$$\sqrt{\dfrac{ST\Delta}{DE\nabla}}$$

Standard deviation WorkSheets

Practical problem # 1:

Calculate the standard deviation of the following dataset and record the values for each step in the designated blank.

Set = 1, 3, 4, 8, 9, 12, 14, 17, 19, 20

Mean = _____   ,   n = _____

Value	Difference from the mean $(x - \bar{x})$	(Difference from the mean)^2 $(x - \bar{x})^2$
	Sum of (Difference from the mean)^2 $\Sigma (x - \bar{x})^2$	

Sum of (Difference from the Mean)^2 divided by degrees of freedom (n–1):_____. This is called variance.

Lastly,

Standard deviation = Squareroot of variance

$$\sqrt{\dfrac{\sum (x - \bar{x})^2}{(n - 1)}} = \underline{\hspace{3cm}}$$

Practical problem # 2:

Calculate the standard deviation previous problem.

Set = 10, 15, 18, 19, 20, 21, 22, 25, 26, 28

Mean = _____   ,   n = _____

Value	Difference from the mean $(x - \bar{x})$	(Difference from the mean)^2 $(x - \bar{x})^2$
	Sum of (Difference from the mean)^2 $\Sigma (x - \bar{x})^2$	

Sum of (Difference from the Mean)^2 divided by degrees of freedom (n–1):_____. This is called variance.

Lastly,

Standard deviation = Squareroot of variance

$$\sqrt{\frac{\sum (x - \bar{x})^2}{(n-1)}} = \underline{\hspace{3cm}}$$

Practical problem # 3:

Set = 9, 10, 11, 12, 14, 16, 19, 21, 23, 24

Mean = _____ , n = _____

Value	Difference from the mean $(x - \bar{x})$	(Difference from the mean)^2 $(x - \bar{x})^2$
	Sum of (Difference from the mean)^2 $\Sigma (x - \bar{x})^2$	

Sum of (Difference from the Mean)^2 divided by degrees of freedom (n–1):_____. This is called variance.

Lastly,

Standard deviation = Squareroot of variance

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

$\sqrt{\dfrac{STΔ}{DE\nabla}}$

Solutions

Practical problem # 1:

Mean = 10.7 , n = 10

Value	Difference from the mean $(x - \bar{x})$	(Difference from the mean)² $(x - \bar{x})^2$
1	-9.70	94.09
3	-7.70	59.29
4	-6.70	44.89
8	-2.70	7.29
9	-1.70	2.89
12	1.30	1.69
14	3.30	10.89
17	6.30	39.69
19	8.30	68.89
20	9.30	86.49
	Sum of (Difference from the mean)² $\Sigma (x - \bar{x})^2$	416.1

Variance = 46.233

Standard deviation = 6.79

Practical problem # 2:

Mean = 20.4 , n = 10

Value	Difference from the mean $(x - \bar{x})$	(Difference from the mean)^2 $(x - \bar{x})^2$
10	-10.40	108.16
15	-5.40	29.16
18	-2.40	5.76
19	-1.40	1.96
20	-0.40	0.16
21	0.60	0.36
22	1.60	2.56
25	4.60	21.16
26	5.60	31.36
28	7.60	57.76
	Sum of (Difference from the mean)^2 $\Sigma (x - \bar{x})^2$	258.4

Variance = 28.711

Standard deviation = 5.358

Practical problem # 3:

Mean = 15.9 , n = 10

Value	Difference from the mean $(x - \bar{x})$	(Difference from the mean)² $(x - \bar{x})^2$
9	-6.90	47.61
10	-5.90	34.81
11	-4.90	24.01
12	-3.90	15.21
14	-1.90	3.61
16	0.10	0.01
19	3.10	9.61
21	5.10	26.01
23	7.10	50.41
24	8.10	65.61
	Sum of (Difference from the mean)² $\Sigma (x - \bar{x})^2$	276.9

Variance = 30.76
Standard deviation = 5.546