

## ANSWER 1

Variance measures how far a set of numbers are spread out from their mean. If variance of a variable/column is 0, it means all the data in that particular variable lies on its variable.

No, we can't use that variable for our analysis, as it doesn't provide any substantial information of the data, since the entire data lies on one singular data value, which turns out to be its mean.

## ANSWER 2

Mean of the data in variable A: Average of the data in variable

$$= u = \frac{\sum_{i=1}^{11} xi}{11} = \frac{7+6+7+7+8+5+8+7+7+5+5}{11} = \frac{72}{11} = 6.545$$

Mode of the data in variable A: Score that occurs most frequently in variable A = 7 (occurs 5 times)

Median of the data in variable A: middle score, when the data is arranged in ascending/descending order = 50<sup>th</sup> percentile(5,5,5,6,7,7,7,7,8,8) = 6.5

$$\begin{aligned} \text{Variance of the data in variable A: } &= \frac{\sum_{i=1}^{11} (xi-u)^2}{11} = \\ &= \frac{(7-6.545)^2 + (6-6.545)^2 + (7-6.545)^2 + (7-6.545)^2 + (8-6.545)^2 + (5-6.545)^2 + (8-6.545)^2 + (7-6.545)^2 + (7-6.545)^2 + (5-6.545)^2 + (5-6.545)^2}{11} \\ &= \frac{12.727275}{11} = 1.157025 \end{aligned}$$

Standard deviation of the data in variable A:  $\sqrt{\text{Variance}} = \sqrt{1.157025} = 1.075650966$

## ANSWER 3

In a group of 12 scores, if the largest score is increased by 36 and the number of scores remain the same, then the mean 'u' will change as following:

$$\frac{\sum_{i=1}^{12} x_i + 36}{12} = u + \frac{36}{12} = u + 3$$

Hence, the value will increase by 3

## ANSWER 4

Data (Singular) is the value of the variable associated with one element of population or sample whereas, data (plural) is a set of values collected for the variable from each of the elements belonging to the sample. Eg. In the variable A of second question, "7" is a singular data whereas, (7,6,7,7,8,5,8,7,7,5,5) is a set of values which means it's a plural data.

## **ANSWER 5**

Inferential data helps to make decision out of it by delivering initial level insights of data, as it makes predictions about asset of data by following its pattern/trend.