

Mean Deviation

It is defined as the arithmetic average or mean of the deviation of various items of a series computed from mean or median.

Or

It is the average difference between the items of a distribution and the mean or median of that series.

For an individual series

$$\text{Mean deviation from mean or average} = \frac{1}{n} \sum |x - \bar{x}|$$

$$\text{Mean deviation from mean} = \frac{1}{n} \sum |x - m|$$

Example: To calculate the mean deviation from mean

Marks	Frequency (f)	Mid value (x)	fx	$\bar{x} = \frac{\sum fx}{\sum f}$	$ x - \bar{x} $	$f x - \bar{x} $
0-10	5	5	25	27	22	110
10-20	8	15	120	27	12	96
20-30	15	25	375	27	2	30
30-40	16	35	560	27	8	128
40-50	6	45	270	27	18	108
	$n = \sum f = 50$		$\sum fx = 1350$			

$$\text{Mean deviation} = \frac{\sum f|x - \bar{x}|}{n} = \frac{472}{50} = 9.44$$