

1. Problem

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

162	158	153	157	158	145
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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} $
162	6.5	6.5
158	2.5	2.5
153	-2.5	2.5
157	1.5	1.5
158	2.5	2.5
145	-10.5	10.5
=====	=====	=====
$\sum x = 933$		$\sum x - \bar{x} = 26$
$\bar{x} = 155.5$		

We are ready for the formula.

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

$$= \frac{26}{6}$$

$$= \boxed{4.3333333}$$

2. Problem

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

55	51	55	49
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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	$x - \bar{x}$	$(x - \bar{x})^2$
55	2.5	6.25
51	-1.5	2.25
55	2.5	6.25
49	-3.5	12.25
=====	=====	=====
$\sum x = 210$		$\sum (x - \bar{x})^2 = 27$
$\bar{x} = 52.5$		

We are ready for the formula.

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

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

$$= \sqrt{9}$$

$$= \boxed{3}$$