5.3 Notes

Wednesday, May 27, 2015   8:58 AM

5.3 – Standard Deviation

- Deviation
    - The difference between a data value and the mean for the same set of data
- Standard Deviation
    - The measure of the dispersion of scatter of data values in relation to the mean
    - A low standard deviation indicates that most data values are close to the mean
    - A high standard deviation indicates that most data values are scattered farther from the mean
- Formulas
    - Mean
        - $$\bar{x} = \frac{\sum x}{n}$$
            - $\sum x$ means the sum of all data values (x).
            - n means the number of data values
            - x̄ (read as x-bar) represents the mean of the data
    - Standard Deviation
        - $$\sigma = \sqrt{\frac{\sum(x-\bar{x})^2}{n}}$$
            - σ means standard deviation (pronounced Sigma)

5.3 Example

Twila and Amberr kept a log of how much time in June they spent studying for finals for two weeks. Determine the mean and range of each girl's log and compare the data.

T:	45	55	50	40	55	40	60	45	40	35
A:	80	10	65	15	75	30	40	85	20	35

1. Predict which girl's data will have the lowest standard deviation. Justify your answer.

    Twila – smaller range

2. Determine the standard deviation.

    $\sigma_T = 8.18196$ $\sigma_A = 28.32843$

    $\bar{x}_T = 46.5$ $\bar{x}_A = 45.5$

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