

Arithmetic Mean

→ Calculation of Simple Arithmetic Mean in Discrete Series or Frequency Array

In discrete series, there are frequencies corresponding to different items in the series. There are three methods of calculating mean of the discrete series.

That discrete series. do not have class intervals. An item in the series does not assume any range of value but each item has corresponding frequency.

(i) Direct Method,

(ii) Short-cut Method,

(iii) Step-deviation Method.

Illustration: →

following is the weekly wage earnings of 19 workers.

Calculating arithmetic Mean using Direct Method and Short-cut Method.

Wage (₹)	10	20	30	40	50
No. of workers	4	5	3	2	5

Sol ⁿ	Wage (₹) (X)	No. of workers or frequency (f)	Multiple of the value of X and frequency (fx)
	10	4	$4 \times 10 = 40$
	20	5	$5 \times 20 = 100$
	30	3	$3 \times 30 = 90$
	40	2	$2 \times 40 = 80$
	50	5	$5 \times 50 = 250$
		Σf or $N = 19$	$\Sigma fx = 560$

$$\text{Mean } (\bar{X}) = \frac{\Sigma fx}{\Sigma f} \text{ or } \frac{\Sigma fx}{N} = \frac{560}{19} = 29.47$$

Short cut Method

(X)	(f)	Deviation $dx = X - A$ ($A=30$)	fdx
10	4	$10 - 30 = -20$	$4 \times -20 = -80$
20	5	$20 - 30 = -10$	$5 \times -10 = -50$
30	3	$30 - 30 = 0$	$3 \times 0 = 0$
40	2	$40 - 30 = 10$	$2 \times 10 = 20$
50	5	$50 - 30 = 20$	$5 \times 20 = 100$
	$\Sigma f = N = 19$		$\Sigma fdx = 120 - 130 = -10$

A = Assumed Average $A = 30$

formula of Short-cut Method.

$$\bar{x} = A + \frac{\sum fd}{N}$$

$$= 30 + \frac{-10}{19} = 30 - \frac{10}{19}$$

$$= 30 - 0.53 = 29.47$$

Arithmetic Mean = 29.47