ASQ CRE Prep course

Lesson II. A. 1. d.

Statistical Terms

Measures of Dispersion

The spread matters, too

MEASURES OF DISPERSION

2nd Moment - Dispersion

- **Spread**
- **Dispersion**
- **Scatter**

- **3rd moment is Skewness**

- **4th moment is Kurtosis**

Range

- Difference between maximum and minimum value in data set.

- For crude estimate of standard deviation divide range by 4

- Could also divide range by control chart factor d_2

Variance

- **Sum of squared deviations from the mean divided by the number of items in set**

$$\sigma^2 = \frac{\sum (x - \mu)^2}{N}$$

- **Work with variances, not standard deviations…**

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

Standard Deviation

- **In same units of data**

$$\sigma = \sqrt{\frac{\sum (x - \mu)^2}{N}}$$

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

How does your calculator do standard deviation?

- **Let's try a quick calculation**

- **3.4, 9.3, 3.3, 5.6, 4.7, 2.7**

- **Sample Standard Deviation**
- **Population Standard Deviation**

How does your calculator do standard deviation?

- **Let's try a quick calculation**

- **3.4, 9.3, 3.3, 5.6, 4.7, 2.7**

- **Sample Standard Deviation = 2.43**
- **Population Standard Deviation = 2.22**

Why the n-1?

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Statistical Terms

COV & A Couple Laws