Lesson 11

GCSE Mathematics

Statistics II : Handelling and Processing Data

11.1 Revision Exercise

Marks Available : 60

Question 1

Nineteen students took part in a spelling test.
There were thirty words in the test, one mark for each word spelt correctly.
Here are the marks that resulted.

28	25	18	23	23	12	24	27	18	21
25	30	15	28	30	21	22	23	19	

(a) Put the data in order.

[2 marks]

(b) Find **(i)** The lower quartile.

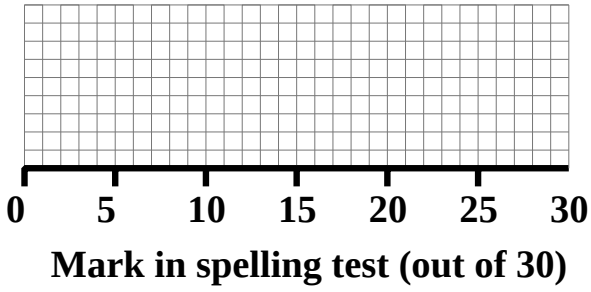
(ii) The median.

(iii) The upper quartile.

(iv) The interquartile range.

[4 marks]

(c) Plot a box and whisker diagram to show the distribution of the test marks.



[5 marks]

Question 2

Twenty children were asked how they rated their maths teacher.
Here are the results:

****	***	***	*****	*	***	**	*****
****	***	****	****	*****	***	***	*****
***	**	*****	***				

Number of stars	*	**	***	****	*****
Frequency					

(a) Fill in the frequency row of the table.

[3 marks]

(b) Showing your working, calculate the average (mean) star rating of the maths teacher.

[3 marks]

Question 3

The table shows the distribution of the number of *minor errors* made by a random sample of 35 people sitting their driving test.

Number of errors	0	1	2	3	4	5	6	7	8	9	10
Frequency	2	12	9	6	2	3	1	0	0	0	0

(a) In the test, people making three or fewer *minor errors* pass.
What percentage of people pass the test ?

[2 marks]

(b) What is the median number of *minor errors* made ?

[2 marks]

Question 4

The table below shows the distribution of the weights of 150 peaches.

Weight (w grams)	Number of peaches		
$40 < w \leqslant 50$	23		
$50 < w \leqslant 60$	41		
$60 < w \leqslant 70$	50		
$70 < w \leqslant 80$	20		
$80 < w \leqslant 90$	16		

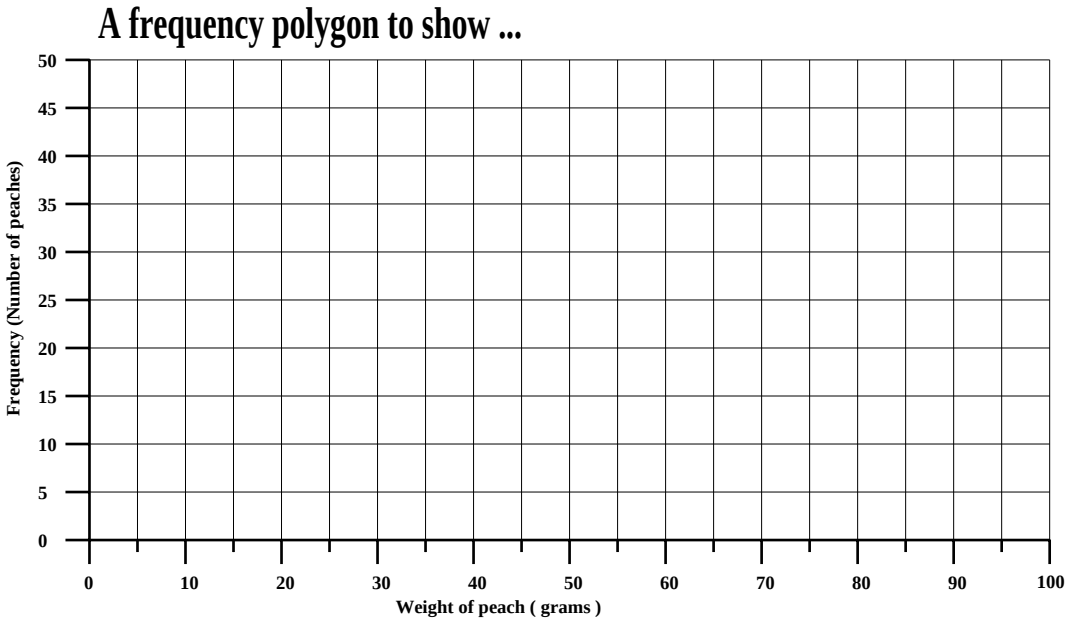
(a) What is the modal class ?

[1 mark]

(b) Showing your working, calculate an estimate of the mean weight of a peach.

[4 marks]

(c) Plot a frequency polygon to show the distribution of the weights of the peaches.



[4 marks]

Question 5

The following table shows the distribution of the marks scored by last year's common entrance candidates in their mathematics papers;

Mark (*m* percent)	Frequency	Cumulative Frequency
$1 \leqslant m \leqslant 10$	0	
$11 \leqslant m \leqslant 20$	7	
$21 \leqslant m \leqslant 30$	14	
$31 \leqslant m \leqslant 40$	18	
$41 \leqslant m \leqslant 50$	33	
$51 \leqslant m \leqslant 60$	36	
$61 \leqslant m \leqslant 70$	43	
$71 \leqslant m \leqslant 80$	28	
$81 \leqslant m \leqslant 90$	8	
$91 \leqslant m \leqslant 100$	5	

(a) Complete the column headed “cumulative frequency” in the above table.

[3 marks]

(b) How many candidates were there ?

[1 mark]

(c) How many candidates scored 50% or less ?

[1 mark]

(d) How many candidates scored more than 60% ?

[2 marks]

(e) On the graph paper provided on the next page, plot the cumulative frequency curve to show the distribution of the common entrance marks.

[3 marks]

(f) ***Use your graph*** to determine,

(i) The lower quartile mark.

[1 mark]

(ii) The median mark.

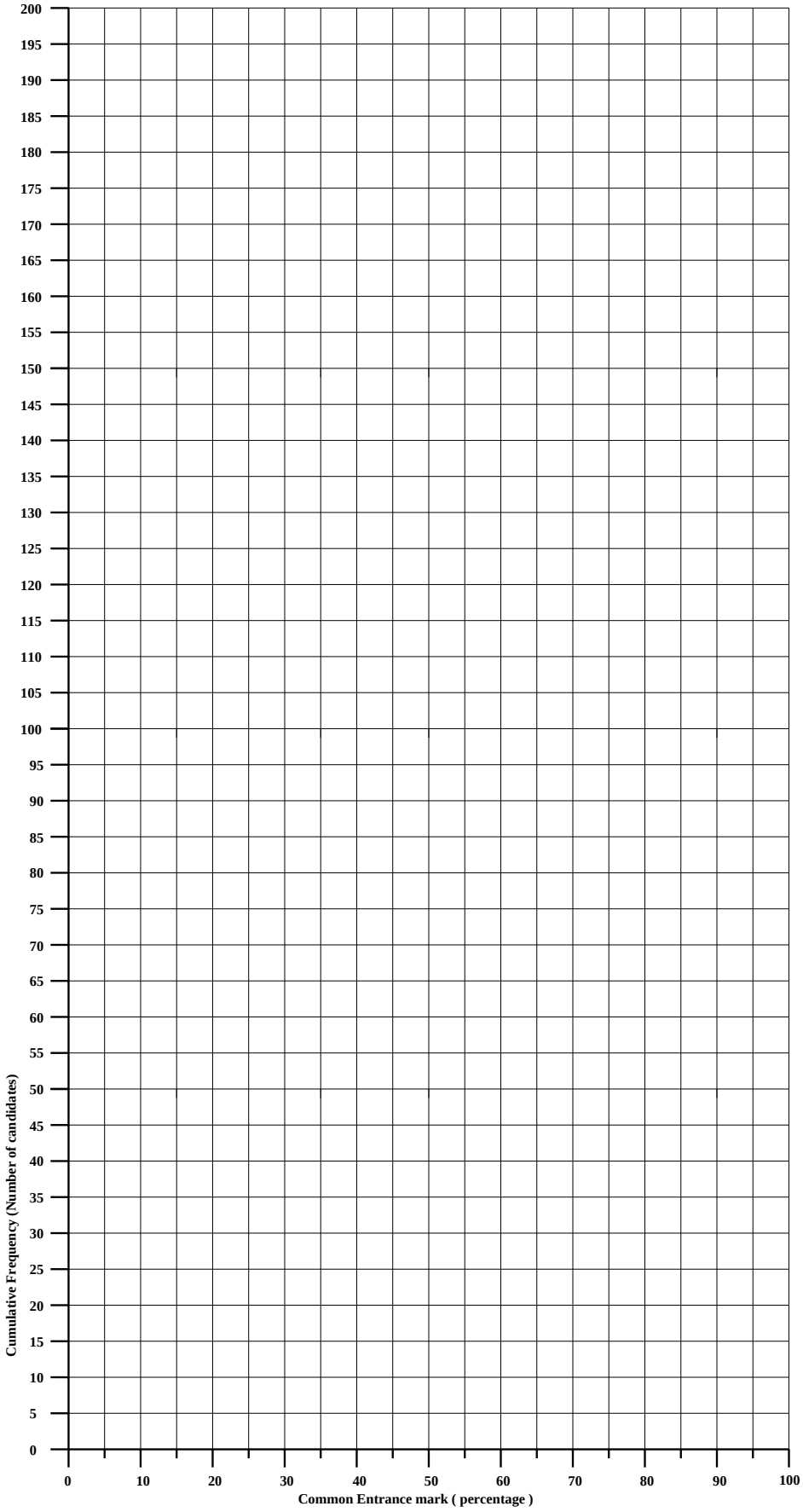
[1 mark]

(iii) The upper quartile mark.

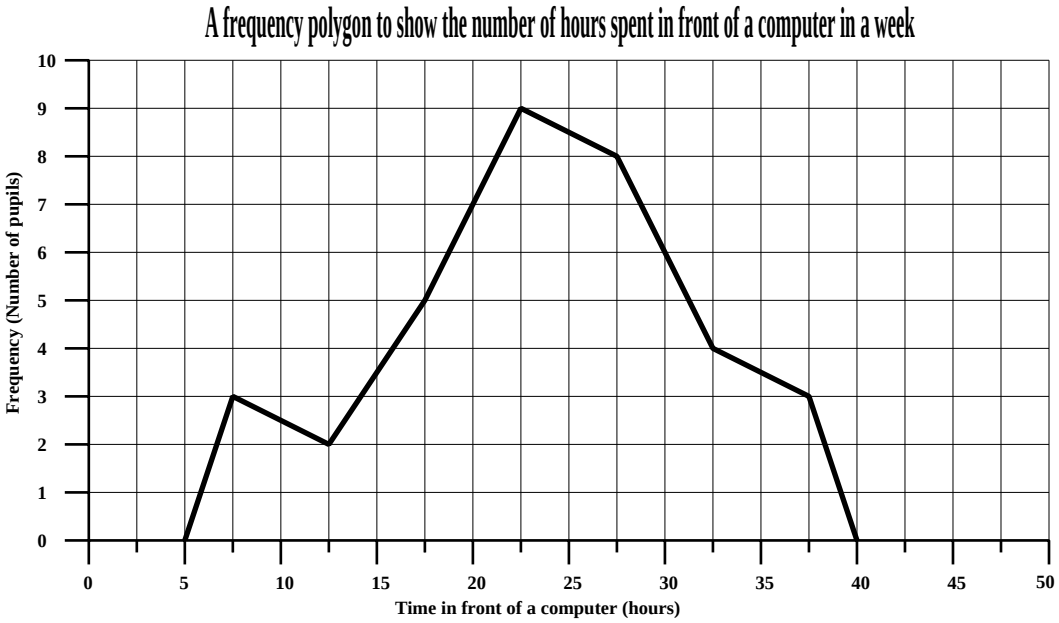
[1 mark]

(iv) The interquartile range.

[1 mark]


Cumulative Frequency (Number of candidates)
200
195
190
185
180
175
170
165
160
155
150
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
0
10
20
30
40
50
60
70
80
90
100
Common Entrance mark (percentage)

Question 6



The frequency polygon shows the number of hours spent on a computer by a class of pupils in a week.

(a) Use the graph to fill in the following grouped frequency table;

Number of hours	Frequency		
$5 \leqslant h < 10$			
$10 \leqslant h < 15$			
$15 \leqslant h < 20$			
$20 \leqslant h < 25$			
$25 \leqslant h < 30$			
$30 \leqslant h < 35$			
$35 \leqslant h < 40$			

[2 marks]

(b) Calculate an estimate for the mean (average) number of hours a pupil spends on a computer during a week.
Answers without working will not be marked.

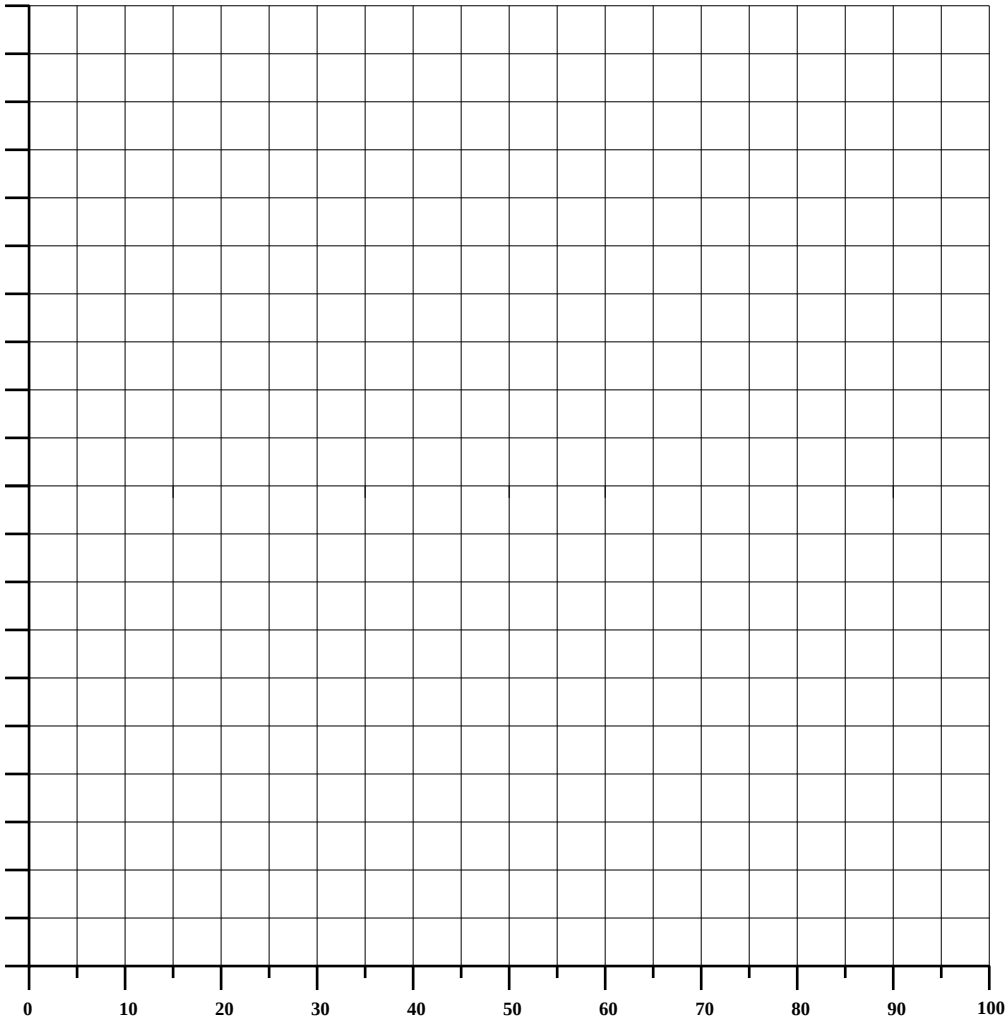
[4 marks]

Question 7

The following table shows the distribution of the times taken by 300 teenagers to get up in the morning following 7.30am alarm call.

Time Taken (t minutes)	Frequency	Width	Height
$0 < t \leqslant 4$	64		
$4 < t \leqslant 10$	42		
$10 < t \leqslant 20$	84		
$20 < t \leqslant 30$	64		
$30 < t \leqslant 50$	36		
$50 < t \leqslant 90$	10		

After completing the above table, draw a histogram to represent the data.



[10 marks]