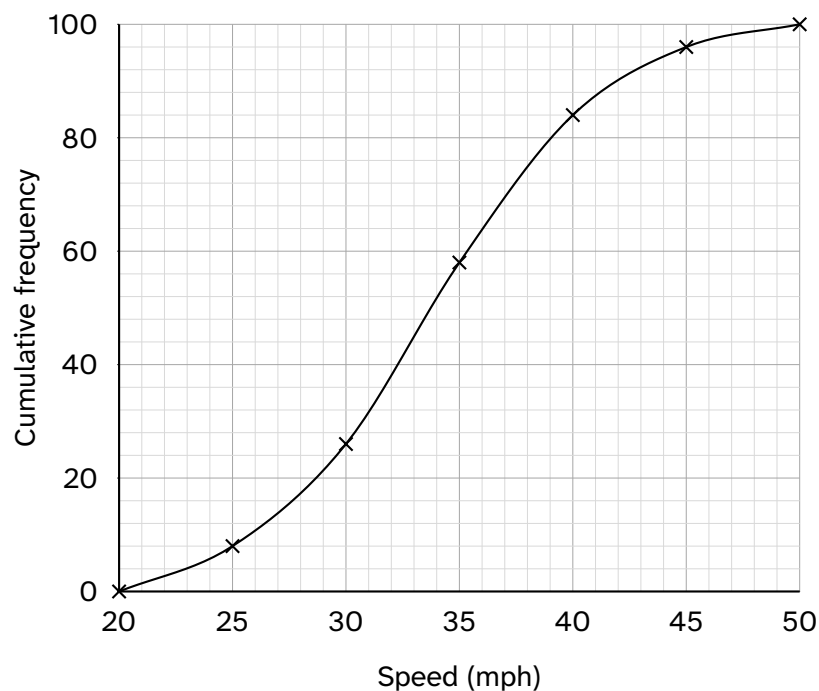
- (b) Use your graph to find an estimate for the median time.

..... minutes
(1)

- (c) Use your graph to find an estimate for the number of commuters whose journey took longer than 45 minutes.

.....
(2)
(Total for Question 1 is 5 marks)

- 2** The cumulative frequency graph shows information about the speeds of 100 cars on a road.



- (a) Use the graph to find an estimate for the median speed.

..... mph
(1)

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

..... mph
(2)

(c) The speed limit on the road is 40 mph.
Find an estimate for the percentage of these cars that were travelling faster than the speed limit.

..... %
(3)

(Total for Question 2 is 6 marks)

3 The table gives information about the times, in minutes, 50 people took to finish a crossword.

Time (t minutes)	Frequency
$0 < t \leq 10$	7
$10 < t \leq 20$	14
$20 < t \leq 30$	16
$30 < t \leq 40$	9
$40 < t \leq 50$	4

Kim is going to draw a cumulative frequency graph for this information.
For the class $20 < t \leq 30$ she plots the point (25, 37)
Explain what is wrong with this point.

(1)

(Total for Question 3 is 1 mark)

- 4 The table gives information about the masses of 120 parcels.

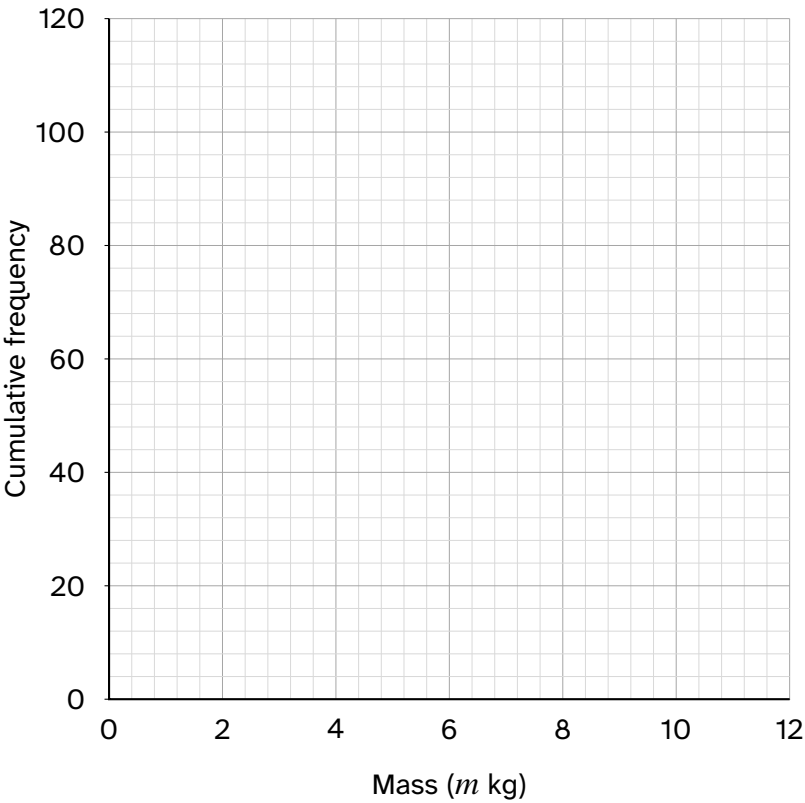
Mass (m kg)	Frequency
$0 < m \leq 2$	8
$2 < m \leq 4$	22
$4 < m \leq 6$	36
$6 < m \leq 8$	30
$8 < m \leq 10$	16
$10 < m \leq 12$	8

- (a) Complete the cumulative frequency table.

Mass (m kg)	Cumulative frequency
$0 < m \leq 2$	
$0 < m \leq 4$	
$0 < m \leq 6$	
$0 < m \leq 8$	
$0 < m \leq 10$	
$0 < m \leq 12$	

(1)

(b) On the grid, draw a cumulative frequency graph for your completed table.



(2)

(c) Use your graph to find an estimate for the percentage of the parcels with a mass between 3 kg and 7 kg.

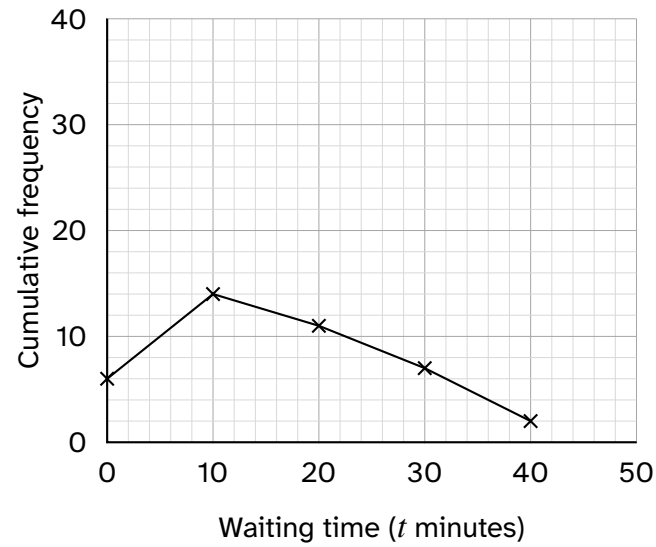
..... %
(3)

(Total for Question 4 is 6 marks)

- 5 The table gives information about the times, in minutes, that 40 patients waited at a health centre.

Time (t minutes)	Frequency
$0 < t \leq 10$	6
$10 < t \leq 20$	14
$20 < t \leq 30$	11
$30 < t \leq 40$	7
$40 < t \leq 50$	2

Ella draws this graph for the information in the table.

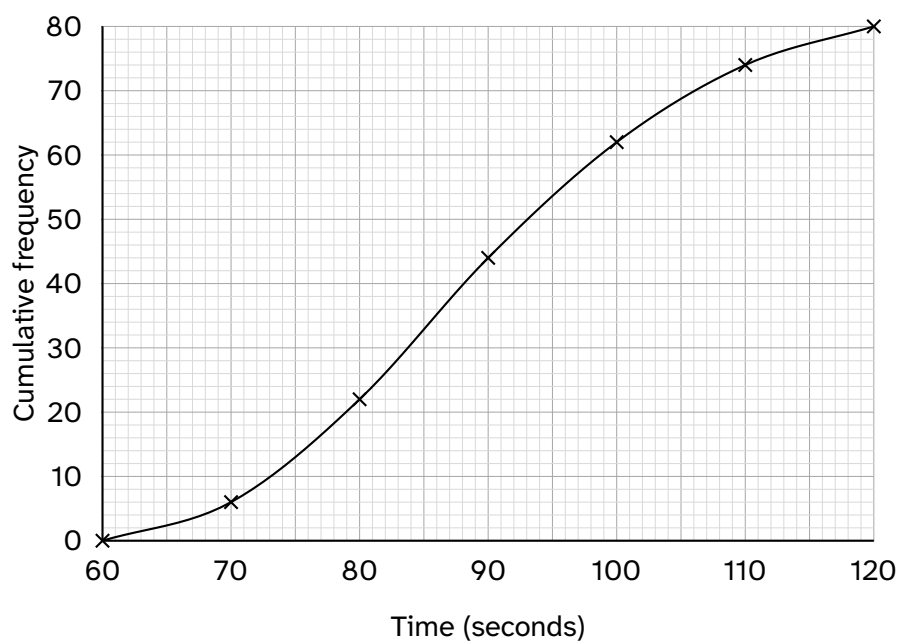


Write down **two** different things that are wrong with Ella's graph.

(2)

(Total for Question 5 is 2 marks)

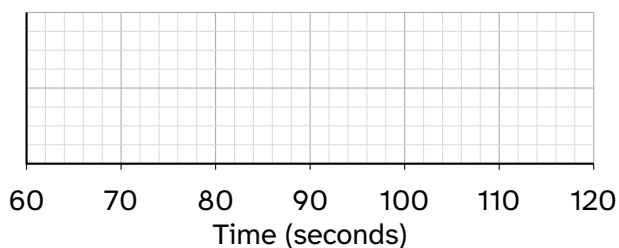
- 6 The cumulative frequency graph gives information about the times, in seconds, that 80 students took to run 400 m.



The fastest student took 63 seconds.

The slowest student took 117 seconds.

- (a) On the grid below, draw a box plot for the distribution of the times.



(3)

(b) 80 adults also ran 400 m.

For the adults

the median time was 95 seconds

the interquartile range was 26 seconds.

Compare the distribution of the times of the students with the distribution of the times of the adults.

(2)

(Total for Question 6 is 5 marks)
