

Math 150

Section 10.3 Measures of Variation

Range

The range is the difference between the largest and smallest number in a sample.

Deviations from the mean

Deviations from the mean are the differences found by subtracting the mean from each number in a distribution.

Sample variance

The variance of a sample (denoted s^2) of n numbers $x_1, x_2, x_3, \dots, x_n$, with mean \bar{x} , is

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

Standard deviation

The standard deviation of a sample of n numbers $x_1, x_2, x_3, \dots, x_n$, with mean \bar{x} , is

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

Standard deviation for a grouped distribution

The standard deviation for a sample distribution with mean \bar{x} , where x is an interval midpoint with frequency f and $n = \sum f$, is

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