1. **Problem**

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

83	82	92	105

Please calculate the average absolute deviation using the following formula:

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

Solution

We fill out the table column by column.

x	$x - \bar{x}$	$|x - \bar{x}|$
83	-7.5	7.5
82	-8.5	8.5
92	1.5	1.5
105	14.5	14.5
========	========	========
$\sum x = 362$		$\sum|x - \bar{x}| = 32$
$\bar{x} = 90.5$		

We are ready for the formula.

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

$$= \frac{32}{4}$$

$$= \boxed{8}$$

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

42	47	48	39	51	56	53

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	$x - \bar{x}$	$(x - \bar{x})^2$
42	-6	36
47	-1	1
48	0	0
39	-9	81
51	3	9
56	8	64
53	5	25
=======	=======	=======
$\sum x = 336$		$\sum(x - \bar{x})^2 = 216$
$\bar{x} = 48$		

We are ready for the formula.

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

$$= \sqrt{\frac{216}{7 - 1}}$$

$$= \sqrt{36}$$

$$= \boxed{6}$$