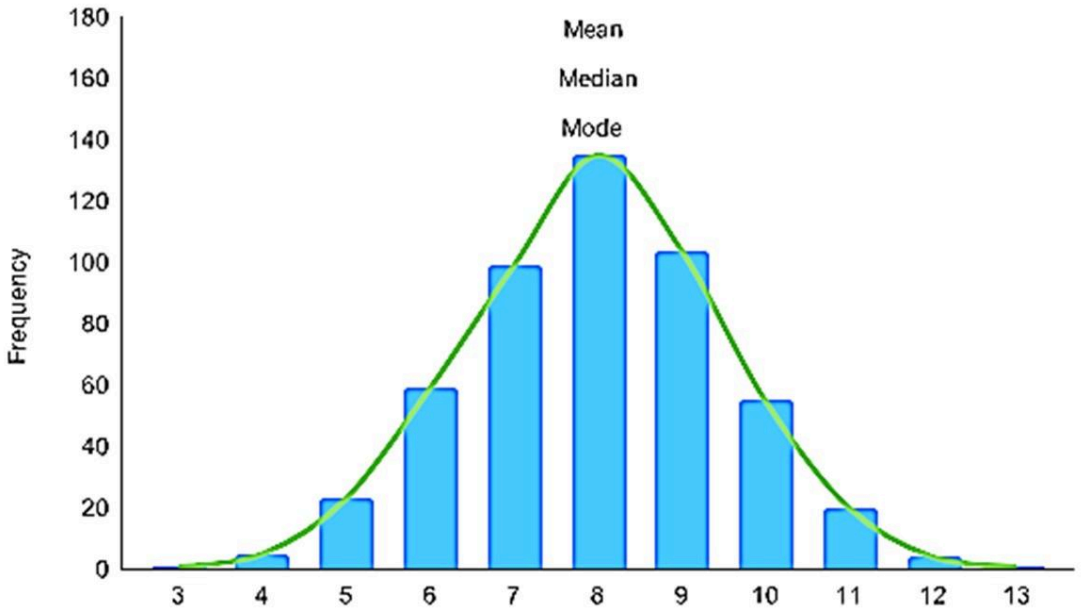
Central tendency in statistics

What is central tendency ?

- In the distribution of data to get more information about data, we used term known as central tendency.
- The mean, mode and median are commonly used measures of central tendency.
- The mean is the sum of all values divided by the total number of values (Average).
- The median is the middle number in an ordered data set.
- The mode is the most frequent value.



Mean:

- The mean is also known as average..
- The average is sum of all observations in data divides by the number of total observations.

Suppose we have,

$x1, x2, x3, \ldots.. xn\ data$

the sum of $x1$ to xn is calculated and then divided by the total number (n) of data samples.

Formula: $\overline{X} = \sum_{i=1}^{n} xi/n$

Here,

$\overline{X}$ = sample mean it is also read as X bar.

n= number of values in sample.

For example,
Rohit sharma scored 6,6,6,6,4,2 in one over
The mean of score is ,
$6 + 6 + 6 + 6 + 4 + 2/6 = 30$

Mean is 30.

Median:

- Median is the mid value in the data.
- We can find the mid value of data using median.
- median is 50 percentile of data.
- We must have to order the numerical data in ascending or descending order to get proper mid value of the data.

Formula:
If the number of observations are odd i.e 3,5,7….
Then the formula to find the middle term is:
$(n + 1/2)^{th\ term}$
Where,
n = the number of observations

If the number of observations are even i.e 2,4,6….
Then the formula to find the middle term is:
$(n/2)^{th\ term} + (n/2 + 1)^{th\ term}/2$

Example 1:The numbers 5 obtained in test is 25,27,27,28,19.

To find the mid term for 5 observations

Calculate $(5 + 1/2)^{th\ term}$

$(6/2)^{th\ term}$

$3^{rd\ term}$

25,27,27,28,19

The third term is observation is 27.

The median is 27.

Example 2:

The numbers 5 obtained in test is 25,27,27,29,19,21

To find the mid term for 5 observations

Calculate,

$(6/2)^{th\ term} + (6/2 + 1)^{th\ term}/2$

$3^{rd\ term} + (3 + 1)^{th\ term}/2$

$3^{rd\ term} + (3 + 1)^{th\ term}/2$

$3^{rd\ term}+4^{th\ term}/2$

In 25,27,27,29,19,21 observations third and fourth term

The addition of 27 and 28 is 56

$56/2 = 28$

The median is 28

Mode:

- The mode is most occuring number in the observation.
- The mode is most repeated observation .
- It is the highest peak of data distribution.

For example:

1,1,2,3,4,3,2,2,2,3,4,3,2

The most repeated number in above observations is 2

The mode is 2