

Statistics

Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Statistics
Paper	Paper 4
Difficulty	Hard
Booklet	Question Paper 1

Time allowed: 107 minutes

Score: /93

Percentage: /100

Grade Boundaries:

CIE IGCSE Maths (0580)

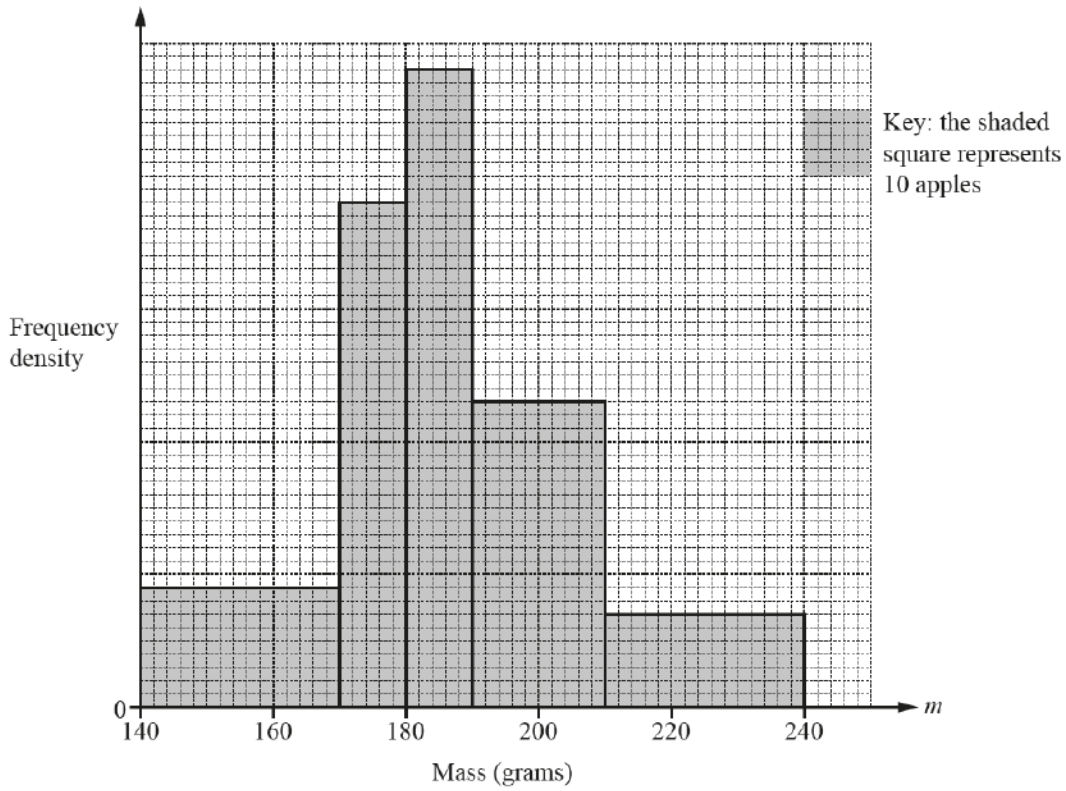
A*	A	B	C	D
>83%	67%	51%	41%	31%

CIE IGCSE Maths (0980)

9	8	7	6	5	4
>95%	87%	80%	69%	58%	46%

Question 1

The histogram shows the distribution of the masses, m grams, of 360 apples.



(a) Use the histogram to complete the frequency table. [3]

Mass (m grams)	Number of apples
$140 < m \leq 170$	
$170 < m \leq 180$	
$180 < m \leq 190$	
$190 < m \leq 210$	92
$210 < m \leq 240$	42

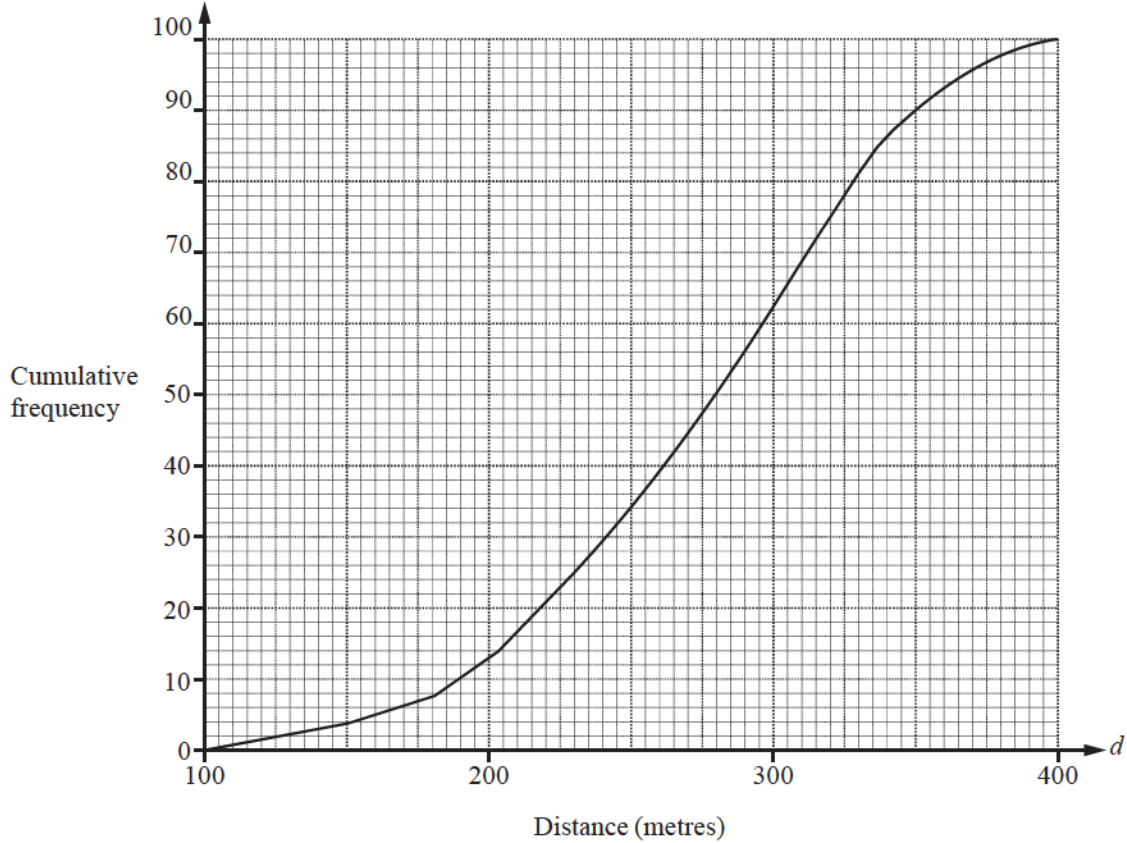
(b) Calculate an estimate of the mean mass of the 360 apples. [4]

Question 2

(a) There are 100 students in group *A*.

The teacher records the distance, d metres, each student runs in one minute.

The results are shown in the cumulative frequency diagram.



Find

(i) the median, [1]

(ii) the upper quartile, [1]

(iii) the inter-quartile range, [1]

(iv) the number of students who run more than 350m. [2]

(b) There are 100 students in group *B*.

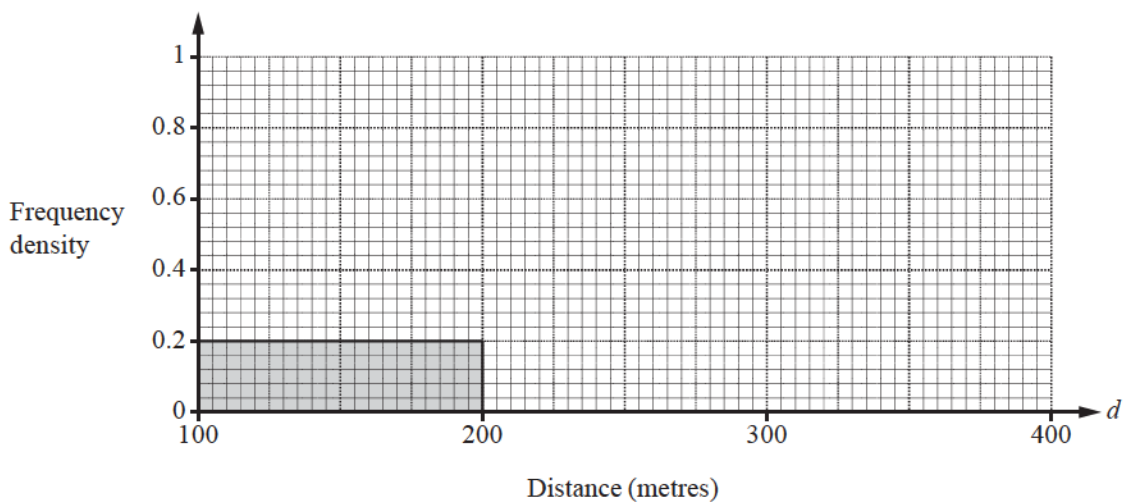
The teacher records the distance, d metres, each of these students runs in one minute.

The results are shown in the frequency table.

Distance (d metres)	$100 < d \leq 200$	$200 < d \leq 250$	$250 < d \leq 280$	$280 < d \leq 320$	$320 < d \leq 400$
Number of students	20	22	30	16	12

(i) Calculate an estimate of the mean distance for group *B*. [4]

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



[4]

(c) For the 100 students in group *B*, the median is 258m.

Complete the statement.

On average, the students in group *A* run than the students in group *B*. [1]

Question 3

The time taken for each of 90 cars to complete one lap of a race track is shown in the table.

Time (t seconds)	$70 < t \leq 71$	$71 < t \leq 72$	$72 < t \leq 73$	$73 < t \leq 74$	$74 < t \leq 75$
Frequency	17	24	21	18	10

(a) Write down the modal time interval. [1]

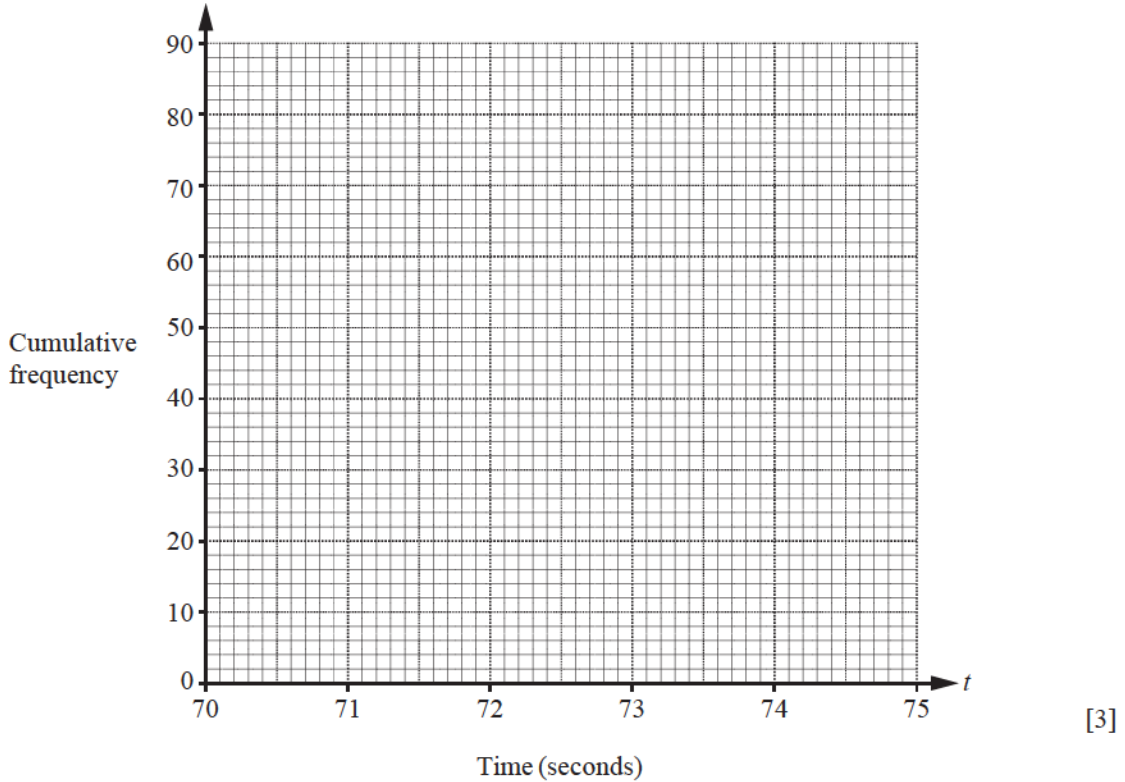
(b) Calculate an estimate of the mean time. [4]

(c) (i) Complete the cumulative frequency table.

Time (t seconds)	$t \leq 71$	$t \leq 72$	$t \leq 73$	$t \leq 74$	$t \leq 75$
Cumulative frequency	17				

[2]

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



(iii) Find the median time. [1]

(iv) Find the inter-quartile range. [2]

(d) One lap of the race track measures 3720 metres, correct to the nearest 10 metres. A car completed the lap in 75 seconds, correct to the nearest second.

Calculate the upper bound for the average speed of this car. Give your answer in kilometres per hour. [4]

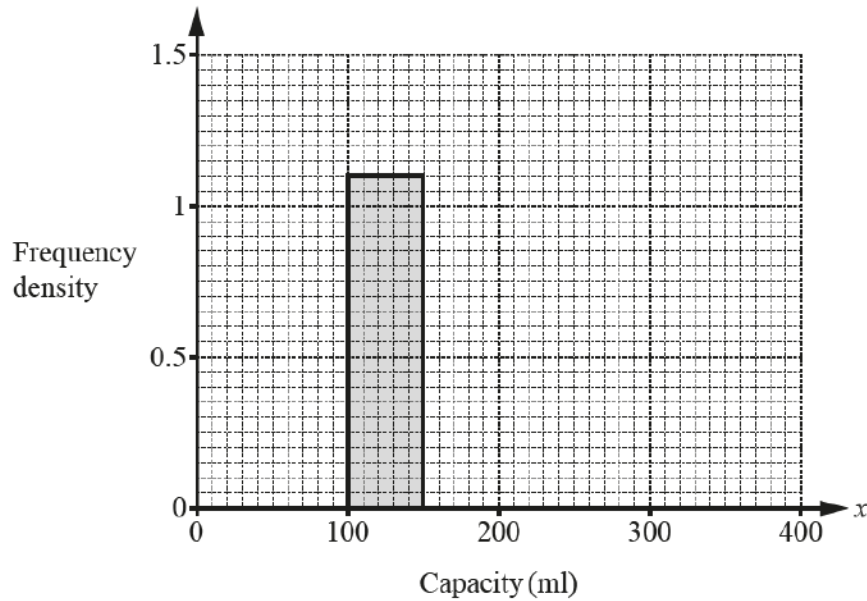
Question 4

- (a) 200 students estimate the capacity, x millilitres, of a cup.
The results are shown in the frequency table.

Capacity (x ml)	$0 < x \leq 100$	$100 < x \leq 150$	$150 < x \leq 200$	$200 < x \leq 250$	$250 < x \leq 400$
Frequency	20	55	66	35	24

- (i) Calculate an estimate of the mean. [4]

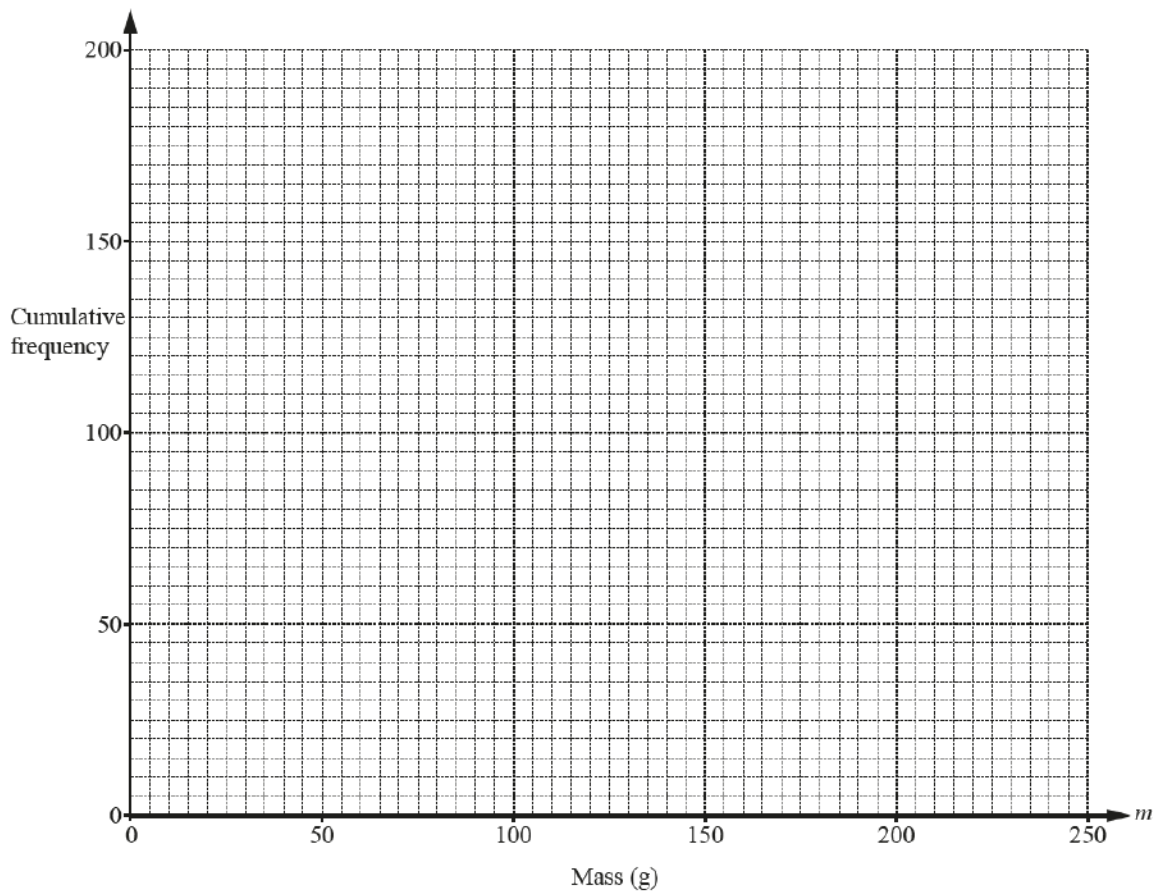
- (ii) Complete the histogram.



(b) The 200 students also estimate the mass, m grams, of a small rock.
The results are shown in the cumulative frequency table.

Mass (m grams)	$m \leq 50$	$m \leq 100$	$m \leq 150$	$m \leq 200$	$m \leq 250$
Cumulative frequency	28	64	104	168	200

(i) On the grid, draw a cumulative frequency diagram.



[3]

(ii) Find

(a) the 65th percentile,

[1]

(b) the number of students who estimated more than 75 g.

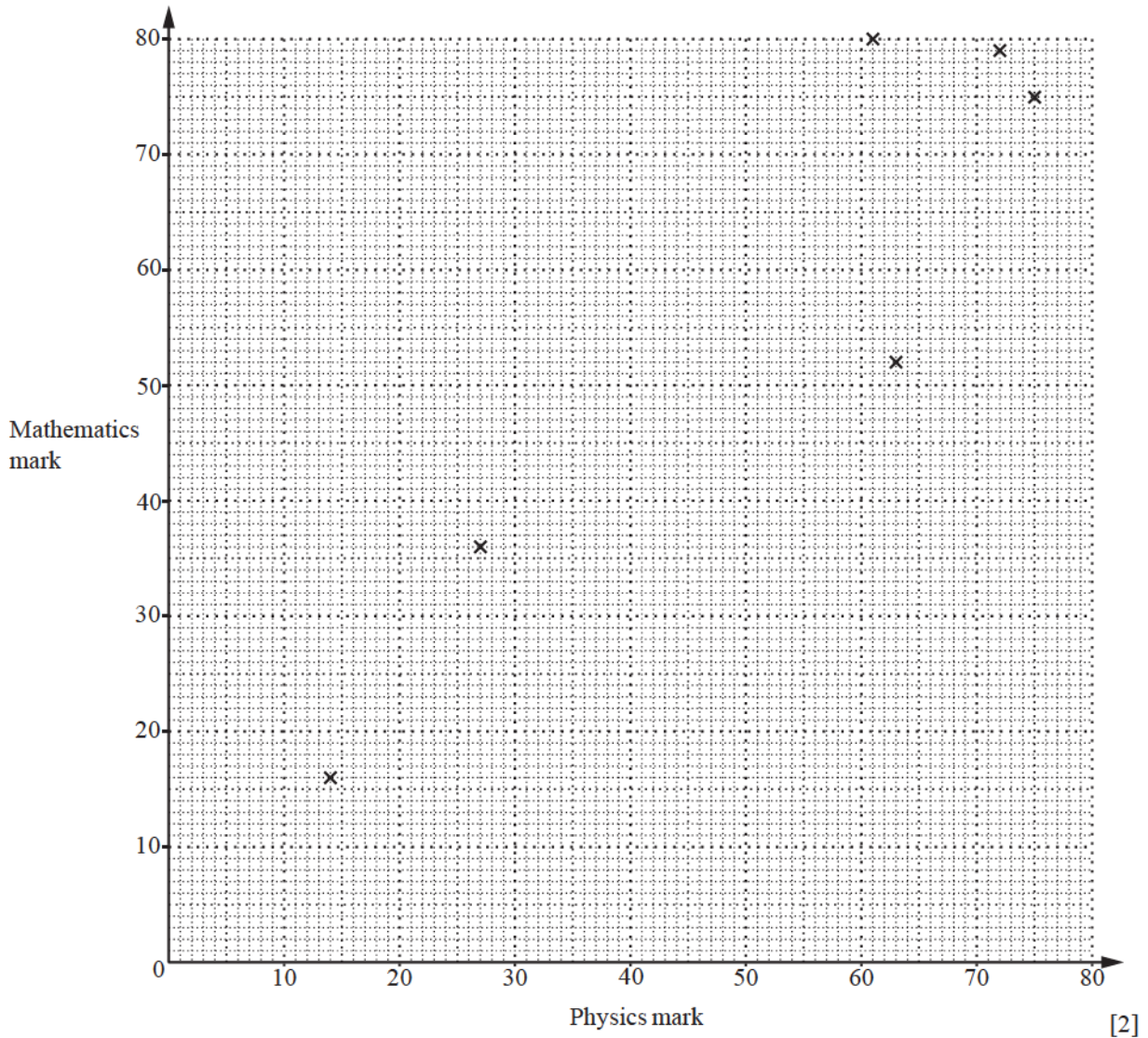
[2]

Question 5

(a) The table shows the marks gained by 10 students in their physics test and their mathematics test.

Physics mark	63	61	14	27	72	75	44	40	28	50
Mathematics mark	52	80	16	36	79	75	51	35	24	63

- (i) Complete the scatter diagram below.
The first six points have been plotted for you.



[2]

- (ii) What type of correlation is shown in the scatter diagram?

[1]

(b) The marks of 30 students in a spelling test are shown in the table below.

Mark	0	1	2	3	4	5
Frequency	2	4	5	5	6	8

Find the mean, median, mode and range of these marks.

[7]

(c) The table shows the marks gained by some students in their English test.

Mark	52	75	91
Number of students	x	45	11

The mean mark for these students is 70.3 .

Find the value of x .

[3]

Question 6

The table shows information about the time taken by 400 people to complete a race.

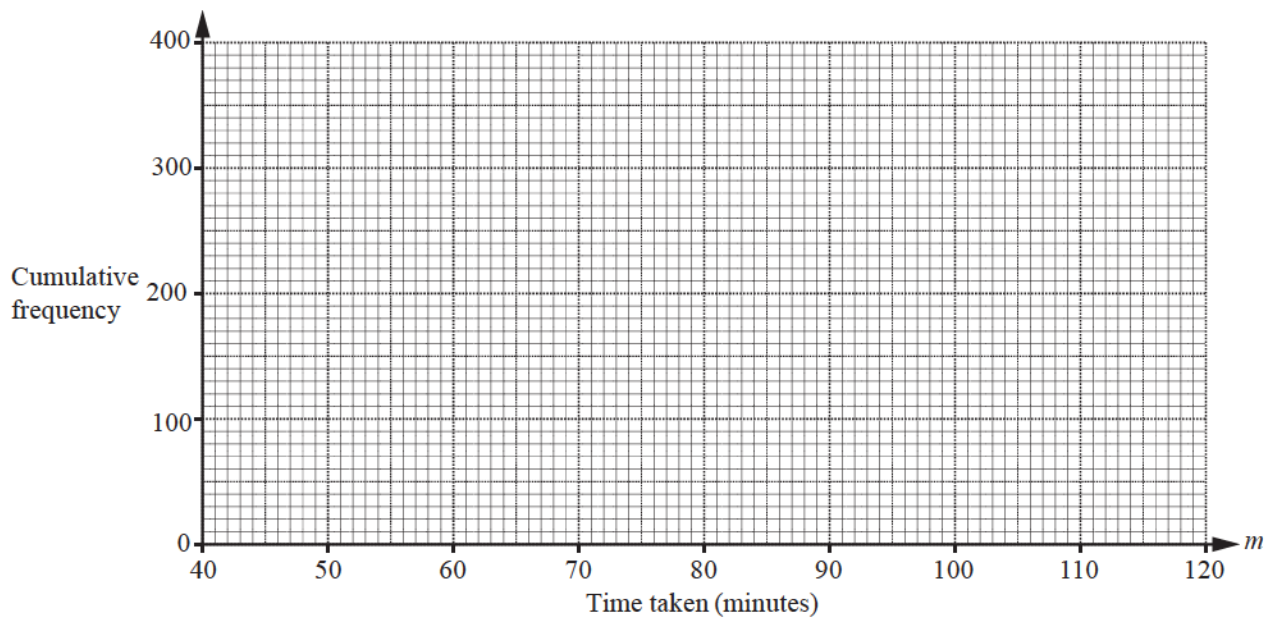
Time taken (m minutes)	$45 < m \leq 50$	$50 < m \leq 60$	$60 < m \leq 70$	$70 < m \leq 90$	$90 < m \leq 100$	$100 < m \leq 120$
Frequency	23	64	122	136	26	29

(a) Calculate an estimate of the mean time taken. [4]

(b) (i) Complete the cumulative frequency table. [2]

Time taken (m minutes)	$m \leq 50$	$m \leq 60$	$m \leq 70$	$m \leq 90$	$m \leq 100$	$m \leq 120$
Cumulative frequency	23					400

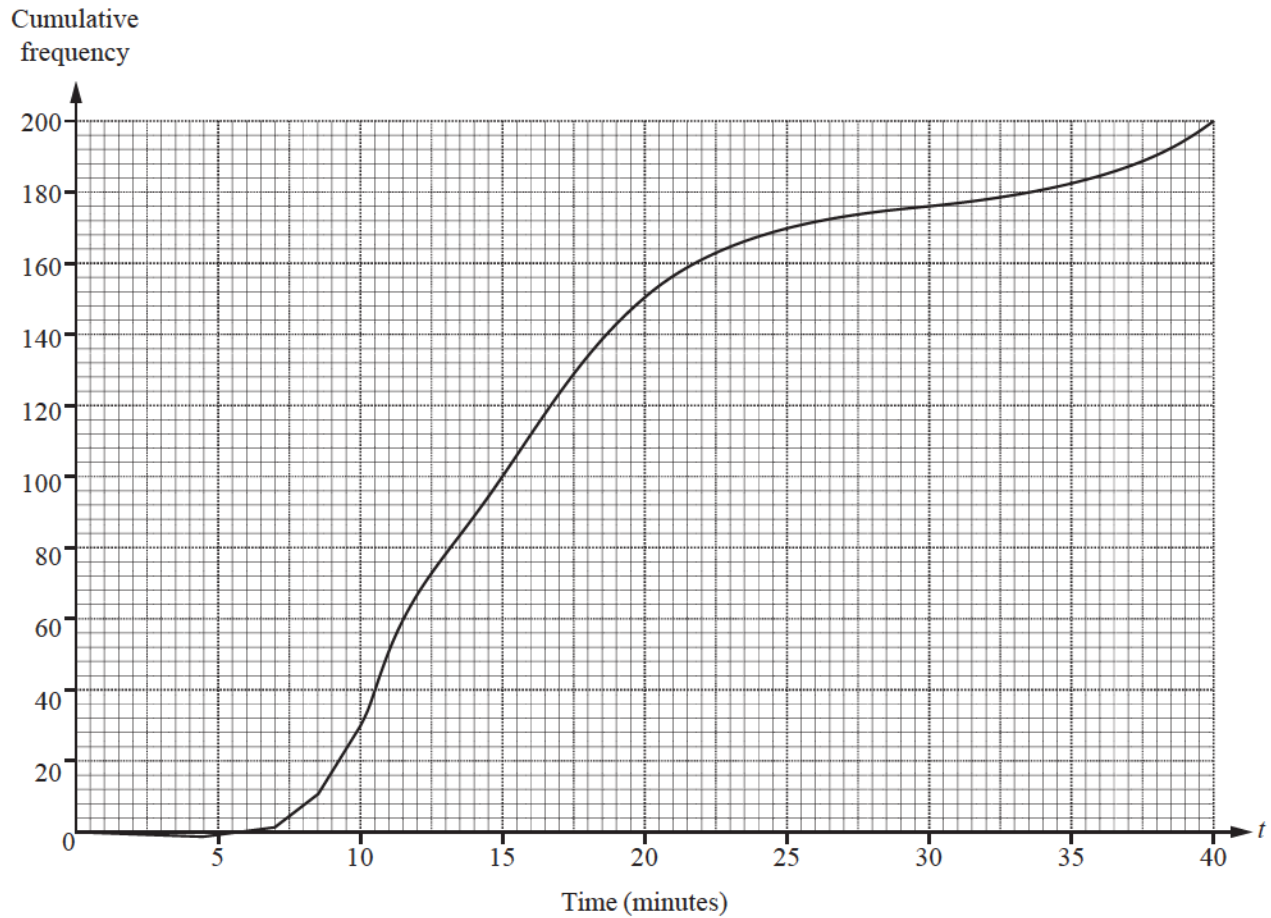
- (ii) On the grid, draw a cumulative frequency diagram to show this information. [3]



- (iii) Use your diagram to estimate
- (a) the median, [1]
 - (b) the inter-quartile range, [2]
 - (c) the 60th percentile. [2]

Question 7

- (a) 200 students record the time, t minutes, for their journey from home to school.
The cumulative frequency diagram shows the results.



Find

- (i) the median, [1]
- (ii) the lower quartile, [1]
- (iii) the inter-quartile range, [1]
- (iv) the 15th percentile, [1]
- (v) the number of students whose journey time was more than 30 minutes. [2]

- (b) The 200 students record the time, t minutes, for their journey from school to home.
The frequency table shows the results.

Time (t minutes)	$0 < t \leq 10$	$10 < t \leq 15$	$15 < t \leq 20$	$20 < t \leq 30$	$30 < t \leq 60$
Frequency	48	48	60	26	18

- (i) Calculate an estimate of the mean.

[4]

- (ii) On the grid, complete the histogram to show the information in the frequency table.

