CLASS – 10

MATHEMATICS

Chapter – 13

STATISTICS

Part – 2

Step–deviation Method

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3. STEP DEVIATION METHOD

In this method, we divide the values of d with a number "h" to make our calculations easier.

$$\bar{x} = a + \left(\frac{\sum f_i u_i}{\sum f_i} \right) \times h$$

Here, a = assumed mean

h = class–size

$$u_i = x_i - \frac{a}{h}$$

Example :

A teacher marks the test result of the class of 55 students for mathematics. Find the mean for the given group.

Marks of Students	Frequency
0 – 10	2
10 – 20	3
20 – 30	7
30 – 40	5
40 – 50	4

Solution :

$\frac{x_i - a}{h} = u_i$

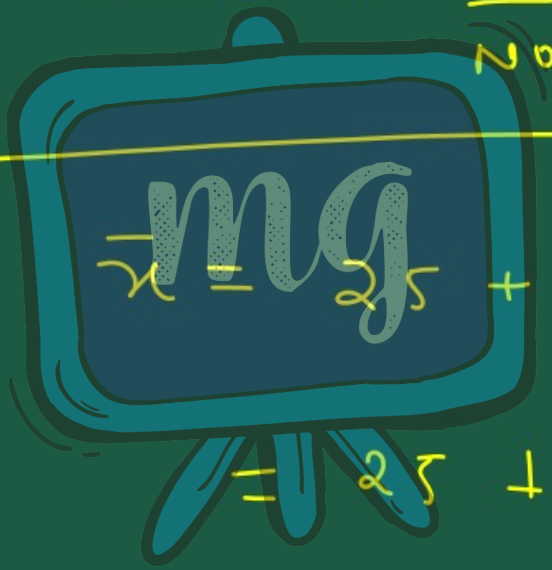
Marks of Students	Frequency (f_i)	Midpoint (x_i)	$d_i = x_i - a$	$u_i = \frac{d_i}{h}$	$u_i f_i$
0 – 10	2	5	−20	−2	−4
10 – 20	3	15	−10	−1	−3
20 – 30	7	25 = a	0	0	0
30 – 40	5	35	10	1	5
40 – 50	4	45	20	2	8

$\Sigma f_i = 21$

$\Sigma f_i u_i = 6$

$$\bar{x} = a + \left(\frac{\Sigma f_i u_i}{\Sigma f_i}\right) \times h$$

Mean = $\frac{\text{Sum of o/n}}{\text{No. of o/n}}$



$\bar{x} = 25 + \left[\frac{6}{21}\right] \times 10$

$= 25 + \frac{60}{21}$

$= 25 + 2.8$

$= 27.8$

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LEARNING OUTCOME

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ASSESSMENT

1 What is u_i in the step deviation method of finding mean of a given data.

A $\frac{x_i - a}{h}$

B $\frac{x_i + a}{h}$

C $\frac{x_i - d}{h}$

D $\frac{x_i + d}{h}$