

Richmond Public Schools
Department of Curriculum and Instruction
Curriculum Pacing And Resource Guide – Unit Plan



Course Title/ Course #: Algebra 1

Unit Title/ Marking Period # (MP#1): Statistics & Regressions

Start day:

Meetings (Length of Unit): 6

Desired Results ~ What will students be learning?

Standards of Learning/ Standards

A.9

The student, given a set of data, will interpret variation in real-world contexts and calculate and interpret mean absolute deviation, standard deviation, and z-scores.

A.10

The student will compare and contrast multiple univariate data sets, using box-and-whisker plots.

A.11

The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve realworld problems, using mathematical models. Mathematical models will include linear and quadratic functions.

Essential Understandings/ Big Ideas

A.9

- Descriptive statistics may include measures of center and dispersion.
- Variance, standard deviation, and mean absolute deviation measure the dispersion of the data.
- The sum of the deviations of data points from the mean of a data set is 0.
- Standard deviation is expressed in the original units of measurement of the data.
- Standard deviation addresses the dispersion of data about the mean.

- Standard deviation is calculated by taking the square root of the variance.
- The greater the value of the standard deviation, the further the data tend to be dispersed from the mean.
- For a data distribution with outliers, the mean absolute deviation may be a better measure of dispersion than the standard deviation or variance.
- A z-score (standard score) is a measure of position derived from the mean and standard deviation of data.
- A z-score derived from a particular data value tells how many standard deviations that data value is above or below the mean of the data set. It is positive if the data value lies above the mean and negative if the data value lies below the mean.

A.10

- Statistical techniques can be used to organize, display, and compare sets of data.
- Box-and-whisker plots can be used to analyze data

A.11

- The graphing calculator can be used to determine the equation of a curve of best fit for a set of data.
- The curve of best fit for the relationship among a set of data points can be used to make predictions where appropriate.
- Many problems can be solved by using a mathematical model as an interpretation of a real-world situation. The solution must then refer to the original real-world situation.
- Considerations such as sample size, randomness, and bias should affect experimental design.

Key Essential Skills and Knowledge

A.9

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Analyze descriptive statistics to determine the implications for the real-world situations from which the data derive.
- Given data, including data in a real-world context, calculate and interpret the mean absolute deviation of a data set.
- Given data, including data in a real-world context, calculate variance and standard deviation of a data set and interpret the standard deviation.
- Given data, including data in a real-world context, calculate and interpret z-scores for a data set.
- Explain ways in which standard deviation addresses dispersion by examining the formula for standard deviation.
- Compare and contrast mean absolute deviation and standard deviation in a real-world context.

A.10

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Compare, contrast, and analyze data, including data from realworld situations displayed in box-and-whisker plots.

A.11

The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to

- Write an equation for a curve of best fit, given a set of no more than twenty data points in a table, a graph, or real-world situation.
- Make predictions about unknown outcomes, using the equation of the curve of best fit.
- Design experiments and collect data to address specific, real world questions.
- Evaluate the reasonableness of a mathematical model of a real world situation.

Vocabulary		
A.9 Statistic Mean Absolute Data Data Set Variance Standard Deviation Z-Score Dispersion Absolute Value Summation Greek Letters for statistics Normal Bell Curve	A.10 Box and Whisker Plot Lower Extreme Upper Extreme Median Lower Quartile Upper Quartile Range Interquartile Range Percentage of Data that lies within each section Outlier	A.11 Linear Regression Slope-intercept Form Quadratic Regression Line of Best Fit Curve of Best Fit Scatterplots No Correlation Positive Correlation Negative Correlation
Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?		
Assessment/ Evidence		
Mulligan Checkpoint A.9 Interactive Achievement Henrico Practice Quiz	Mulligan Checkpoint A.10 Interactive Achievement York County Practice Items	Mulligan Checkpoint A.11 Interactive Achievement York County Practice Items

[York County Practice Items](#)

Learning Plan ~ What are the strategies and activities you plan to use?

Learning Experiences/ Best Practice

Create a foldable for vocabulary/topics in the unit

All Things Algebra → Statistics → Activities

- Statistics Unit Bundle
- Mean Absolute Deviation Bingo
- Mean Absolute Deviation Math Lib Activity
- Normal Distribution & Z-Score Task Cards
- Linear Equations – Notes & Homework for Linear Regressions
- Quadratic Equations – Notes & Homework for Quad Regression

Technology Integrations

Khan Academy

Gizmo

TI-84+ Graphing Calculator

Smart Board Lessons and Activities

Resources

A.9

Text

Virginia Glencoe, *Algebra I*, ©2012, Carter, et al,
McGraw-Hill School Education Group, page(s) 756 – 762, 785

Coach book, Virginia edition, page(s) 198 - 223

Mulligan Math in Minutes A.9

Technology

- Gizmo

- None

- Khan Academy
 - [Descriptive Statistics](#)

Virginia Department of Education

[Analyzing and Interpreting Statistics](#)

[Calculating Measures of Dispersion](#)

[Exploring Statistics](#)

[Z-Scores](#)

[A.9 Technical Assistance Document](#)

Other Sites

[Henrico Algebra 1 Online – A.9](#)

A.10

Text

Virginia Glencoe, Algebra I, ©2012, Carter, et al,
McGraw-Hill School Education Group, page(s) P42 – P45

Coach book, Virginia edition, page(s) 224 - 229

Mulligan Math in Minutes A.10

Technology

- Gizmo
 - [Solve Using Trend Lines](#)
- [Khan Academy](#)
 - [Regression](#)

Virginia Department of Education

[Quadratic Curve of Best Fit](#)

[Line of Best Fit](#)

[How Much is that Tune?](#)

[Linear Curve of Best Fit](#)

Other Sites

[Henrico Algebra 1 Online – A.10](#)

A.11

Text

[Virginia Glencoe, Algebra I](#), ©2012, Carter, et al,
McGraw-Hill School Education Group, page(s) 590, 245 - 260

Coach book, Virginia edition, page(s) 230 - 244

Mulligan Math in Minutes A.11

Technology

- Gizmo
 - [Box-and-Whisker Plots](#)
- [Khan Academy](#)
 - [Descriptive Statistics](#)

Virginia Department of Education

[Box-and-Whisker Plots](#)

[Quadratic Curve of Best Fit](#)

[Line of Best Fit](#)

[How Much is that Tune?](#)

[Linear Curve of Best Fit](#)

Other Sites

[Henrico Algebra 1 Online – A.11](#)

Cross Curricular Connection

Statistics can be applied to almost anything!

Examples:

- When companies agree to buy a product they look at the statistics given by the company to see if that product will fit their customer's needs.
- Statistics are also used in determining the quality of a manufactured good.
- All sports use statistics to determine best plays, player success rates, team success rates, etc.
- Used in medicine to determine the intervals where a certain drug would be effective depending on weight and/or age of the person being treated.
- Etc.