

1. Problem

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

129	131	142	128
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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} $
129	-3.5	3.5
131	-1.5	1.5
142	9.5	9.5
128	-4.5	4.5
=====	=====	=====
$\sum x = 530$		$\sum x - \bar{x} = 19$
$\bar{x} = 132.5$		

We are ready for the formula.

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

$$= \frac{19}{4}$$

$$= \boxed{4.75}$$

2. Problem

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

138	132	138	138
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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	$x - \bar{x}$	$(x - \bar{x})^2$
138	1.5	2.25
132	-4.5	20.25
138	1.5	2.25
138	1.5	2.25
=====	=====	=====
$\sum x = 546$		$\sum (x - \bar{x})^2 = 27$
$\bar{x} = 136.5$		

We are ready for the formula.

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

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

$$= \sqrt{9}$$

$$= \boxed{3}$$