Standard Deviation and Variance

1. You're given a ssample with $n = 8$ measurements: $3, 1, 5, 6, 4, 4, 3, 5$.

RANGE

$$6 - 1 = \boxed{5}$$

MEAN

$$\frac{3+1+5+6+4+4+3+5}{8} = \boxed{3.875}$$

VARIANCE/STANDARD DEVIATION

$$\frac{(0.875)^2 + (2.875)^2 + (1.125)^2 + (2.125)^2 + (0.125)^2 + (0.125)^2 + (0.875)^2 + (1.125)^2}{8} = \boxed{2.109}$$

$$\sqrt{2.109} = \boxed{1.452}$$

The range is approximately $\boxed{3.5}$ standard deviations.

2. Consider the following set of data, which represents a simple random smaple of heights (in inches) of full-grown corn plants in Elephanteyetown, WI.

RANGE: $\boxed{66.10}$

MEAN: $\boxed{62.41}$

STANDARD DEVIATION/VARIANCE: $\boxed{13.52}$/$\boxed{182.84}$

3. Consider the following set of data, which represents a simple random sample of heights of full-grown corn plants in Horseyetown, WI.

RANGE: $\boxed{80.3}$

MEAN: $\boxed{71.47}$

STANDARD DEVIATION/VARIANCE: $\boxed{15.76}$/$\boxed{248.36}$

4. In Goateyeville, MN, they use a new type of fish fertilizer. A random sampling of the heights of 20 full-grown corn plants in Goateyeville yields the following data.

RANGE: $\boxed{46.1}$

MEAN: $\boxed{65.41}$

STANDARD DEVIATION/VARIANCE: $\boxed{12.34}$/$\boxed{152.17}$

5. Make Histograms.

The histogram for #2 is symmetrical, while the histogram for #4 is skewed right. Their means are the same. However, the standard deviation for #4 is around 4 times that of #2. It seems that the standard deviation is strongly affected by skew.