



# MATH NEWS



Algebra I, Module 2, Topic B

## Algebra I

### Module 2: Descriptive Statistics

#### Math Parent Letter

This document is created to give parents and students a better understanding of the math concepts found in Eureka Math (© 2013 Common Core, Inc.) that is also posted as the Engage New York material which is taught in the classroom. Module 2 of Eureka Math (Engage New York) students develop a set of tools for understanding and interpreting variability in data, and begin to make more informed decisions from the data. Students will also display and interpret graphical representations of data, and when appropriate, choose regression techniques that approximate a linear relationship between quantities. Through the use of linear models, students will determine the goodness of fit.



#### Focus Area Topic B:

##### *Describing Variability and Comparing Distributions*

In Topic B, students reconnect with methods for describing variability first seen in Grade 6. Topic B deepens students' understanding of measures of variability by connecting a measure of the center of a data distribution to an appropriate measure of variability. The mean is used as a measure of center when the distribution is more symmetrical. Students calculate and interpret the mean absolute deviation and the standard deviation to describe variability for data distributions that are approximately symmetric. The median is used as a measure of center for distributions that are more skewed, and students interpret the interquartile range as a measure of variability for data distributions that are not symmetric. Students match histograms to box plots for various distributions based on an understanding of center and variability. Students describe data distributions in terms of shape, a measure of center, and a measure of variability from the center.

#### Words to Know

**Skewed data distributions** – a data distribution is said to be skewed if the distribution is not symmetric with respect to its mean. Left-skewed or skewed to the left is indicated by the data spreading out longer (like a tail) on the left side. Right-skewed or skewed to the right is indicated by the data spreading out longer (like a tail) on the right side.

**Outliers:** an outlier of a finite numerical data set is a value that is greater than  $Q_3$  by a distance of  $1.5 \times IQR$  or a value that is less than  $Q_1$  by a distance of  $1.5 \times IQR$ . Outliers are usually identified by a \* or a ● in a box plot.

**Sample variance:** The sample variance for a numerical sample data set of  $n$  values is the sum of the squared distance the values are from the mean divided by  $(n-1)$ .

**Sample standard deviation:** the sample standard deviation is the principle (positive) square root of the sample variance.

**Interquartile range:** the interquartile range (or IQR) is the distance between the first quartile and the second quartile:  $IQR = Q_3 - Q_1$ . The IQR describes variability by identifying the length of the interval that contains the middle 50% of the data values.

#### Focus Area Topic B:

##### *Describing Variability and Comparing Distributions*

*Lesson 4: Summarizing Deviations from the Mean*

<http://youtu.be/aEHnj66xoUo>

*Lesson 5: Measuring Variability for Symmetrical Distributions*

<http://youtu.be/iifRLc6P7mo>

*Lesson 6: Interpreting the Standard Deviation*

Using TI84: <http://youtu.be/qkF2ZRA8g9w>

Using TINspire: <http://youtu.be/WyZCP7CqGuc>

*Lesson 7: Measuring variability for Skewed Distributions*

*(Interquartile Range)*

<http://youtu.be/yDcNoyDu-sE>

*Lesson 8: Comparing Distributions*

<http://youtu.be/wWgKgEdK4yQ>

