

Lesson 12

GCSE Mathematics Statistics II : Handelling and Processing Data

12.1 Test

Marks Available : 60

Question 1

Twenty-three hikers took part in a 30 km sponsored walk.
Here is how far each hiker walked.

21	18	27	30	14	16	20	20	28
23	17	26	19	24	19	18	15	16
21	30	26	28	26				

(a) Put the data in order.

[2 marks]

(b) Find (i) The lower quartile.

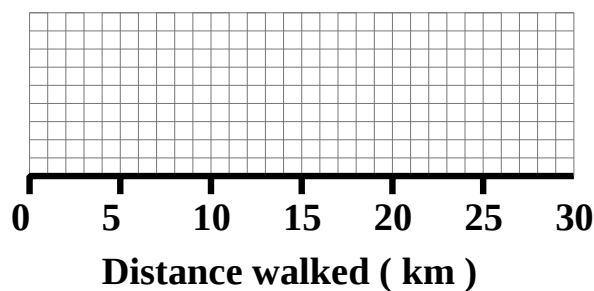
(ii) The median.

(iii) The upper quartile.

(iv) The interquartile range.

[4 marks]

(c) Plot a box and whisker diagram of the distribution of distances walked.



[5 marks]

Question 2

Twenty children were asked how they rated the new Dr Who.
Here are the results:

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

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

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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 new Dr Who.

[3 marks]

Question 3

The table shows the distribution of the number of *unsatisfactory assignments* submitted by a class of 25 pupils over a two year course.

Number of unsatisfactory assignments	0	1	2	3	4	5	6	7	8	9	10
Frequency	7	5	4	4	0	2	0	0	2	0	1

(a) In assessing the course, pupils submitting three or more *unsatisfactory assignments* fail the course.

What percentage of pupils fail ?

[2 marks]

(b) What is the median number of *unsatisfactory assignments* submitted ?

[2 marks]

Question 4

The table below shows the the weights of 150 eggs from Mrs Tweedy's chicken farm.

Weight (w grams)	Number of eggs		
$30 < w \leq 40$	13		
$40 < w \leq 50$	38		
$50 < w \leq 60$	42		
$60 < w \leq 70$	35		
$70 < w \leq 80$	22		

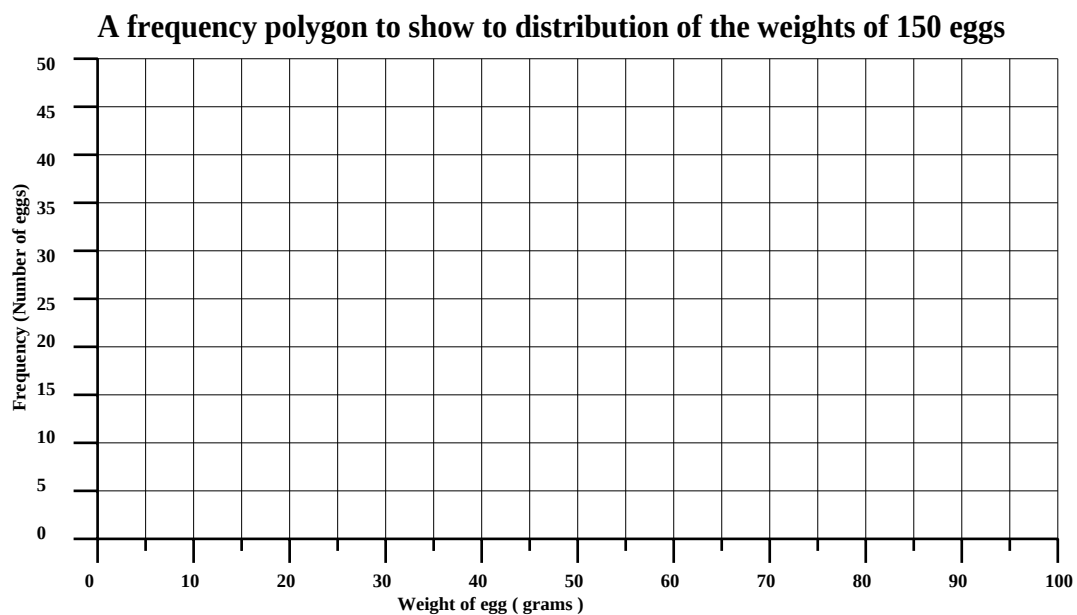
(a) What is the modal class ?

[1 mark]

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

[4 marks]

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



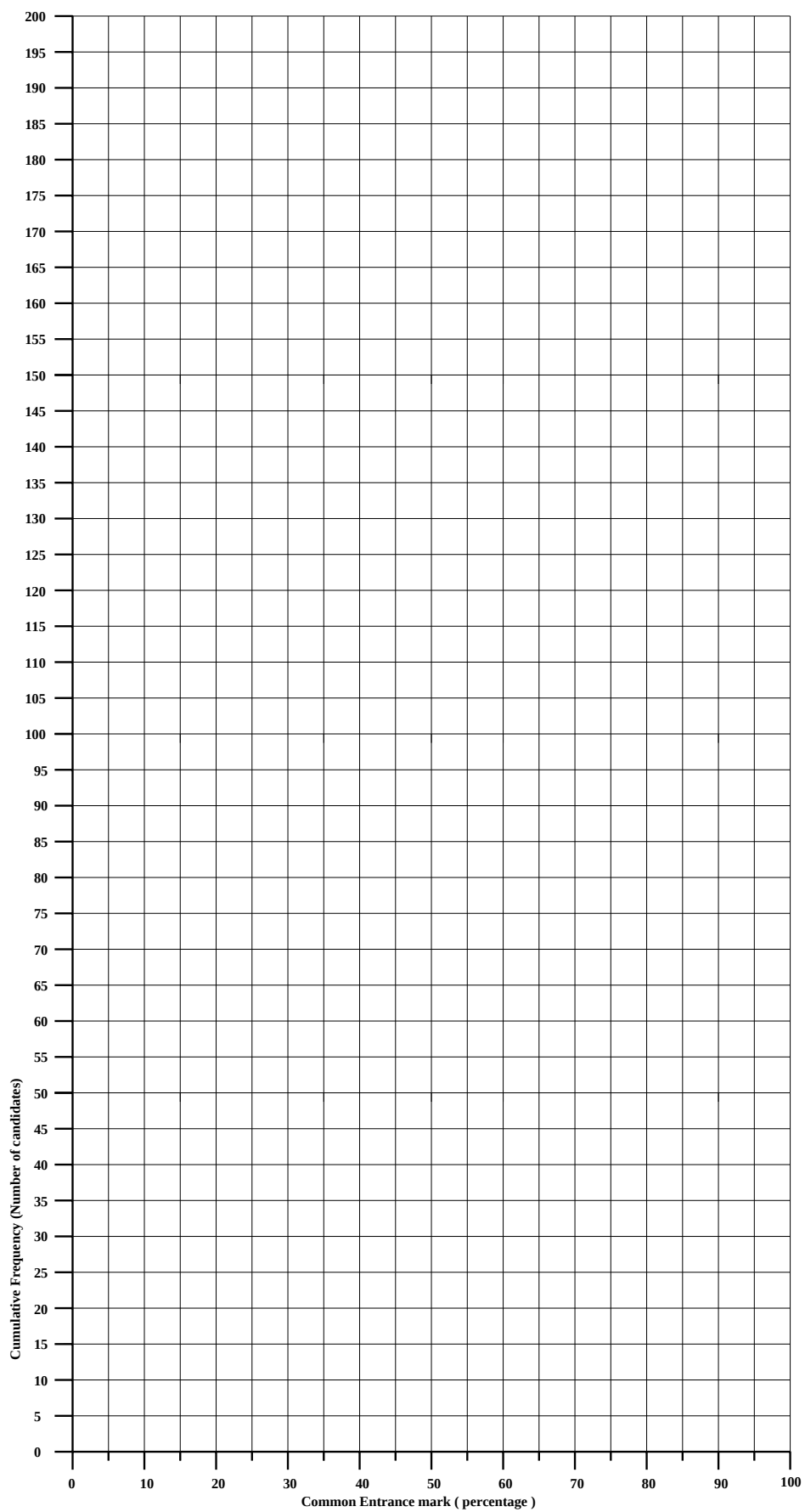
[4 marks]

Question 5

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

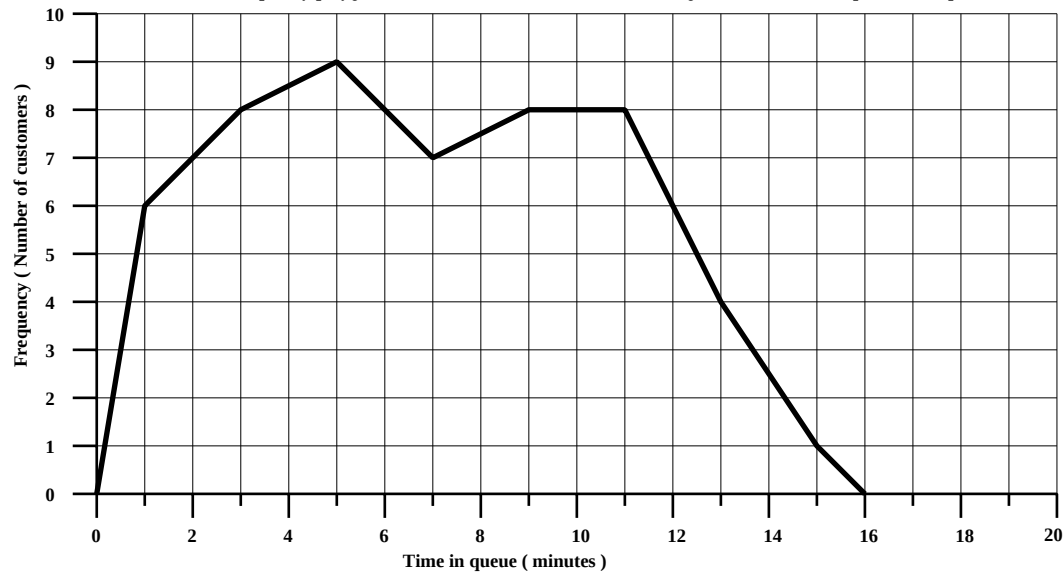
Mark (m percent)	Frequency	Cumulative Frequency
$1 \leq m \leq 10$	0	
$11 \leq m \leq 20$	5	
$21 \leq m \leq 30$	8	
$31 \leq m \leq 40$	16	
$41 \leq m \leq 50$	35	
$51 \leq m \leq 60$	41	
$61 \leq m \leq 70$	38	
$71 \leq m \leq 80$	32	
$81 \leq m \leq 90$	14	
$91 \leq m \leq 100$	11	

- (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 40% or less ?
[1 mark]
- (d) How many candidates scored more than 50% ?
[1 mark]
- (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]



Question 6

A frequency polygon to show the number of minutes waiting to be served in a supermarket queue



The frequency polygon shows the number of minutes spent waiting to be served in a queue at a supermarket.

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

Number of minutes	Frequency		
$0 \leq m < 2$			
$2 \leq m < 4$			
$4 \leq m < 6$			
$6 \leq m < 8$			
$8 \leq m < 10$			
$10 \leq m < 12$			
$12 \leq m < 14$			
$14 \leq m < 16$			

[2 marks]

(b) Calculate an estimate for the mean (average) number of minutes a customer spends in a queue waiting to be served in this supermarket.
Answers without working will not be marked.

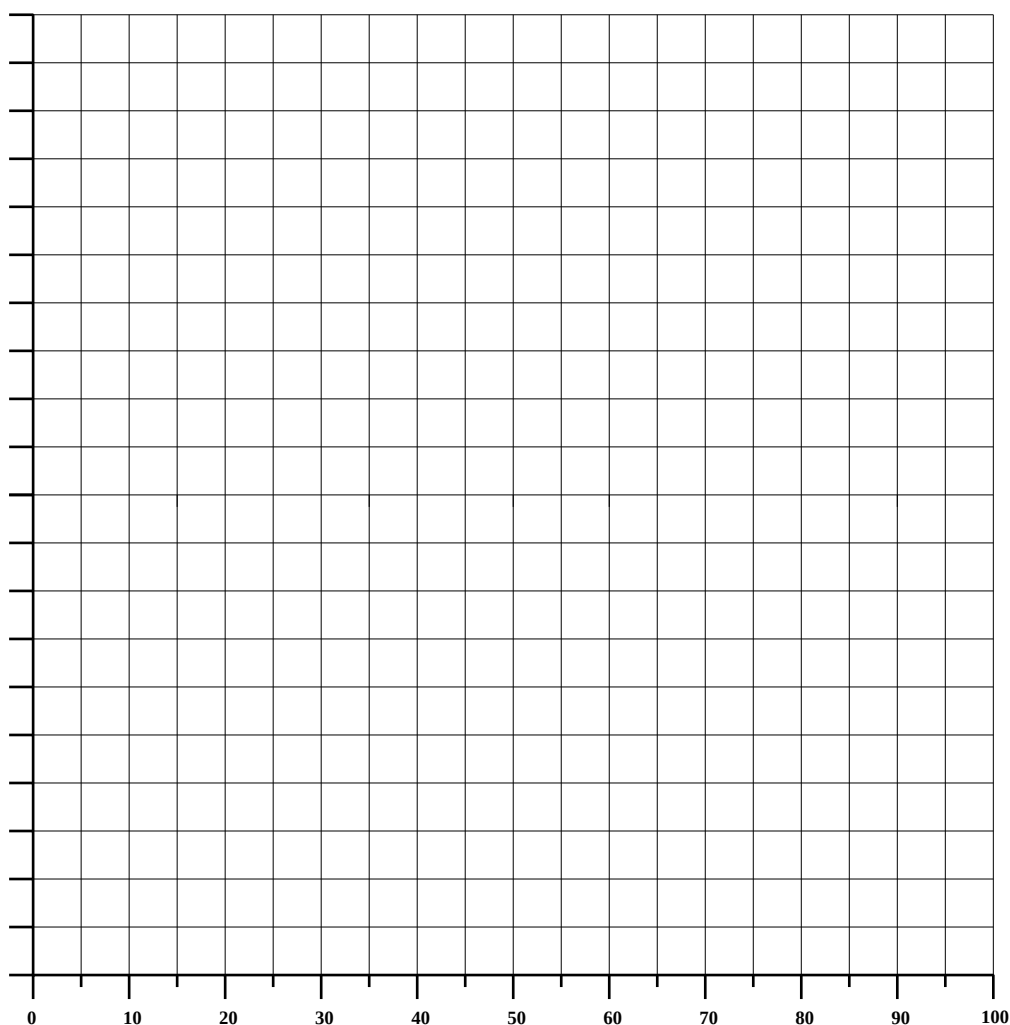
[4 marks]

Question 7

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

Time Taken (t minutes)	Frequency	Width	Height
$0 < t \leq 4$	24		
$4 < t \leq 10$	84		
$10 < t \leq 20$	100		
$20 < t \leq 30$	60		
$30 < t \leq 50$	20		
$50 < t \leq 90$	12		

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



[10 marks]

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Teachers may obtain detailed worked solutions to the exercises by email from MHHShrewsbury@Gmail.com