Math Study Strategies

Basic Concepts of Statistics

Statistics is the branch of mathematics that studies the collection, organization, analysis and interpretation of numerical data.

Data is a collection of information.

Average (mean) is the quotient between the sum of values and number of values.

> Mean = Sum of elements divided by number of elements.
>
> *Ex: Set = 3,4,5*
> *If the set contains elements 3, 4, 5 , the sum of the elements would be expressed as 3 +4 + 5 = 12*
> *The number of elements in this set = 3*
> *Therefore, the mean of the set 3, 4, 5 = 12/3 or 4*

Median is the middle value in a set of elements. To find the median, rearrange the set in ascending order. If the set has an odd number of elements, the middle element will be the median. If the the set has an even number of elements take the two element from the middle and divide by two.

> *Ex: Set = 3,5,2,4*
> *If we rearrange the numbers in ascending order, the set will be rewritten 2, 3, 4, 5 .*
> *The two middle numbers will then be 3, 4.*
> *Since we have an even number of elements in the set, we add 3+4. and divide by 2 to get the median.*
> *Therefore the median of 3,5,2,4 = 7/2 or 3.5*

Mode is the most frequently occuring element. If there are two modes the data are called **bimodal.**

> *Ex 1: 2,4, 6, 8, 5, 7, 5, 9, 5, 10, 12, 5 the mode will be 5*
> *Ex 2: = 3, 5, 6, 3, 5, 9, 3, 10, 5 the bimode will be 3 and 5.*

Range is the difference between the largest and smallest element of the set.

> *Ex 1: -2, 0, 9, -20, 5. Rearranged in ascending order will be -20, -2, 0, 5, 9*
> *Therefore, the range will be: 9 - (-20) = 29*
> *Ex 2: 3, 7, 20, 54*
> *Therefore, the range will be 54-3=51*