STATISTICS 12 AUGUST 2013

Lesson Description

In this lesson we:

- Cover measures of central tendency
- Look at measures of dispersion

Key Concepts

Measures of Central Tendency

A measure of central tendency is a value that represents a typical item in a set of data.

Mean

Mean = sum of all the values ÷ total number of values

Median

Median (M) is the middle value of a data set after ordering the data. If there is an even number of values, there are two middle values so the median will be between those two values.

Mode

The mode is the value that occurs most often.

Advantages and Disadvantages of Mean, Median and Mode

- The mean: Easy to calculate, every value is used BUT it is influenced by outliers.
- The median: not affected by outliers
- The mode: useful to work out the most popular value, can be used for non-numerical data BUT does not occur if there are no repetitions

Types of Data

Quantitative data is numerical data that can be counted or measured. We call quantitative data that is obtained by counting, discreet data. For example the number of pupils in the school bus each morning.

Quantitative data obtained by measuring is called, Continuous data. For example, the height of learners in your class.

Measures of Dispersion

To get a better understanding of how the data are distributed around the measure of central tendency, we need to use measures of spread, which are called measures of dispersion.
The measures of dispersion will tell us if the data are grouped together or if they are spread out.

Range

Range= largest value - smallest value

- It cannot be calculated when data is grouped in frequency tables
- It is affected by outliers

Quartiles

The median divides an ordered set of data into two equal parts. About one half of the data is less than the median and about one half of data is greater than the median.
It is possible to divide the data further into four equal parts using the quartiles Q_1, Q_2, Q_3

Questions

Question 1

Consider the following results for a class test out of twenty. Calculate the mode, mean and median marks.

10,11, 11, 12, 12, 12, 14, 14, 14, 16, 17, 18, 18, 19, 20

Question 2

The mass in kilograms of sixteen bodybuilders is shown.

Mass	Frequency
150<x≤155	3
155<x≤160	4
160<x≤165	7
165<x≤170	2

Calculate the:

a.) estimated mean
b.) estimated median
c.) modal interval

Question 3

These are the marks in percentage form, for a group of learners.

60 85 55 60 65 65 70 73 75 80 81 85 90 95 85 100 60 81 60 75 70 91 85 64 85 75 100 75 70 90 80 60 90 70

a.) Is the data discrete or continuous
b.) Find the median, lower and upper quartiles and the inter-quartile range.
c.) Find the 80^{th} percentile and explain what it tells you about the marks