

## Mean Deviation - Measure of Dispersion

The mean deviation is a measure of spread of a set of data.

It shows the average difference (or deviation) between each value and the mean.

- **Higher Mean Deviation** - data is more spread out from the mean
- **Lower Mean Deviation** - data is less spread out from the mean

Formula:

Mean Deviation = $\frac{\text{Sum of the differences from the mean}}{\text{Total number of values}}$
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Example: Calculate the mean deviation

1, 4, 5, 6, 8, 8, 9, 11

Method:

1. Calculate the mean ( $\bar{x}$ )
2. Make a table
3. Find the difference between the value and the mean - this is always a positive number
4. Calculate the mean deviation

Note: The difference from the mean will always be a positive number - we use  $| \quad |$  to show this.

Example:  $|-2| = 2$      $|-10| = 10$      $|4| = 4$

*Absolute value*

1)  $\bar{x} = 6.5$

2) Value	Mean $\bar{x}$	③ Difference from the Mean
1	6.5	$ 1 - 6.5  = 5.5$
4	6.5	$ 4 - 6.5  = 2.5$
5	6.5	$ 5 - 6.5  = 1.5$
6	6.5	$ 6 - 6.5  = 0.5$
8	6.5	$ 8 - 6.5  = 1.5$
8	6.5	$ 8 - 6.5  = 1.5$
9	6.5	$ 9 - 6.5  = 2.5$
11	6.5	$ 11 - 6.5  = 4.5$

4) Mean Deviation:

$$MD = \frac{5.5 + 2.5 + 1.5 + 0.5 + 1.5 + 1.5 + 2.5 + 4.5}{8} = \underline{\underline{2.5}}$$

This means the average difference between each value and the mean is 2.5.