

**Richmond Public Schools**  
Curriculum Framework  
*Algebra, Functions, and Data Analysis*

Strand: Algebra Functions	
<b>AFDA.3 The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve practical problems using models of linear, quadratic, and exponential functions.</b>	
Suggested Pacing	
9 Class Periods	
Spiraling Standards	
<p>A.9-The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve practical problems, using mathematical models of linear and quadratic functions.</p> <p>All.9-The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve practical problems, using mathematical models of quadratic and exponential functions.</p>	<p>PS.4 -The student will analyze scatterplots to identify and describe the relationship between two variables, using shape; strength of relationship; clusters; positive, negative, or no association; outliers; and influential points.</p> <p>PS.5-The student will determine and interpret linear correlation, use the method of least squares regression to model the linear relationship between two variables, and use the residual plots to assess linearity.</p> <p>MA.9-The student will investigate and identify the characteristics of the graphs of polar equations.</p>
Essential Questions	Common Misconceptions
<ul style="list-style-type: none"> <li>• What is a curve of best fit?</li> <li>• How can the equation for the curve of best fit be found?</li> <li>• How is a curve of best fit used to make predictions in real-world situations?</li> <li>• How is a scatterplot constructed?</li> <li>• How is the positive or negative relationship between the two variables described?</li> <li>• What determines a strong correlation?</li> </ul>	<p>Students may identify the wrong type of regression</p> <p>Students may not properly construct or identify the curve of best fit</p> <p>Students may not be able to determine the type of regression from a practical situation</p> <p>Students may not input data into the calculator correctly</p> <p>Students may choose the wrong type of regression to calculate</p>

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<ul style="list-style-type: none"> <li>• How can the graphing calculator be best used to plot the scatterplot and determine the line of best fit for all equations?</li> </ul>	
<b>Understanding the Standard</b>	<b>Essential Knowledge and Skills</b>
<ul style="list-style-type: none"> <li>• Data and scatterplots may indicate patterns that can be modeled with a function.</li> <li>• The curve of best fit for the relationship among a set of data points can be used to make predictions where appropriate.</li> <li>• Knowledge of transformational graphing using parent functions can be used to verify a mathematical model from a scatterplot that approximates the data.</li> <li>• Graphing utilities can be used to collect, organize, represent, and generate an equation of a curve of best fit for a set of data.</li> <li>• Data that fit linear (<math>y = mx + b</math>), quadratic (<math>y = ax^2 + bx + c</math>), and exponential (<math>y = ab^x</math>) models arise from practical situations.</li> <li>• A correlation coefficient measures the degree of association between two variables that are related linearly.</li> <li>• Rounding that occurs during intermediate steps of problem solving may reduce the accuracy of the final answer.</li> <li>• Evaluation of the reasonableness of a mathematical model of a practical situation involves asking questions including:           <ul style="list-style-type: none"> <li>“Is there another curve (linear, quadratic, or exponential) that better fits the data?”</li> <li>“Does the curve of best fit make sense?”</li> </ul> </li> </ul> <p>“Could the curve of best fit be used to make reasonable predictions?”</p>	<p><b>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</b></p> <ul style="list-style-type: none"> <li>• Determine an equation for the curve of best fit, given a set of no more than 20 data points in a table, on a graph, or practical situation.</li> <li>• Make predictions, using data, scatterplots, or the equation of the curve of best fit.</li> <li>• Solve practical problems involving an equation of the curve of best fit.</li> <li>• Evaluate the reasonableness of a mathematical model of a practical situation.</li> </ul>

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Vocabulary	
curve of best fit, scatterplot, quadratic, data, exponential, transformations, parent function, function, correlation coefficient, linear regression, pattern, equation, relationship, verify, variable, independent, dependent, reasonableness, prediction	<p><b>Textbook</b></p> <p><a href="#">Eureka Math Algebra 1 Module 5 Topic B Lesson 7</a></p> <ul style="list-style-type: none"> <li>Algebra 1, ©2012, Price, et al, McGraw-Hill School Education Group, page(s) 590-591</li> <li>Algebra 2, ©2012, Price, et al, McGraw-Hill School Education Group</li> </ul> <p><b>Notes</b></p> <p><a href="#">Regressions</a></p> <p><b>Resources</b></p> <ul style="list-style-type: none"> <li>Print</li> </ul> <p>Coach book Algebra 1, Virginia edition, Lesson(s) 34-35 page(s) 230-244</p> <p>Coach book Algebra 2, Virginia edition, Lesson(s) 26-32, 34 page(s) 169-212, 228-236</p> <ul style="list-style-type: none"> <li>Technology-based</li> </ul> <p><a href="#">Spaghetti Bridges (Smart Board Exchange)</a></p> <p><b>Station Activities</b></p> <p><a href="#">Does it Fit?</a></p>
Assessment	
Classroom Teacher Developed Assessments	
Cross-Curricular Connections	Tiered Differentiations
<p><b>Science/Technology/CTE</b>-Regressions are used in predictions and forecasting of populations, costs, growth, decay, etc.</p>	<p><b>Tier 1</b>-Students will have to identify the type of regression to use to solve practical problems.</p> <p><b>Tier 2</b>- Students will be given a word bank to help identify the type of regression to use to solve practical problems.</p> <p><b>Tier 3</b>-Students will be given the type of regression that they must use to solve practical problems.</p>