

1. Problem

From a very large population, a small sample of measurements was taken.

102	89	89	109	93	94	82
-----	----	----	-----	----	----	----

Please calculate the average absolute deviation using the following formula:

$$AAD = \frac{\sum |x - \bar{x}|}{n}$$

Solution

We fill out the table column by column.

x	$x - \bar{x}$	$ x - \bar{x} $
102	8	8
89	-5	5
89	-5	5
109	15	15
93	-1	1
94	0	0
82	-12	12
=====	=====	=====
$\sum x = 658$		$\sum x - \bar{x} = 46$
$\bar{x} = 94$		

We are ready for the formula.

$$s = \frac{\sum |x - \bar{x}|}{n}$$

$$= \frac{46}{7}$$

$$= \boxed{6.5714286}$$

2. Problem

From a very large population, a small sample of measurements was taken.

95	109	103	95	98
----	-----	-----	----	----

Please calculate the (Bessel corrected) sample standard deviation using the following formula:

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

Solution

We fill out the table column by column.

x	$x - \bar{x}$	$(x - \bar{x})^2$
95	-5	25
109	9	81
103	3	9
95	-5	25
98	-2	4
=====	=====	=====
$\sum x = 500$		$\sum (x - \bar{x})^2 = 144$
$\bar{x} = 100$		

We are ready for the formula.

$$s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$$

$$= \sqrt{\frac{144}{5 - 1}}$$

$$= \sqrt{36}$$

$$= \boxed{6}$$