TUTORIAL-I

Descriptive Statistics

OBJECTIVES

The _____ is the value you calculate when you want the arithmetic average.

a) Mean ✓
b) Median
c) Mode
d) All of the above

OBJECTIVES

The process of arranging data into rows and columns is called

a) Classification
b) Frequency distribution
c) Tabulation ✓
d) Array

OBJECTIVES

Find the median of the following data: 160, 180, 200, 280, 300, 320, 400

a) 140
b) 300
c) 180
d) 280 

OBJECTIVES

The “average” type of grass used in Kharagpur campus lawns is best described by

a) the mean
b) the median
c) the mode ✓
d) the standard deviation

OBJECTIVES

The median is a better measure of central tendency than the mean if

a) the variable is discrete
b) the distribution is skewed 
c) the variable is continuous
d) the distribution is symmetric

OBJECTIVES

A set of data points follow a simple linear relation y = 3x + 2, where x is any integer number. The mean of the values of y for all values of x in the range [1 ... 100] (equally probable) is

(a) 50
(b) 50.5
(c) 152
(d) 153.5 ✓

OBJECTIVES

The GM of the following data will be calculated as
X = [50, 125, 70, 56, 49, 98]

a) 70 ✓
b) 74
c) 100
d) 101

OBJECTIVES

A set of data points follow a simple linear relation y = 3x + 2, where x is any integer number. The mean of the values of y for all values of x in the range [1 ... 100] (equally probable) is

a) *n*-1 ✓
b) *n*+1
c) *n*
d) *0* (zero)

OBJECTIVES

What is the primary characteristic of a set of data for which the standard deviation is zero?

a) All values of the variable appear with equal frequency.
b) All values of the variable have the same value. ✓
c) The mean of the values is also zero.
d) None of the above is correct.

OBJECTIVES

If the standard deviation of x, y, z is p then the standard deviation of 3x + 5 , 3y + 5 , 3z + 5 is?

a) 3p + 5
b) 3p 
c) p + 5
d) 9p + 15

NUMERICALS

The wickets taken by a bowler in 10 cricket matches are as follows :
2 6 4 5 0 2 1 3 2 3
Find the mode of the data

ANS:-

No. of wickets taken by bowler in 10 cricket matches-
2,6,4,5,0,2,1,3,2,3
Since 2 wickets are taken by the bowler in maximum no. of matches.
Hence the mode of the given data is 2.

NUMERICALS

If the mean of a frequency distribution is 100 and the coefficient of variation is 45%, then what is the value of Variance

ANS:-

Coefficient of Variation = Standard Deviation/ Mean

Coefficient of Variation = 0.45

Mean = 100

Standard Deviation = 45

Variance = (Standard Deviation)^2 = 45 X 45 = 2025

NUMERICALS

For a given sample, the observation is as follows.

X	1	2	3	4	5	6
F(x)	25	50	10	30	40	20

x denotes a sample value and $f(x)$ denotes the frequency of occurrence of x. Find the five-point summary of the above data

Ans:-

Min = 1

Max = 6

Median = 4

1st Quartile(Q1) = 2

3rd Quartile(Q3) = 1

NUMERICALS

Calculate the mean, median and mode of the following data:
5, 10, 10, 12, 13
Are these three equal?

ANS:-

Sum of all observations = 5 + 10 + 10 + 12 + 13 = 50
Number of observations = 5
Mean=Sum of all observations /Total observations
=50/ 5=10 Here, n = 5(odd)
So, median = (5+1)th/2 position = 3 rd position = 10
Mode = Most frequent data = 10
Mean = Median = Mode

NUMERICALS

A frequency distribution of a set of 10 data is given below (see Table QII). Calculate the coefficient of variance of the data.

X	1	2	3	4	5	6	7	8	9	10
F(x)	1	3	5	7	9	2	4	6	1	0

Ans:-

$$\text{Here, } \mu = = \frac{1+6+15+28+45+12+28+48+9+0}{1+3+5+7+9+2+4+6+1+0} = 5.18$$

$$\text{and } \sigma^2 = \frac{1}{n-1}\sum_{i=1}^{n}(x_i - \overline{x})^2 = 17.60, \text{ that is } \sigma = 4.19$$

$$\text{Hence, for the given data, } CV = \frac{\sigma}{\overline{\mu}} * 100 = 80.88\%$$