AFM **2.2 Measures of Spread** Chapter 2

**Spread:** The variability in numerical data.

**Variance (s2):** A measure of spread for the one-variable data set that uses squaring to eliminate the effect of the different signs of the individual deviations. It is the sum of the square of the deviations divided by one less than the number of the values.

**Standard Deviation:** A measure of spread for a one-variable data set that uses squaring to eliminate the effect of the different signs of the individual deviations. It is the square root of the variance.

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| **Standard Deviation** |
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Where xi represents the individual data values, n is the number of values, and is the mean.

**Example 1:** Find the standard deviation for the following data set: 9, 17, 10, 13, 12, 11, 15, 10, 14, 11

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| --- | --- | --- |
| ***Data Value:*** | ***Deviation:*** | ***Standard Deviation:*** |
|  |  |  |
| 9 |  |  |
| 17 |  |  |
| 10 |  |  |
| 13 |  |  |
| 12 |  |  |
| 11 |  |  |
| 15 |  |  |
| 10 |  |  |
| 14 |  |  |
| 11 |  |  |

**Finding Outliers**

Q3 + 1.5(IQR) = upper outlier boundary (any number above this is an outlier)

Q1 – 1.5(IQR) = lower outlier boundary (any number below this is an outlier)

**Example 2:** Find the outliers in the following data: {74, 82.87, 71.01, 76, 71, 102.50, 73.01, 112.50, 56, 76, 64.57, 77, 86, 135.50, 51, 74, 71, 102.50, 66, 88}