

Study Materials

Class - B. Com Hons Sem IV

Sub Code – BCH 4.2

Topic – Mathematical Averages – Mean

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To find A.M. for Discrete Grouped data

If x_1, x_2, \dots, x_n are discrete values with the corresponding frequencies f_1, f_2, \dots, f_n . Then the mean for discrete grouped data is defined as (direct method)

$$\bar{x} = \frac{\sum_{i=1}^n f_i x_i}{N}$$

In the short cut method the formula is modified as

$$\bar{x} = A + \frac{\sum_{i=1}^n f_i d_i}{N} \quad \text{where } d_i = x_i - A$$

Example .1

A proof reads through 73 pages manuscript The number of mistakes found on each of the pages are summarized in the table below Determine the mean number of mistakes found per page

No of mistakes	1	2	3	4	5	6	7
No of pages	5	9	12	17	14	10	6

Solution:

(i) Direct Method

x_i	f_i	$f_i x_i$
1	5	5
2	9	18
3	12	36
4	17	68
5	14	70
6	10	60
7	6	42
Total	N=73	299

$$\begin{aligned}
 \bar{x} &= \frac{\sum_{i=1}^n f_i x_i}{N} \\
 &= \frac{299}{73} \\
 &= 4.09
 \end{aligned}$$

The mean number of mistakes is 4.09

(ii) Short-cut Method

x_i	f_i	$d_i=x_i-A$	f_id_i
1	5	-3	-15
2	9	-2	-18
3	12	-1	-12
4	17	0	0
5	14	1	14
6	10	2	20
7	6	3	18
	$\Sigma f_i=73$		$\Sigma f_id_i=7$

$$\begin{aligned}
 \bar{x} &= A + \frac{\sum_{i=1}^n f_id_i}{N} \\
 &= 4 + \frac{7}{73} \\
 &= 4.09
 \end{aligned}$$

The mean number of mistakes = 4.09