Standard Deviation

The standard deviation is the square root of the variance.

Example: Find the standard deviation of 65, 75, and 100.

Standard Deviation = $\sqrt{variance}$

Standard Deviation = $\sqrt{\frac{1}{n}\sum_{i=1}^{n}(x_i - \bar{x})^2}$

The mean is 80.

65 – 80 = –15; 75 – 80 = –5; 100 – 80 = 20

Squaring each difference, I have 225, 25, and 400. Now add and divide by three.

$$\sqrt{\frac{225+25+400}{3}} = \sqrt{\frac{650}{3}} = \sqrt{216.6} \approx 14$$

The standard deviation is approximately 14

Find standard deviation for the following:

1. 60, 80, 80, 100

2. 60, 70, 80, 80, 90, 100

3. 80, 80, 80, 80, 80, 80

5. 55, 60, 65, 70, 75, 80, 85

6. 7, 9, 10, 14, 15, 17

7. 1, 13, 3, 11, 8, 6, 9, 5, 2, 12

8. 10, 20, 37, 38, 42, 45, 48, 50, 52, 55, 58, 62, 63, 80, 90

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$$\sqrt{\frac{225+25+400}{3}} = \sqrt{\frac{650}{3}} = \sqrt{216.6} \approx 14$$

The standard deviation is approximately 14

Find the standard deviation for the following

1. 50, 80, 80, 90

2. 60, 70, 80, 80, 90, 100

3. 90, 90, 90, 90, 90, 90

5. 55, 60, 65, 70, 75, 80, 85

6. 8, 9, 10, 13, 15, 18

7. 1, 3, 14, 10,, 6, 9, 5, 2, 12

8. 10, 20, 37, 38, 42, 45, 48, 50, 52, 55, 58, 62, 63, 80, 90