

Lesson 5

GCSE Mathematics

Statistics II : Handelling and Processing Data

5.1 Interquartile Range from Tabled Data

As the quantity of data increases it become impractical to work with it in a list where each individual item is listed separately. Instead, it is placed into a table.

5.2 Example

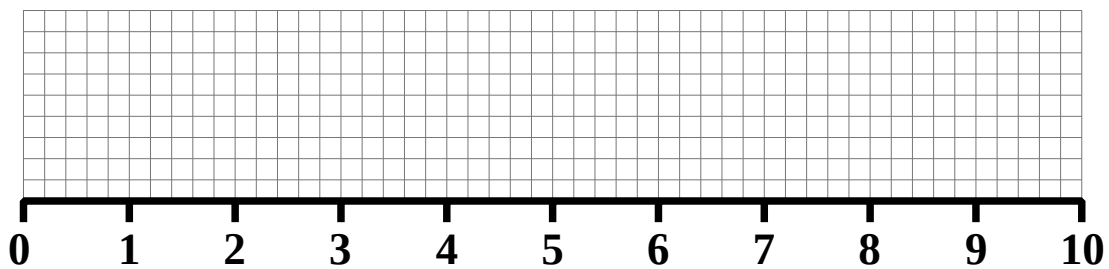
The table shows the scores of 99 pupils in a ten mark mental arithmetic test.

Score	Frequency	Cumulative Frequency
0	1	
1	0	
2	0	
3	6	
4	9	
5	11	
6	17	
7	21	
8	16	
9	11	
10	7	

- (i) Complete the column in the table headed Cumulative Frequency.
- (ii) Remembering to “add 1 and divide by 4” work out the IQR.

(iii) Determine the median score of the 99 pupils.

(iv) Plot a box and whisker diagram of the data.
Mark the outlier with an isolated cross, $\times$, and take the lowest score to be that with the outlier removed.



5.3 Exercise

Question 1

The table shows the scores of 183 contestants on *Mastermind*

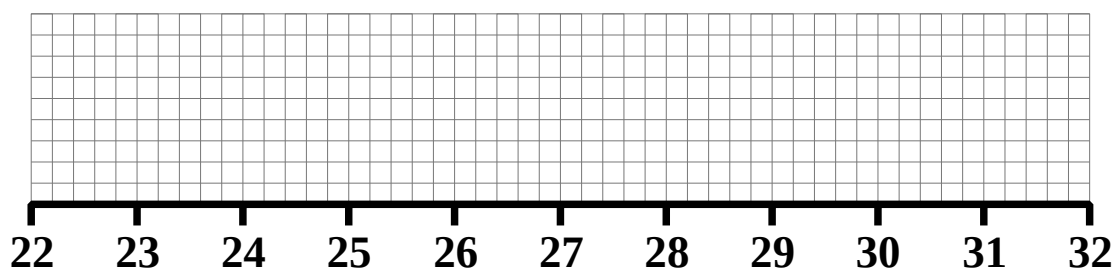
Score	Frequency	Cumulative Frequency
22	2	
23	15	
24	29	
25	32	
26	41	
27	31	
28	17	
29	11	
30	4	
31	0	
32	1	

(i) Complete the column in the table headed Cumulative Frequency.

- (ii) Remembering to “add 1 and divide by 4” work out the IQR of the *Mastermind* contestant's scores.

- (iii) Determine the median score of the 183 mastermind contestants.

- (iv) Plot a box and whisker diagram of the data.
Mark the outlier with an isolated cross, $\times$, and take the highest score to be that with the outlier removed.



Question 2

Shoe sizes in a class of 19 pupils.

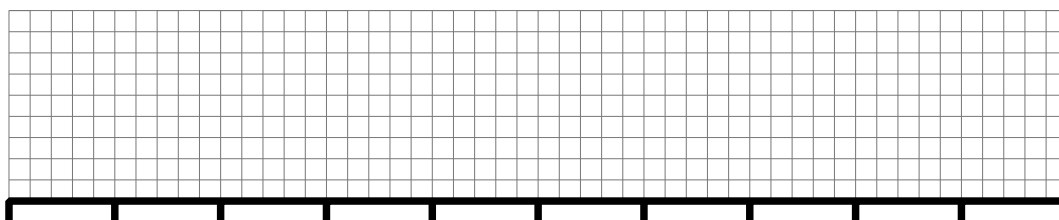
7 5½ 9½ 5½ 7½ 7 6 8 7 6½
6½ 7½ 5 6½ 6 5½ 7 5½ 6

(i) Put this data into the following table

Shoe Size	Tally	Frequency	Cumulative Frequency
4			
4½			
5			
5½			
6			
6½			
7			
7½			
8			
8½			
9			
9½			
10			

(ii) What is the IQR and median of this data ?
Show your working.

(iv) Plot a box and whisker diagram of the data by first labelling the x-axis.
Mark the outlier with an isolated cross, ×, and take the highest shoe size to be that with the outlier removed.



Question 3

In a 20 question test multiple choice test, each question is worth 5%.

A group of 115 pupils take the test and the results are tabulated below.

Test Score (%)	Frequency
50	5
55	9
60	14
65	29
70	21
75	11
80	10
85	9
90	6
95	0
100	1

- (i) Which percentage score was achieved by the greatest number of candidates ?
And what is this statistic called ?
- (ii) What is the range of the data ?
- (iii) Determine the lower quartile, upper quartile and median of the scores.
TOP TIP : Add a column for Cumulative Frequency.
- (iv) Plot a box and whisker diagram for the data.
Take the single score of 100% to be the only outlier.

