

Questions on Grouped Data

Q1.

The table shows information about the lengths, in seconds, of 40 TV adverts.

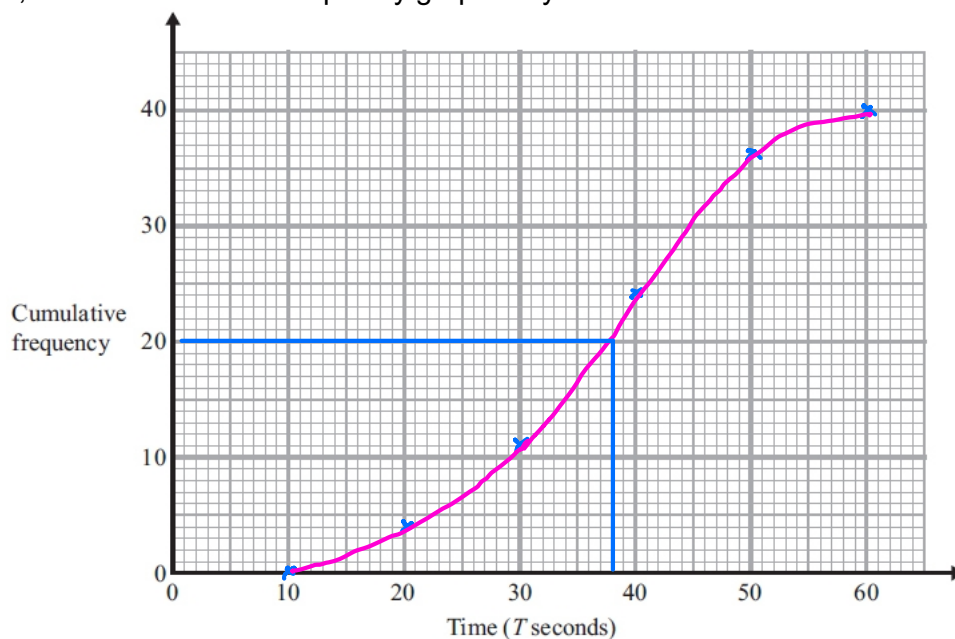
Time (T seconds)	Frequency
$10 < T \leq 20$	4
$20 < T \leq 30$	7
$30 < T \leq 40$	13
$40 < T \leq 50$	12
$50 < T \leq 60$	4

(a) Complete the cumulative frequency table for this information.

Time (T seconds)	Cumulative frequency
$10 < T \leq 20$	4
$10 < T \leq 30$	11
$10 < T \leq 40$	24
$10 < T \leq 50$	36
$10 < T \leq 60$	40

(1)

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



(2)

(c) Use your graph to find an estimate for the median length of these TV adverts.

38

..... seconds

(1)

(Total for Question is 4 marks)

Q2.

The table shows some information about the weights of oranges.

Weight (w grams)	Frequency
$0 < w \leq 20$	20×0.5 10
$20 < w \leq 30$	15
$30 < w \leq 50$	20×0.9 18
$50 < w \leq 60$	13
$60 < w \leq 75$	15
$75 < w \leq 100$	10

FD

$$15/10 = 1.5$$

$$15/15 = 1$$

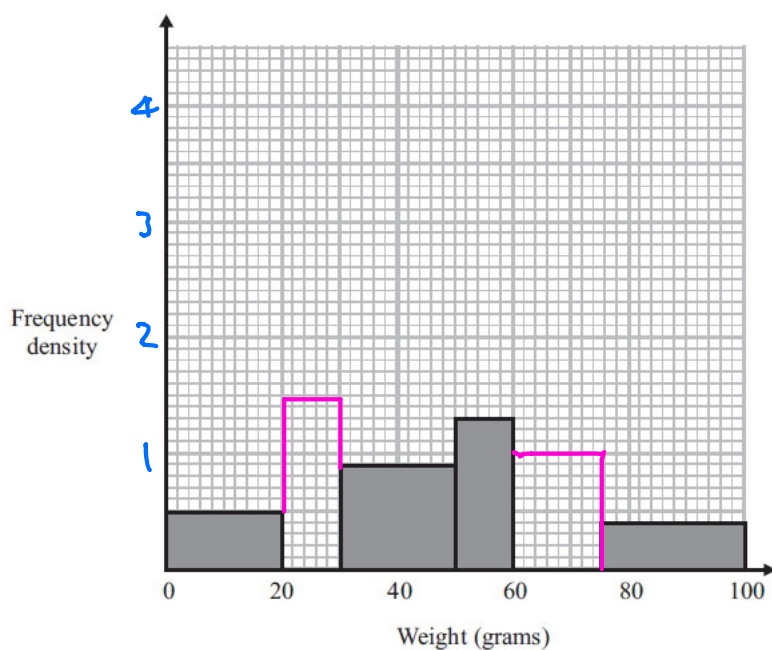
$$10/25 = 0.4$$

(a) Use the histogram to complete the table.

(2)

(b) Use the table to complete the histogram.

(2)



(Total for Question is 4 marks)

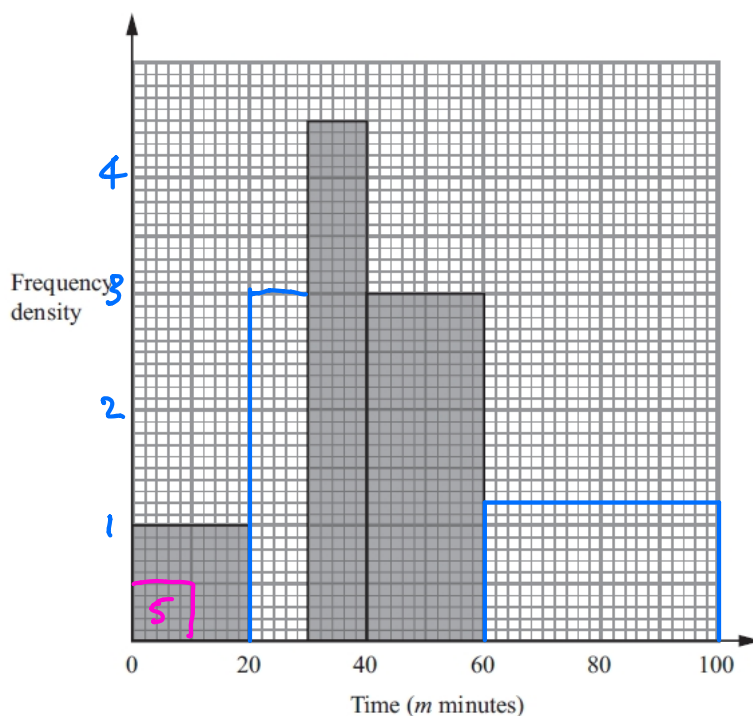
Q3.

The table and the histogram show some information about the time, in minutes, taken by a group of students to travel to college in one week.

Time (m minutes)	Frequency
$0 < m \leq 20$	20
$20 < m \leq 30$	30
$30 < m \leq 40$	45
$40 < m \leq 60$	60
$60 < m \leq 100$	48

203

$$FD \ 48/40 = 1.2$$



(a) Use the histogram to complete the table.

(2)

(b) Use the table to complete the histogram.

(2)

(c) Work out an estimate for the median time.

$$\text{Median item } \frac{203+1}{2} = 102 \text{nd}$$

7th in interval $40 < m \leq 60$

$$40 + \frac{7}{60} \times 20 = 42.3$$

42.3

..... minutes

(2)

(Total for Question is 6 marks)

Q4.

The table shows information about the speeds of 100 lorries.

Speed (s) in km/h	Frequency
$0 < s \leq 20$	2
$20 < s \leq 40$	9
$40 < s \leq 60$	23
$60 < s \leq 80$	31
$80 < s \leq 100$	27
$100 < s \leq 120$	8

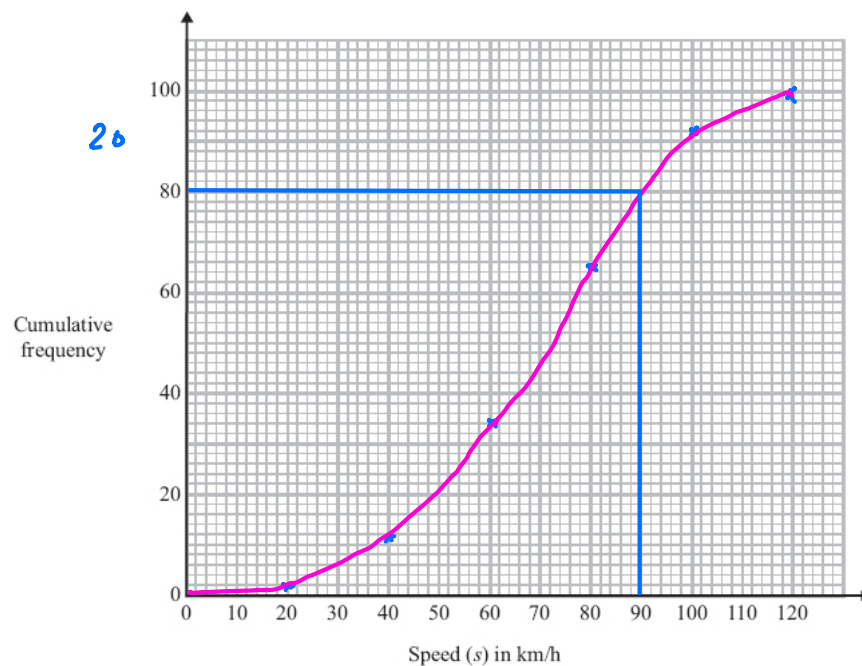
(a) Complete the cumulative frequency table for this information.

Speed (s) in km/h	Cumulative frequency
$0 < s \leq 20$	2
$0 < s \leq 40$	11
$0 < s \leq 60$	34
$0 < s \leq 80$	65
$0 < s \leq 100$	92
$0 < s \leq 120$	100

(1)

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

(2)



(c) Find an estimate for the number of lorries with a speed of more than 90 km/h.

20

(2)

(Total for Question is 5 marks)

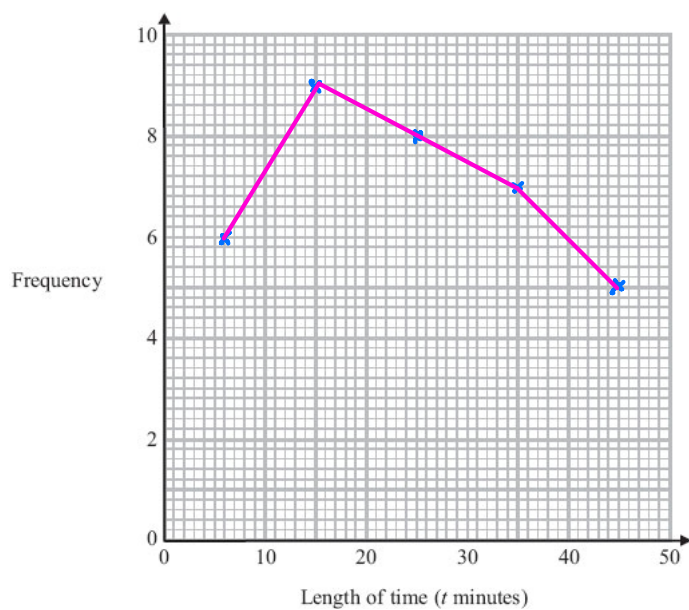
Q5.

Helen went on 35 flights in a hot air balloon last year.

The table gives some information about the length of time, t minutes, of each flight.

Length of time (t minutes)	Frequency
$0 < t \leq 10$	6
$10 < t \leq 20$	9
$20 < t \leq 30$	8
$30 < t \leq 40$	7
$40 < t \leq 50$	5

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



(Total for Question is 2 marks)

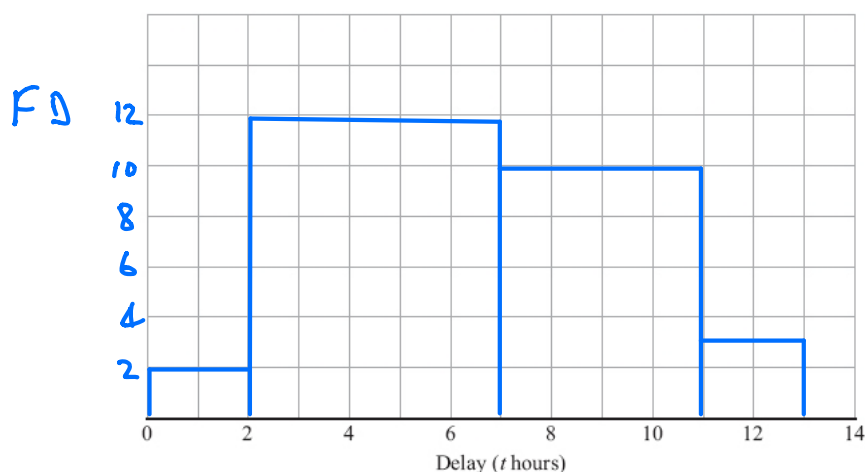
Q6.

During one week in January, the flights from an airport were delayed.

The table shows information about the flight delays on Monday.

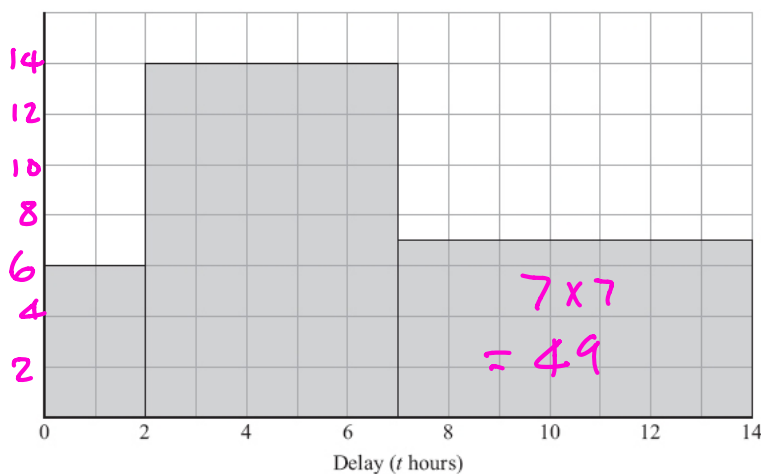
Delay (t hours)	Frequency	FD	FD
$0 < t \leq 2$	4	$4 \div 2$	2
$2 < t \leq 7$	60	$60 \div 5$	12
$7 < t \leq 11$	40	$40 \div 4$	10
$11 < t \leq 13$	6	$6 \div 2$	3

(a) Draw a histogram for the information given in the table.



(3)

The histogram below shows information about the flight delays on Tuesday.



12 flights were delayed for up to 2 hours.

Avi says

"A greater number of flights were delayed for more than 7 hours on Monday than for more than 7 hours on Tuesday."

(b) Is Avi correct?

You must explain your answer

49 Tue 46 Mon

so true

(2)

(Total for Question is 5 marks)

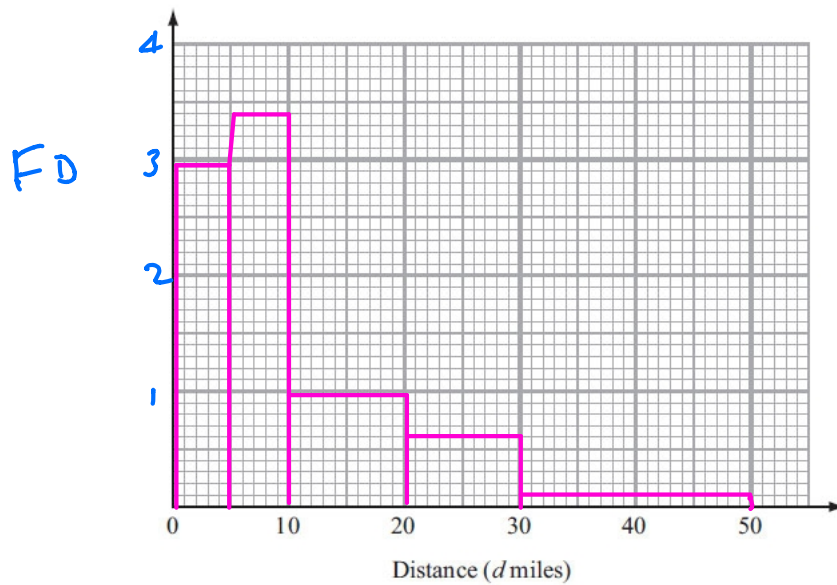
Q7.

The table gives some information about the distances, in miles, that some men travelled to work.

Distance (d miles)	Frequency
$0 < d \leq 5$	15
$5 < d \leq 10$	17
$10 < d \leq 20$	10
$20 < d \leq 30$	6
$30 < d \leq 50$	2

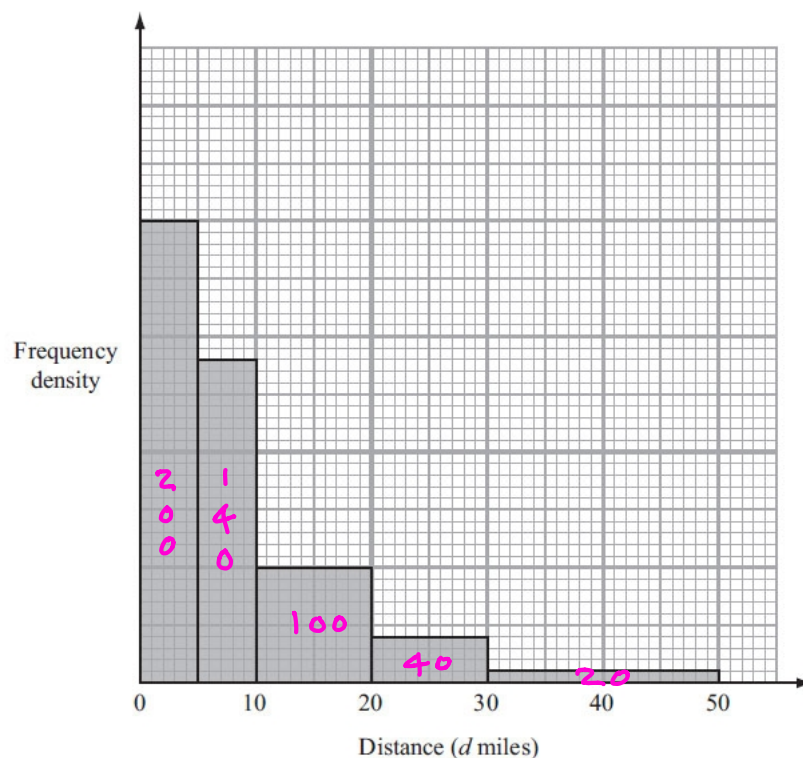
FD
3
3.4
1
0.6
0.1

(a) Draw a histogram for the information in the table.



(3)

The histogram below shows information about the distances, in miles, that some women travelled to work.



TOTAL = 500 small squares

x women travelled between 10 and 20 miles to work.

(b) Find an expression, in terms of x , for the total number of women represented by the histogram.

$$10 \text{ to } 20 = 100 \text{ small squares} = x$$

$$\therefore 500 = 5x$$

$$5x$$

(2)

(Total for Question is 5 marks)

Q8.

Bob asked each of 40 friends how many minutes they took to get to work.

The table shows some information about his results.

Time taken (m minutes)	Mid	Frequency	$F \times \text{Mid}$
$0 < m \leq 10$	5	3	15
$10 < m \leq 20$	15	8	120
$20 < m \leq 30$	25	11	275
$30 < m \leq 40$	35	9	315
$40 < m \leq 50$	45	9	405

40

1130

Work out an estimate for the mean time taken.

$$\text{estimate } \bar{x} = \frac{1130}{40} = 28.25$$

28.25

..... minutes

(Total for Question is 4 marks)

Q9.

The table gives some information about the lengths of time, in hours, that some adults watched TV last week.

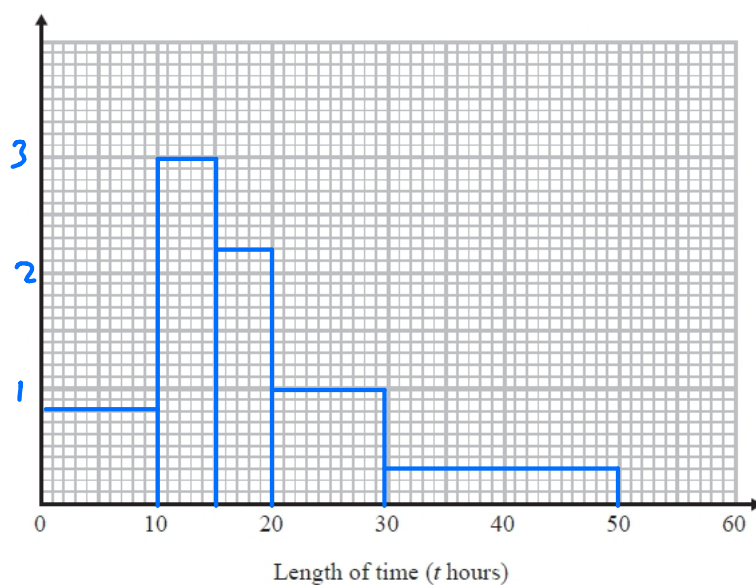
FD	Length of time (t hours)	Frequency	Mid	$F \times \text{Mid}$
0.8	$0 \leq t < 10$	8	5	40
3	$10 \leq t < 15$	15	12.5	187.5
2.2	$15 \leq t < 20$	11	17.5	192.5
1	$20 \leq t < 30$	10	25	250
0.3	$30 \leq t < 50$	6	40	240
		50		<u>910</u>

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

$$\text{estimate } \bar{x} = \frac{910}{50} = 18.2$$

..... hours
(4)

(b) Draw a histogram for the information in the table.



(3)

(Total for question = 7 marks)

Q10.

The table shows some information about the times, in minutes, 60 people took to get to work.

Time (x minutes)	Frequency	M.d	$F \times M$
$0 < x \leq 10$	5	5	25
$10 < x \leq 30$	11	15	165
$30 < x \leq 50$	23	20	460
$50 < x \leq 80$	13	65	845
$80 < x \leq 100$	8	90	720

(a) Calculate an estimate for the mean.

$$\frac{2215}{60} = 36.9$$

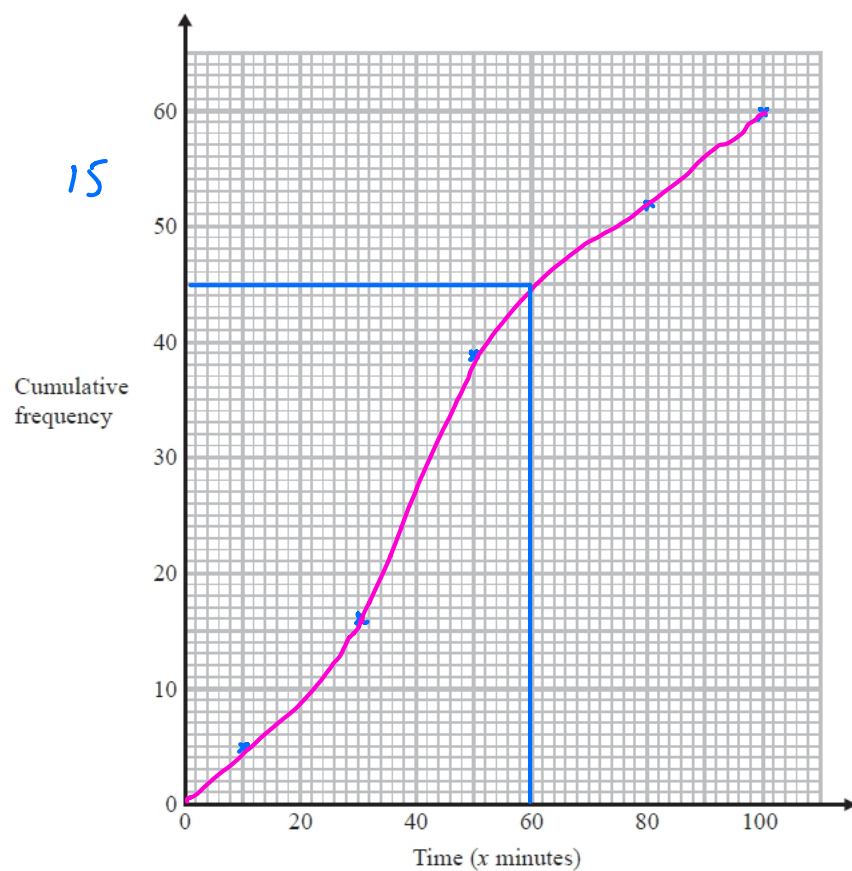
.....minutes
(4)

(b) Complete the cumulative frequency table.

Time (x minutes)	Cumulative frequency
$0 < x \leq 10$	5
$0 < x \leq 30$	16
$0 < x \leq 50$	39
$0 < x \leq 80$	52
$0 < x \leq 100$	60

(1)

(c) On the grid draw a cumulative frequency graph for your table.



(2)

(d) Find an estimate for the number of people who took **more** than 1 hour to travel to work.

$$60 - 45 = 15$$

.....
(2)

(Total for Question is 9 marks)