

STATISTICS: INTERPRETING DATA

20 OCTOBER 2014



Lesson Description

In this lesson we

- Use the measures of central tendency and dispersion to interpret data



Summary

Measures of Central Tendency

- Mean (the average)
- Median (the middle value)
- Mode (value occurring the most times)

Measures of Dispersion

Clustering around central measure or widely dispersed around the central measure:

- Standard Deviation – dispersion around the mean
- Inter Quartile Range – dispersion around the median



Test yourself

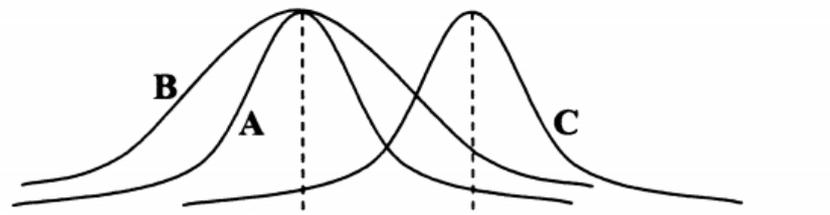
Question 1

(Adapted from November 2013, Paper 2, Question 4)

The Grade 10 classes of three schools wrote a term test. All three schools have the same number of learners in Grade 10. The results of the tests have been summarised in the table below.

	SCHOOL A	SCHOOL B	SCHOOL C
Mean	9,8	9,8	14,8
Standard deviation	2,3	3,1	2,3

The distribution of the results is shown in the diagram below.



- In which school (A, B or C) is the majority of the results more widely spread around the mean? Give a reason for your answer. (2)
- What is the difference in the spread around the respective means of the marks in School A and School C? (1)
- Explain how the marks of School A must be adjusted to match the marks of School C. (2)
- If each mark in School C is lowered by 10%, explain the effect it will have on the mean and standard deviation of this school. (2)

Question 2

The table below shows the amount of time, in hours, that learners aged between 14 and 18 spent watching TV during 3 weeks of holiday.

Time (hours)	Cumulative frequency
$0 \leq t < 20$	25
$20 \leq t < 40$	69
$40 \leq t < 60$	129
$60 \leq t < 80$	157
$80 \leq t < 100$	166
$100 \leq t < 120$	172

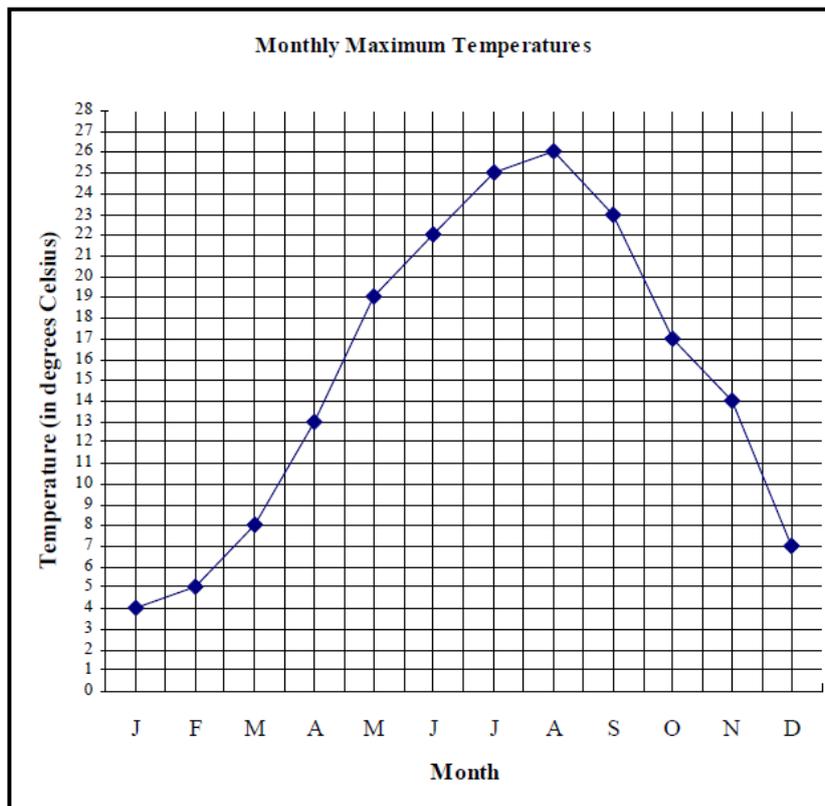
- 2.1 Draw an ogive to represent the data
- 2.2 Calculate the median of the data.
- 2.3 Calculate the Inter Quartile Range of the Data.
- 2.4 Calculate the mean of the data.
- 2.5 Use the ogive to estimate the number of learners who watched TV more than 80% of the time.



Improve your Skills

Question 1

The graph below shows the monthly maximum temperature in a certain city.

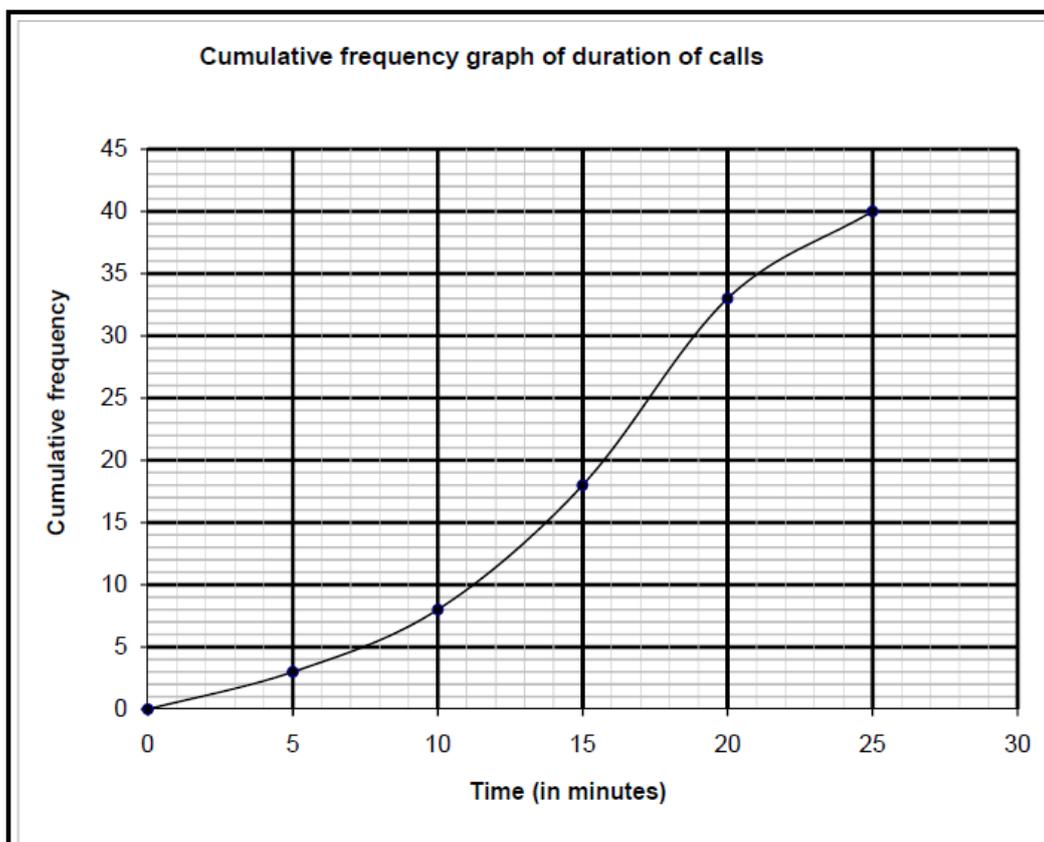


notes for...

- 1.1 What is the range of the monthly maximum temperatures? (2)
- 1.2 Calculate the mean monthly maximum temperature. (3)
- 1.3 Calculate the standard deviation of the monthly maximum temperature. (2)
- 1.4 It is predicted that one hundred years from now, global warming is likely to increase the city's monthly maximum temperature by 5C in December, January and February. It will also result in an increase of 1°C in the other months of the year.
 - 1.4.1 By how much does the mean increase? (2)
 - 1.4.2 Describe the effect that the predicted increases in temperature will have on the standard deviation. Justify your answer. (2)

Question 2

The length of time, in minutes, of a certain number of telephone calls was recorded. No call lasted 25 minutes or longer. A cumulative frequency diagram of this data is show below.



- 2.1 Determine the total number of calls recorded. (1)
- 2.2 Complete the frequency table for the data on the diagram below. (3)

notes for...

2.3 Hence, draw a histogram on the grid below.

(3)

