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

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.

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

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

$$= \sqrt{36}$$

$$= \boxed{6}$$

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

139	156	148	144	154

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
139	-9.19999999999999	9.2
156	7.80000000000001	7.8
148	-0.199999999999989	0.2
144	-4.19999999999999	4.2
154	5.80000000000001	5.8
========	========	========
$\sum x = 741$		$\sum \lvert x - \bar{x}\rvert = 27.2$
$\bar{x} = 148.2$		

We are ready for the formula.

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

$$= \frac{27.2}{5}$$

$$= \boxed{5.44}$$

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

140	136	140	140

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	$x-\bar{x}$	$(x-\bar{x})^2$
140	1	1
136	-3	9
140	1	1
140	1	1
========	========	========
$\sum x = 556$		$\sum(x-\bar{x})^2 = 12$
$\bar{x} = 139$		

We are ready for the formula.

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

$$= \sqrt{\frac{12}{4-1}}$$

$$= \sqrt{4}$$

$$= \boxed{2}$$

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

129	149	128	136	161

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
129	-11.6	11.6
149	8.40000000000001	8.4
128	-12.6	12.6
136	-4.59999999999999	4.6
161	20.4	20.4
========	========	========
$\sum x = 703$		$\sum \lvert x - \bar{x}\rvert = 57.6$
$\bar{x} = 140.6$		

We are ready for the formula.

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

$$= \frac{57.6}{5}$$

$$= \boxed{11.52}$$

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

155	149	149	153

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	$x-\bar{x}$	$(x-\bar{x})^2$
155	3.5	12.25
149	-2.5	6.25
149	-2.5	6.25
153	1.5	2.25
========	========	========
$\sum x = 606$		$\sum(x-\bar{x})^2 = 27$
$\bar{x} = 151.5$		

We are ready for the formula.

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

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

$$= \sqrt{9}$$

$$= \boxed{3}$$

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

57	56	44	41	50

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
57	7.4	7.4
56	6.4	6.4
44	-5.6	5.6
41	-8.6	8.6
50	0.399999999999999	0.4
========	========	========
$\sum x = 248$		$\sum \lvert x - \bar{x}\rvert = 28.4$
$\bar{x} = 49.6$		

We are ready for the formula.

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

$$= \frac{28.4}{5}$$

$$= \boxed{5.68}$$

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

189	183	196	175	180	190	175

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	$x-\bar{x}$	$(x-\bar{x})^2$
189	5	25
183	-1	1
196	12	144
175	-9	81
180	-4	16
190	6	36
175	-9	81
========	========	========
$\sum x = 1288$		$\sum(x-\bar{x})^2 = 384$
$\bar{x} = 184$		

We are ready for the formula.

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

$$= \sqrt{\frac{384}{7-1}}$$

$$= \sqrt{64}$$

$$= \boxed{8}$$

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

45	30	36	42	34

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
45	7.6	7.6
30	-7.4	7.4
36	-1.4	1.4
42	4.6	4.6
34	-3.4	3.4
========	========	========
$\sum x = 187$		$\sum \lvert x - \bar{x}\rvert = 24.4$
$\bar{x} = 37.4$		

We are ready for the formula.

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

$$= \frac{24.4}{5}$$

$$= \boxed{4.88}$$

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

192	194	193	194	192

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	$x - \bar{x}$	$(x - \bar{x})^2$
192	-1	1
194	1	1
193	0	0
194	1	1
192	-1	1
========	========	========
$\sum x = 965$		$\sum (x - \bar{x})^2 = 4$
$\bar{x} = 193$		

We are ready for the formula.

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

$$= \sqrt{\frac{4}{5 - 1}}$$

$$= \sqrt{1}$$

$$= \boxed{1}$$

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

71	63	65	63	77

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
71	3.2	3.2
63	-4.8	4.8
65	-2.8	2.8
63	-4.8	4.8
77	9.2	9.2
========	========	========
$\sum x = 339$		$\sum \lvert x - \bar{x}\rvert = 24.8$
$\bar{x} = 67.8$		

We are ready for the formula.

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

$$= \frac{24.8}{5}$$

$$= \boxed{4.96}$$

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

125	125	131	125

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	$x-\bar{x}$	$(x-\bar{x})^2$
125	-1.5	2.25
125	-1.5	2.25
131	4.5	20.25
125	-1.5	2.25
========	========	========
$\sum x = 506$		$\sum(x-\bar{x})^2 = 27$
$\bar{x} = 126.5$		

We are ready for the formula.

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

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

$$= \sqrt{9}$$

$$= \boxed{3}$$

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

187	190	179	183	190

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
187	1.19999999999999	1.2
190	4.19999999999999	4.2
179	-6.80000000000001	6.8
183	-2.80000000000001	2.8
190	4.19999999999999	4.2
========	========	========
$\sum x = 929$		$\sum \lvert x - \bar{x}\rvert = 19.2$
$\bar{x} = 185.8$		

We are ready for the formula.

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

$$= \frac{19.2}{5}$$

$$= \boxed{3.84}$$

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

108	102	102	102

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	$x - \bar{x}$	$(x - \bar{x})^2$
108	4.5	20.25
102	-1.5	2.25
102	-1.5	2.25
102	-1.5	2.25
========	========	========
$\sum x = 414$		$\sum (x - \bar{x})^2 = 27$
$\bar{x} = 103.5$		

We are ready for the formula.

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

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

$$= \sqrt{9}$$

$$= \boxed{3}$$

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

102	89	89	109	93	94	82

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
102	8	8
89	-5	5
89	-5	5
109	15	15
93	-1	1
94	0	0
82	-12	12
========	========	========
$\sum x = 658$		$\sum \lvert x - \bar{x}\rvert = 46$
$\bar{x} = 94$		

We are ready for the formula.

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

$$= \frac{46}{7}$$

$$= \boxed{6.5714286}$$

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

95	109	103	95	98

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	$x - \bar{x}$	$(x - \bar{x})^2$
95	-5	25
109	9	81
103	3	9
95	-5	25
98	-2	4
========	========	========
$\sum x = 500$		$\sum (x - \bar{x})^2 = 144$
$\bar{x} = 100$		

We are ready for the formula.

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

$$= \sqrt{\frac{144}{5 - 1}}$$

$$= \sqrt{36}$$

$$= \boxed{6}$$

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

126	126	129	123	112

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
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
========	========	========
$\sum x = 616$		$\sum \lvert x - \bar{x}\rvert = 22.8$
$\bar{x} = 123.2$		

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

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.

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

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

$$= \sqrt{4}$$

$$= \boxed{2}$$

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

183	186	191	184	192

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
183	-4.19999999999999	4.2
186	-1.19999999999999	1.2
191	3.80000000000001	3.8
184	-3.19999999999999	3.2
192	4.80000000000001	4.8
========	========	========
$\sum x = 936$		$\sum \lvert x - \bar{x}\rvert = 17.2$
$\bar{x} = 187.2$		

We are ready for the formula.

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

$$= \frac{17.2}{5}$$

$$= \boxed{3.44}$$

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

98	94	94	94

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	$x - \bar{x}$	$(x - \bar{x})^2$
98	3	9
94	-1	1
94	-1	1
94	-1	1
========	========	========
$\sum x = 380$		$\sum (x - \bar{x})^2 = 12$
$\bar{x} = 95$		

We are ready for the formula.

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

$$= \sqrt{\frac{12}{4 - 1}}$$

$$= \sqrt{4}$$

$$= \boxed{2}$$

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

93	95	92	95	96

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
93	-1.2	1.2
95	0.799999999999997	0.8
92	-2.2	2.2
95	0.799999999999997	0.8
96	1.8	1.8
========	========	========
$\sum x = 471$		$\sum \lvert x - \bar{x}\rvert = 6.8$
$\bar{x} = 94.2$		

We are ready for the formula.

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

$$= \frac{6.8}{5}$$

$$= \boxed{1.36}$$

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

113	113	113	127

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	$x-\bar{x}$	$(x-\bar{x})^2$
113	-3.5	12.25
113	-3.5	12.25
113	-3.5	12.25
127	10.5	110.25
========	========	========
$\sum x = 466$		$\sum(x-\bar{x})^2 = 147$
$\bar{x} = 116.5$		

We are ready for the formula.

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

$$= \sqrt{\frac{147}{4-1}}$$

$$= \sqrt{49}$$

$$= \boxed{7}$$

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

114	120	112	114	119	108

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
114	-0.5	0.5
120	5.5	5.5
112	-2.5	2.5
114	-0.5	0.5
119	4.5	4.5
108	-6.5	6.5
========	========	========
$\sum x = 687$		$\sum \lvert x - \bar{x}\rvert = 20$
$\bar{x} = 114.5$		

We are ready for the formula.

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

$$= \frac{20}{6}$$

$$= \boxed{3.3333333}$$

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

52	47	48	50	48	51	47

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	$x - \bar{x}$	$(x - \bar{x})^2$
52	3	9
47	-2	4
48	-1	1
50	1	1
48	-1	1
51	2	4
47	-2	4
========	========	========
$\sum x = 343$		$\sum (x - \bar{x})^2 = 24$
$\bar{x} = 49$		

We are ready for the formula.

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

$$= \sqrt{\frac{24}{7 - 1}}$$

$$= \sqrt{4}$$

$$= \boxed{2}$$

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

93	86	87	92	83

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
93	4.8	4.8
86	-2.2	2.2
87	-1.2	1.2
92	3.8	3.8
83	-5.2	5.2
========	========	========
$\sum x = 441$		$\sum \lvert x - \bar{x}\rvert = 17.2$
$\bar{x} = 88.2$		

We are ready for the formula.

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

$$= \frac{17.2}{5}$$

$$= \boxed{3.44}$$

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

69	87	89	69

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	$x-\bar{x}$	$(x-\bar{x})^2$
69	-9.5	90.25
87	8.5	72.25
89	10.5	110.25
69	-9.5	90.25
========	========	========
$\sum x = 314$		$\sum(x-\bar{x})^2 = 363$
$\bar{x} = 78.5$		

We are ready for the formula.

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

$$= \sqrt{\frac{363}{4-1}}$$

$$= \sqrt{121}$$

$$= \boxed{11}$$

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

110	117	120	115	112

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
110	-4.8	4.8
117	2.2	2.2
120	5.2	5.2
115	0.200000000000003	0.2
112	-2.8	2.8
========	========	========
$\sum x = 574$		$\sum \lvert x - \bar{x}\rvert = 15.2$
$\bar{x} = 114.8$		

We are ready for the formula.

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

$$= \frac{15.2}{5}$$

$$= \boxed{3.04}$$

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

65	67	67	65	66

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	$x - \bar{x}$	$(x - \bar{x})^2$
65	-1	1
67	1	1
67	1	1
65	-1	1
66	0	0
========	========	========
$\sum x = 330$		$\sum (x - \bar{x})^2 = 4$
$\bar{x} = 66$		

We are ready for the formula.

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

$$= \sqrt{\frac{4}{5 - 1}}$$

$$= \sqrt{1}$$

$$= \boxed{1}$$

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

199	189	193	201

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
199	3.5	3.5
189	-6.5	6.5
193	-2.5	2.5
201	5.5	5.5
========	========	========
$\sum x = 782$		$\sum \lvert x - \bar{x}\rvert = 18$
$\bar{x} = 195.5$		

We are ready for the formula.

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

$$= \frac{18}{4}$$

$$= \boxed{4.5}$$

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

153	137	142	135	143

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	$x - \bar{x}$	$(x - \bar{x})^2$
153	11	121
137	-5	25
142	0	0
135	-7	49
143	1	1
========	========	========
$\sum x = 710$		$\sum (x - \bar{x})^2 = 196$
$\bar{x} = 142$		

We are ready for the formula.

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

$$= \sqrt{\frac{196}{5 - 1}}$$

$$= \sqrt{49}$$

$$= \boxed{7}$$

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

100	102	103	101

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
100	-1.5	1.5
102	0.5	0.5
103	1.5	1.5
101	-0.5	0.5
========	========	========
$\sum x = 406$		$\sum \lvert x - \bar{x}\rvert = 4$
$\bar{x} = 101.5$		

We are ready for the formula.

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

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

$$= \boxed{1}$$

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

163	165	164	165	163

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	$x - \bar{x}$	$(x - \bar{x})^2$
163	-1	1
165	1	1
164	0	0
165	1	1
163	-1	1
========	========	========
$\sum x = 820$		$\sum (x - \bar{x})^2 = 4$
$\bar{x} = 164$		

We are ready for the formula.

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

$$= \sqrt{\frac{4}{5 - 1}}$$

$$= \sqrt{1}$$

$$= \boxed{1}$$

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

129	131	142	128

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

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

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.

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

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

$$= \sqrt{9}$$

$$= \boxed{3}$$

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

186	205	186	189	189	187	195

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	$x - \bar{x}$	$\lvert x - \bar{x} \rvert$
186	-5	5
205	14	14
186	-5	5
189	-2	2
189	-2	2
187	-4	4
195	4	4
========	========	========
$\sum x = 1337$		$\sum \lvert x - \bar{x} \rvert = 36$
$\bar{x} = 191$		

We are ready for the formula.

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

$$= \frac{36}{7}$$

$$= \boxed{5.1428571}$$

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

197	191	195	203

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	$x-\bar{x}$	$(x-\bar{x})^2$
197	0.5	0.25
191	-5.5	30.25
195	-1.5	2.25
203	6.5	42.25
========	========	========
$\sum x = 786$		$\sum(x-\bar{x})^2 = 75$
$\bar{x} = 196.5$		

We are ready for the formula.

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

$$= \sqrt{\frac{75}{4-1}}$$

$$= \sqrt{25}$$

$$= \boxed{5}$$

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

115	127	103	115	122

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
115	-1.40000000000001	1.4
127	10.6	10.6
103	-13.4	13.4
115	-1.40000000000001	1.4
122	5.59999999999999	5.6
========	========	========
$\sum x = 582$		$\sum \lvert x - \bar{x}\rvert = 32.4$
$\bar{x} = 116.4$		

We are ready for the formula.

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

$$= \frac{32.4}{5}$$

$$= \boxed{6.48}$$

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

86	82	82	88

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	$x-\bar{x}$	$(x-\bar{x})^2$
86	1.5	2.25
82	-2.5	6.25
82	-2.5	6.25
88	3.5	12.25
========	========	========
$\sum x = 338$		$\sum(x-\bar{x})^2 = 27$
$\bar{x} = 84.5$		

We are ready for the formula.

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

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

$$= \sqrt{9}$$

$$= \boxed{3}$$

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

70	36	59	50	28

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
70	21.4	21.4
36	-12.6	12.6
59	10.4	10.4
50	1.4	1.4
28	-20.6	20.6
========	========	========
$\sum x = 243$		$\sum \lvert x - \bar{x}\rvert = 66.4$
$\bar{x} = 48.6$		

We are ready for the formula.

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

$$= \frac{66.4}{5}$$

$$= \boxed{13.28}$$

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

146	146	140	143	140

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	$x - \bar{x}$	$(x - \bar{x})^2$
146	3	9
146	3	9
140	-3	9
143	0	0
140	-3	9
========	========	========
$\sum x = 715$		$\sum (x - \bar{x})^2 = 36$
$\bar{x} = 143$		

We are ready for the formula.

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

$$= \sqrt{\frac{36}{5 - 1}}$$

$$= \sqrt{9}$$

$$= \boxed{3}$$

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

130	129	123	126

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
130	3	3
129	2	2
123	-4	4
126	-1	1
========	========	========
$\sum x = 508$		$\sum \lvert x - \bar{x}\rvert = 10$
$\bar{x} = 127$		

We are ready for the formula.

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

$$= \frac{10}{4}$$

$$= \boxed{2.5}$$

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

92	88	89	96	98	95

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	$x - \bar{x}$	$(x - \bar{x})^2$
92	-1	1
88	-5	25
89	-4	16
96	3	9
98	5	25
95	2	4
========	========	========
$\sum x = 558$		$\sum (x - \bar{x})^2 = 80$
$\bar{x} = 93$		

We are ready for the formula.

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

$$= \sqrt{\frac{80}{6 - 1}}$$

$$= \sqrt{16}$$

$$= \boxed{4}$$

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

136	133	130	133	134

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	$x - \bar{x}$	$\lvert x - \bar{x}\rvert$
136	2.80000000000001	2.8
133	-0.199999999999989	0.2
130	-3.19999999999999	3.2
133	-0.199999999999989	0.2
134	0.800000000000011	0.8
========	========	========
$\sum x = 666$		$\sum \lvert x - \bar{x}\rvert = 7.2$
$\bar{x} = 133.2$		

We are ready for the formula.

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

$$= \frac{7.2}{5}$$

$$= \boxed{1.44}$$

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

54	58	54	60

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	$x-\bar{x}$	$(x-\bar{x})^2$
54	-2.5	6.25
58	1.5	2.25
54	-2.5	6.25
60	3.5	12.25
========	========	========
$\sum x = 226$		$\sum(x-\bar{x})^2 = 27$
$\bar{x} = 56.5$		

We are ready for the formula.

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

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

$$= \sqrt{9}$$

$$= \boxed{3}$$