

1. Problem

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

120	130	92	95	130
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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} $
120	6.599999999999999	6.6
130	16.6	16.6
92	-21.4	21.4
95	-18.4	18.4
130	16.6	16.6
=====	=====	=====
$\sum x = 567$		$\sum x - \bar{x} = 79.6$
$\bar{x} = 113.4$		

We are ready for the formula.

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

$$= \frac{79.6}{5}$$

$$= \boxed{15.92}$$

2. Problem

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

169	175	169	169
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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	$x - \bar{x}$	$(x - \bar{x})^2$
169	-1.5	2.25
175	4.5	20.25
169	-1.5	2.25
169	-1.5	2.25
=====	=====	=====
$\sum x = 682$		$\sum (x - \bar{x})^2 = 27$
$\bar{x} = 170.5$		

We are ready for the formula.

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

$$= \sqrt{\frac{27}{4 - 1}}$$

$$= \sqrt{9}$$

$$= \boxed{3}$$