

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:

Hours(x_i)	No. of people(f_i)	$s_i = f_i \times x_i$
10	1	10
7	1	7
13	1	13
20	1	20
15	1	15
Total	$\sum_{i=1}^5 f_i = 5$	$\sum_{i=1}^5 f_i x_i = 65$

TABLE I

HOURS SPENT BY PEOPLE

The formulae for calculating the mean is

$$\mathbf{m} = \left(\mathbf{F}^\top \mathbf{S} \right) \left(\mathbf{K}^\top \mathbf{F} \right)^{-1} \quad (1)$$

where, \mathbf{F} is a column matrix of f_i , \mathbf{S} is a column matrix of $f_i \times x_i$, \mathbf{K} is a column matrix of 1's with 5 rows and \mathbf{m} is mean.

$$\mathbf{F} = \begin{pmatrix} f_1 \\ f_2 \\ f_3 \\ f_4 \\ f_5 \end{pmatrix} \quad (2)$$

$$\mathbf{S} = \begin{pmatrix} f_1 x_1 \\ f_2 x_2 \\ f_3 x_3 \\ f_4 x_4 \\ f_5 x_5 \end{pmatrix} \quad (3)$$

$$\mathbf{K} = \begin{pmatrix} 1 & 1 & 1 & 1 & 1 \end{pmatrix} \quad (4)$$

On keeping the values from TABLE I in equation(2) and equation(3) and equation(4) and substituting these in equation(1) we will get

$$\mathbf{m} = 13 \quad (5)$$

\therefore The mean of time devoted by people is 13.