

1. Problem

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

126	126	129	123	112
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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} $
126	2.8	2.8
126	2.8	2.8
129	5.8	5.8
123	-0.200000000000003	0.2
112	-11.2	11.2
=====	=====	=====
$\sum x = 616$		$\sum x - \bar{x} = 22.8$
$\bar{x} = 123.2$		

We are ready for the formula.

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

$$= \frac{22.8}{5}$$

$$= \boxed{4.56}$$

2. Problem

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

175	175	179	174	177
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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	$x - \bar{x}$	$(x - \bar{x})^2$
175	-1	1
175	-1	1
179	3	9
174	-2	4
177	1	1
=====	=====	=====
$\sum x = 880$		$\sum (x - \bar{x})^2 = 16$
$\bar{x} = 176$		

We are ready for the formula.

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

$$= \sqrt{\frac{16}{5 - 1}}$$

$$= \sqrt{4}$$

$$= \boxed{2}$$