ASSIGNMENT 2

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***Abstract*—This document contains the solution for Assignment 3 (Class 9 Maths NCERT Example 10).**

Example 10: 5 people were asked about the time in a week they spend in doing social work in their community. They said 10, 7, 13, 20 and 15 hours, respectively. Find the mean (or average) time in a week devoted by them for social work.

Solution: We have already studied in our earlier classes that the mean of a certain number of observations is equal to

$$\frac{\text{Sum of all the observations}}{\text{Total number of observations}}$$

To simplify our working of finding the mean, let us use a variable $\vec{x}_i$ to denote the ith observation. In this case, i can take the values from 1 to 5. So our first observation is $\vec{x}_1$, second observation is $\vec{x}_2$,and so on till $\vec{x}_5$.

Also $\vec{x}_1$ = 10 means that the value of the first observation, denoted by $\vec{x}_1$,is 10. Similarly, $\vec{x}_2$ = 7, $\vec{x}_3$ = 13, $\vec{x}_4$ = 20 and $\vec{x}_5$ = 15.

Therefore, the mean

$$\vec{\bar{x}} = \frac{\text{Sum of all the observations}}{\text{Total number of observations}} \tag{1}$$

$$= \frac{\vec{x}_1+\vec{x}_2+\vec{x}_3+\vec{x}_4+\vec{x}_5}{5} \tag{2}$$

$$= \frac{10+7+13+20+15}{5} \tag{3}$$

$$= \frac{65}{3} \tag{4}$$

$$= 13 \tag{5}$$

So, the mean time spent by these 5 people in doing social work is 13 hours in a week.

Now, in case we are finding the mean time spent by 30 people in doing social work, writing $\vec{x}_1$ + $\vec{x}_2$ + $\vec{x}_3$ +.....+ $\vec{x}_{30}$ would be a tedious job.We use the Greek symbol Σ(for the letter Sigma) for *summation*. Instead of writing $\vec{x}_1$ + $\vec{x}_2$ + $\vec{x}_3$ +.....+ $\vec{x}_{30}$, we write $\sum_{i=1}^{30} \vec{x}_i$, which is read as 'the sum of x_i as i varies from 1 to 30'.

So,

$$\vec{\bar{x}} = \frac{\sum_{i=1}^{30} \vec{x}_i}{30} \tag{6}$$

Similarly, for n observations ,

$$\vec{\bar{x}} = \frac{\sum_{i=1}^{n} \vec{x}_i}{n} \tag{7}$$