VIDYA BHAWAN BALIKA VIDYA PITH

शक्तिउत्थानआश्रमलखीसरायबिहार

Class 11 commerce   Sub. ECO/B Date 18.01.2021
Teacher name – Ajay Kumar Sharma

Mean Deviation

Suppose a college is proposed for students of five towns A, B, C, D and E which lie in that order along a road. Distances of towns in kilometers from town A and number of students in these towns are given below:

Activities

- Calculate the total distance to be travelled by students if the college is situated at town A, at town C, or town E and also if it is exactly half way between A and E.
- Decide where, in your opinion, the college should be established, if there is only one student in each town. Does it change your answer?

Now, if the college is situated in town A, 150 students from town B will have to travel 2 kilometers each (a total of 300 kilometres) to reach the college. The objective is to find a location so that the average distance travelled by students is minimum. You may observe that the students will have to travel more, on an average, if the college is situated at town A or E. If on the other hand, it is somewhere in the middle, they are likely to travel less. Mean deviation is the appropriate statistical tool to estimate the average distance travelled by students. Mean deviation is the arithmetic mean of the differences of the values from their average. The average used is either the arithmetic mean or median.

(Since the mode is not a stable average, it is not used to calculate mean deviation.)

Calculation of Mean Deviation from Arithmetic Mean for ungrouped data.

Direct Method Steps:

(i) The A.M. of the values is calculated

(ii) Difference between each value and the A.M. is calculated. All differences are considered positive. These are denoted as |d|

(iii) The A.M. of these differences (called deviations) is the Mean Deviation.

i.e. $\text{M.D.} = \dfrac{\Sigma |d|}{n}$