TOPIC: STANDARD DEVIATION

Calculating Sample Standard Deviation

- ◆ Recall: Mean & Median are **Measures of Center**, but often you'll need to more about the distribution of values.
 - ► Standard Deviation (____) is a **Measure of Variation**, how _____ out #s are. $s \ge 0$ ($s \uparrow$, more "spread out")

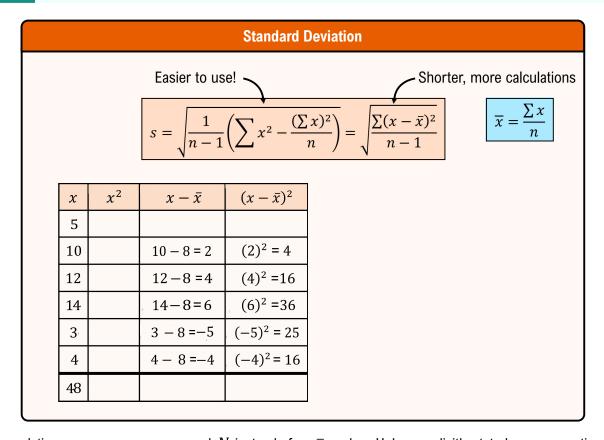
13
 14
 15
 16
 17
 5
 10
 15
 20
 25

$$\bar{x} = 15$$
 $s = 1.58$
 $\bar{x} = 15$
 $s = 7.91$

 [LESS | MORE] spread out
 [LESS | MORE] spread out

EXAMPLE

Find the (A) mean & (B) standard deviation of the sample $\{5, 10, 12, 14, 3, 4\}$



♦ For populations, you may see σ , μ , and N instead of s, \overline{x} , and n. Unless explicitly stated, use s equation.

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PRACTICE

An economist analyzes the quarterly GDP growth over the past 5 quarters, shown below. Calculate the standard deviation of the data.

Quarterly GPD Growth
1.80% | 2.50% | 2.10% | 1.90% | 2.30%

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

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

EXAMPLE

You take 3 samples of students taking a quiz. The histograms below show the # of correct answers. Without calculating s, rank the standard deviations of each sample from least to greatest.

