MEAN DEVIATION

A measure that tells us how far the data is from the mean.

Absolute value: the positive value of any number

Steps:

1. *Calculate the mean (average)*
2. *Calculate the deviation (difference) between the mean and each data value.*
3. *Take the absolute value of each deviation.*
4. *Add the deviations and divide by the number of data.*

The lower the value of the mean deviation, the more homogeneous the distribution of data values; that is the closer they are to the mean.

Mean Deviation

Mean deviation is a measure of dispersion

Example:

1 4 5 6 8 8 9 11

Step 1 – Calculate the mean

$$\frac{(1+4+5+6+8+8+9+11)}{8} = \frac{52}{8} = 6.5$$

$|-5| = 5$

Step 2 – Calculate the deviation from the mean using absolute values (positive no matter what)

Value	Mean	Deviation
1	6.5	$\|1 - 6.5\| = 5.5$ $\|-5.5\| =$
4	6.5	$\|4 - 6.5\| = 2.5$ $\|-2.5\| =$
5	6.5	$\|5 - 6.5\| = 1.5$ $\|-1.5\|$
6	6.5	$\|6 - 6.5\| = 0.5$ $\|-0.5\|$
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	$\|11 - 6.5\| = 4.5$
		Total = 20

Step 3 – Calculate the mean deviation

$\frac{20}{8} = 2.5$

Mean Deviation is 2.5

Example:

MATH MARKS

The following are the math marks of the class of 21 people. Find the mean deviation, USING A TABLE!

52 60 60 61 65 68 70 70 70 71 71 74 74

75 76 77 79 83 85 88 91

Ex. The following are the math marks of the class of 21 people. Find the mean deviation, USING A TABLE!

med = $\frac{21+1}{2}$

52, 60, 60, 61, 65, 68, 70, 70, 70, 71, 71, 74, 74, 75, 76, 77, 79, 83, 85, 88, 91

Step 1: Calculate the mean :

$\bar{x} = \frac{1520}{21} = 72.38$

Step 2: Calculate the deviation from the mean :

Value	Mean	Deviation
52	72	20
60		12
60		12
61		11
65		7
68		4
70	72	2
70		2
70		2
71		1
71		1
74		2
74		2
75		3
76		4
77		5
79		7
83		11
85		13
88		16
91		19
		156

Mean Dev = $\frac{156}{21}$

7.43

Ex. Which group has the higher mean deviation ?

Males		Females
95 90 80 54 48 15	**1**	05 12 36 47 52 81
73 59 32 18	**2**	58 59 71 76

Step 1: Calculate the mean (for each group):

Male: $\bar{x}$

Female: $\bar{x}$