

1. Problem

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

45	30	36	42	34
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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} $
45	7.6	7.6
30	-7.4	7.4
36	-1.4	1.4
42	4.6	4.6
34	-3.4	3.4
=====	=====	=====
$\sum x = 187$		$\sum x - \bar{x} = 24.4$
$\bar{x} = 37.4$		

We are ready for the formula.

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

$$= \frac{24.4}{5}$$

$$= \boxed{4.88}$$

2. Problem

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

192	194	193	194	192
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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	$x - \bar{x}$	$(x - \bar{x})^2$
192	-1	1
194	1	1
193	0	0
194	1	1
192	-1	1
=====	=====	=====
$\sum x = 965$		$\sum (x - \bar{x})^2 = 4$
$\bar{x} = 193$		

We are ready for the formula.

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

$$= \sqrt{\frac{4}{5 - 1}}$$

$$= \sqrt{1}$$

$$= \boxed{1}$$