

**Portales Municipal Schools**  
**CURRICULUM MAP**

<b>Subject:</b>	Mathematics	<b>May 2009</b>	<b>Grade Level:</b>	Algebra 1
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Calendar	Strand/Standard/ Benchmark	Performance Standard/ Essential Question	Suggested Student Activities/Assessments	Resources/Materials
<b>1<sup>st</sup> Nine Weeks</b>	<p>ALGEBRA, FUNCTIONS, AND GRAPH: Students will understand algebraic concepts and applications.</p> <p>A. Represent and analyze mathematical situations and structures using algebraic symbols.</p>	<p><b>Mastery</b> 1.A.6. Represent and analyze relationships using written and verbal expressions, tables, equations, and graphs, and describe the connections among those representations:</p> <ul style="list-style-type: none"> <li>• translate from verbal expression to algebraic formulae given data in a table, construct a function that represents these data (linear only)</li> <li>• given a graph, construct a function that represents the graph (linear only)</li> </ul> <p><b>Mastery</b> 1.A.8. Simplify algebraic expressions using the distributive property.</p>	<p><u>Words and Algebra</u> Students will play Algebra 1 Game: <i>Words and Algebra</i> (Activity 1.4). This game is located on Activity Generator for Algebra 1. In this game, students will match verbal expressions to the algebraic expression. <b>Assessment: Student will independently complete the matching game. Teacher will check each student's results with an answer key.</b> (Comm.)</p> <p><u>Exploring Multi-Step Equations</u> Students will play Algebra 1 Game: <i>Exploring Multi-Step Equations</i> (Activity 3.3). Students will create multi-step equations and solve for the variable. This game is located on Activity Generator for Algebra 1. <b>Assessment: Student will be given 10 multi-step equations to solve. The assignment will be submitted for a grade. The students will pick one equation to verbally justify the steps taken to solve the problem.</b> (Comm., Prob. Sol., R&amp;P)</p> <p><u>Modeling the Distributive Property</u> Students will complete Algebra 1 Activity: <i>Modeling the Distributive Property</i> (Activity 2.5). Students will use algebra tiles to model the distributive property. This game is located on Activity Generator for Algebra 1. <b>Assessment: Students will write a brief explanation of the Distributive Property.</b> (Rep., Comm.)</p>	<p>McDougal Littell Activity Generator (CD) for Algebra 1</p> <p><u>Translating Word Problems (examples given):</u> <a href="http://www.purplemath.com/modules/translate2.htm">http://www.purplemath.com/modules/translate2.htm</a> Lists of examples on how to translate words to algebra.</p> <p>(McDougal Littell Algebra 1 Textbook Section 1.4 pg. 24 – 26)</p> <p>McDougal Littell Activity Generator (CD) for Algebra 1</p> <p>(McDougal Littell Algebra 1 Textbook Section 3.3, pg. 148)</p> <p>(McDougal Littell Algebra 1 Textbook Section 3.4, pg. 155)</p> <p>McDougal Littell Activity Generator (CD) for Algebra 1 Algebra tiles, mat</p> <p>(McDougal Littell Algebra 1 Textbook Section 2.5. pg. 96)</p>

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<b>1<sup>st</sup> Nine Weeks</b>	<p><b>ALGEBRA, FUNCTIONS, AND GRAPH: Students will understand algebraic concepts and applications.</b></p> <p>C. Use mathematical models to represent and understand quantitative relationships.</p>	<p><b>Mastery</b> 1.C.4. Express the relationship between two variables using an equation and a graph:</p> <ul style="list-style-type: none"> <li>• graph a linear equation and linear inequality in two variables</li> <li>• solve linear inequalities and equations in one variable</li> <li>• solve systems of linear equations in two variables and graph the solutions</li> <li>• use the graph of a system of equations in two variables to help determine the solution</li> </ul> <p><b>Mastery</b> 1.C.5. Solve applications involving systems of equations.</p> <p><b>Mastery</b> 1.C.7. Create a linear equation from a table of values containing co-linear data.</p> <p><b>Introduction</b> 1.C.8. Determine the solution to a system of equations in two variables from a given graph.</p>	<p><u>Batting Averages and More</u> Set up a spreadsheet using a computer or graphing calculator, and perform calculations using columns. Calculate percentages and solve a system of equations regarding baseball statistics. <b>Assessment: Students will turn in spreadsheet to be graded according to rubric provided.</b> (Con., Rep., Prob. Sol., R&amp;P, Comm.)</p> <p><u>Exploring Graphs and Linear Equations</u> Students will complete Algebra 1 Activity: <i>Exploring Graphs of Linear Equations</i> (Activity 4.2). Students will be able to recognize whether or not an ordered pair is a solution. This game is located on Activity Generator for Algebra 1. <b>(R&amp;P)</b> <b>Assessment: This concept will be tested on Chapter 4 Test (Test made using the McDougal Littell Test Generator).</b></p>	<p><u>Batting Averages and More</u> <a href="http://www.pbs.org/teachers/mathline/concepts/sportsandmath/activity3.shtm">http://www.pbs.org/teachers/mathline/concepts/sportsandmath/activity3.shtm</a> Worksheets/activity for calculating percentages and solving equations.</p> <p><u>Solving Linear Equations and Inequalities:</u> <a href="http://www.coolmath.com/algebra/algebra-practice-solving.html">http://www.coolmath.com/algebra/algebra-practice-solving.html</a> Animated computer game.</p> <p><u>Systems of equations:</u> <a href="http://www.math.com/students/worksheets/algebra_sp.htm">http://www.math.com/students/worksheets/algebra_sp.htm</a> Worksheets for solving systems of equations.</p> <p>McDougal Littell Activity Generator (CD) for Algebra 1</p> <p>(McDougal Littell Algebra 1 Textbook Section 4.2, pg. 215)</p>

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<b>1<sup>st</sup> Nine Weeks</b>	<p><b>GEOMETRY AND TRIGONOMETRY:</b> Students will understand geometric concepts and applications.</p> <p>A. Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships.</p>	<p><b>Mastery</b> 2.A.1. Interpret and draw two-dimensional objects and find the area and perimeter of basic figures (e.g., rectangles, circles, triangles, other polygons [e.g., rhombi, parallelograms, trapezoids]).</p> <p><b>Mastery</b> 2.A.2. Find the area and perimeter of a geometric figure composed of a combination of two or more rectangles, triangles, and/or semicircles with just edges in common.</p> <p><b>Introduction</b> 2.A.3. Find and use measures of sides and interior and exterior angles of triangles and polygons to classify figures (e.g., scalene, isosceles, and equilateral triangles; rectangles [square and non-square]; other convex polygons).</p> <p><b>Introduction</b> 2.A.4. Interpret and draw three-dimensional objects and find the surface area and volume of basic figures (e.g., spheres, rectangular solids, prisms, polygonal cones), and calculate the surface areas and volumes of these figures as well as figures constructed from unions of rectangular solids and prisms with faces in common, given the formulas for these figures.</p>	<p><u>Moving Day</u> In this activity, students will be working with volume. Students will record volume calculations in a table to calculate volume totals. <b>Assessment: Students will write a summary paragraph explaining how you can estimate the furniture volume when you are moving.</b> <b>(Con., Comm., Rep., Prob. Sol., R&amp;P)</b></p> <p><u>Euler's Formula and Klein Cube</u> Euler's Formula Activity (pages 9 -12 on website). Students will name vertices, edges, and faces of prisms. Klein Cube Activity (page 6-9 on website). Students will construct Mobius Strip to illustrate a 3 dimensional shape with one surface. <b>(Comm., Rep.)</b> <b>Assessment: The completed activity will be submitted for a grade.</b></p> <p><u>Animated Show</u> Show students the McDougal Littell Animated Algebra (classzone.com) : <i>Volume of Cylinders and Rectangular Prisms</i> <a href="http://www.classzone.com/books/algebra_1_2007_na/animations/g7_12_6.html">http://www.classzone.com/books/algebra_1_2007_na/animations/g7_12_6.html</a> <b>Assessment: In pairs, students will evaluate problems involving the formulas for volume of cylinders and rectangular prisms as seen in video. They will justify they formula they used for each problem.</b> <b>(Comm., R&amp;P, Rep., Con.)</b></p>	<p><u>Moving Day Activity:</u> <a href="http://129.33.210.100/text/pdf/8521book.pdf">http://129.33.210.100/text/pdf/8521book.pdf</a> Worksheets for completing activity regarding volume.</p> <p><u>Euler's Formula and Klein Cube</u> <a href="http://www.cimt.plymouth.ac.uk/projects/mepres/book8/y8s6act.pdf">http://www.cimt.plymouth.ac.uk/projects/mepres/book8/y8s6act.pdf</a> Worksheets for completing activity regarding naming of vertices, edges, and faces of prisms.</p> <p>McDougal Littell Animated Algebra (classzone.com) : <i>Volume of Cylinders and Rectangular Prisms</i> <a href="http://www.classzone.com/books/algebra_1_2007_na/animations/g7_12_6.html">http://www.classzone.com/books/algebra_1_2007_na/animations/g7_12_6.html</a></p> <p>(McDougal Littell Algebra 1 Textbook: Skills Review Handbook pg. 924-928)</p>

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<b>1<sup>st</sup> Nine Weeks</b>	<p>ALGEBRA, FUNCTIONS, AND GRAPH: Students will understand algebraic concepts and applications.</p> <p>B. Understand patterns, relations, functions, and graphs.</p>	<p><b>Mastery</b> 1.B.1. Distinguish between the concept of a relation and a function.</p> <p><b>Mastery</b> 1.B.2. Determine whether a relation defined by a graph, a set of ordered pairs, a table of values, an equation, or a rule is a function.</p> <p><b>Mastery</b> 1.B.3. Describe the concept of a graph of a function.</p> <p><b>Mastery</b> 1.B.4. Translate among tabular, symbolic, and graphical representations of functions.</p> <p><b>Mastery</b> 1.B.8. Describe the concept of a graph of an equation.</p>	<p><u>Identifying Functions</u> Students will complete <i>Identifying Functions</i> (Activity 1.7). This activity is located on Activity Generator for Algebra 1. Through this activity, students will tell whether a table of data or a graph represents a function. <b>Assessment: Students will define a relation in a notebook. Then they will include a method for determining whether a relation in tabular form is a function.</b> <b>(R&amp;P, Rep., Comm.)</b></p> <p><u>Exploring Graphs of Linear Equations</u> Students will complete <i>Exploring Graphs of Linear Equations</i> (Activity 4.2). This activity is located on Activity Generator for Algebra 1. Through this activity, students will explore graphs of linear equations. <b>(Prob. Sol.)</b> <b>Assessment: Student will complete quiz (Quiz made using the McDougal Littell Test Generator).</b></p>	<p>McDougal Littell Activity Generator (CD) for Algebra 1 Graph paper, ruler</p> <p>(McDougal Littell Algebra 1 Textbook Section 1.6, pg. 48)</p> <p>McDougal Littell Activity Generator (CD) for Algebra 1</p> <p>(McDougal Littell Algebra 1 Textbook: Section 4.2, pg. 215)</p> <p><u>Function Machine</u> <a href="http://www.interactive-resources.co.uk/mathspack2/fmachine/function.html">http://www.interactive-resources.co.uk/mathspack2/fmachine/function.html</a> Computer animated game.</p> <p><u>Positive Linear Function Machine</u> <a href="http://www.shodor.org/interactivate/activities/PositiveLinearFunction/">http://www.shodor.org/interactivate/activities/PositiveLinearFunction/</a> Computer animated game.</p>

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<b>2<sup>nd</sup> Nine Weeks</b>	<p>GEOMETRY AND TRIGONOMETRY: Students will understand geometric concepts and applications.</p> <p>B. Specify locations and describe spatial relationships using coordinate geometry and other representational systems.</p>	<p><b>Mastery</b> 2.B.1. Demonstrate understanding of the construction of the coordinate plane, know the names of the origin, coordinate axes and four quadrants, draw and label them correctly, find the coordinates of an indicated point, and plot a point with given coordinates.</p> <p><b>Mastery</b> 2.B.2. Determine the midpoint and distance between two points within a coordinate system and relate these ideas to geometric figures in the plane (e.g., find the center of a circle given two endpoints of a diameter of the circle).</p> <p><b>Mastery</b> 2.B.3. Given two linear equations, determine whether the lines are parallel, perpendicular, or coincide.</p>	<p><u>Exploring Distance on the Coordinate Plane</u> Students will complete <i>Exploring Distance in the Coordinate Plane</i> (Activity 11.5). This activity is located on Activity Generator for Algebra 1. Through this activity, students will find the distance between two points. The activity formally introduces the Distance Formula.</p> <p><b>Assessment: Student will apply how to use the Distance Formula to find the distance between two points on a map. After determining the distance between the two points, the student will write a brief paragraph defending how he/she applied the Distance Formula.</b> (Rep., Comm., Con., R&amp;P, Prob. Sol.)</p>	<p>General Coordinate Graphing <a href="http://www.shodor.org/interactivate/activities/GeneralCoordinates/">http://www.shodor.org/interactivate/activities/GeneralCoordinates/</a> Basic graphing (ordered pairs) on-line site.</p> <p>(McDougal Littell Algebra 1 Textbook Section 4.1, pg. 206)</p> <p>McDougal Littell Activity Generator (CD) for Algebra 1 Graph Paper Map</p> <p>(McDougal Littell Algebra 1 Textbook: Section 11.5, pg. 744)</p> <p><u>Finding the Midpoint of a Segment</u> <a href="http://www.algebralab.org/practice/practice.aspx?file=Algebra2_10-3.xml">http://www.algebralab.org/practice/practice.aspx?file=Algebra2_10-3.xml</a> On-line skill practice.</p>

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<b>2<sup>nd</sup> Nine Weeks</b>	<p><b>GEOMETRY AND TRIGONOMETRY:</b> Students will understand geometric concepts and applications.</p> <p>D. Use visualization, spatial reasoning, and geometric modeling to solve problems.</p>	<p><b>Mastery</b> 2.D.1. Solve real-world problems using congruence and similarity relationships of triangles (e.g., find the height of a pole given the length of its shadow).</p> <p><b>Mastery</b> 2.D.2. Solve problems involving complementary, supplementary, and congruent angles.</p> <p><b>Mastery</b> 2.D.3. Solve problems involving the perimeter, circumference, area, volume, and surface area of common geometric figures (e.g., 'Determine the surface area of a can of height h and radius r. How does the surface area change when the height is changed to 3h? How does the surface area change when the radius is changed to 3r?').</p> <p><b>Introduction</b> 2.D.4. Solve problems using the Pythagorean theorem (e.g., 'Given the length of a ladder and the distance of the base of the ladder from a wall, determine the distance up the wall to the top of the ladder').</p> <p><b>Introduction</b> 2.D.5. Understand and use elementary relationships of basic trigonometric functions defined by the angles of a right triangle (e.g., 'What is the radius of a circle with an inscribed regular octagon with the length of each side being exactly 2 feet?').</p> <p><b>Introduction</b> 2.D.6. Use trigonometric functions to solve for the length of the second leg of a right triangle given the angles and the length of the first leg. (e.g., 'A surveyor determines that the angle subtended by a two-foot stick at right angles to his transit is exactly one degree. What is the distance from the transit to the base of the measuring stick?').</p>	<p><u>Pythagorean Theorem</u> Students will be given a Pre-Assessment Pythagorean Worksheet. Teacher and students will complete activities on Pythagorean Pyramids and Pythagorean Baseball. (<b>Con., Comm., Rep.</b>) <b>Assessment: Students will be given a Post-Assessment Pythagorean Quiz. (All resources for this activity are located on website.)</b></p> <p><u>Pythagorean Theorem</u> Students will complete: <i>Investigating the Pythagorean Theorem</i> (Activity 11.4). These activities are located on Activity Generator for Algebra 1 <b>Assessment: Student will define hypotenuse and legs of a right triangle and state the Pythagorean theorem in words and algebraically. The students will write a brief paragraph assessing different situations where the Pythagorean Theorem may be used in real life situations. (Comm., Rep., Con.)</b></p>	<p><u>Pythagorean Theorem</u> <a href="http://ctap295.ctaponline.org/~dgelman/">http://ctap295.ctaponline.org/~dgelman/</a> Pre-and Post-Assessments, Activities to introduce Pythagorean Theorem.</p> <p>McDougal Littell Activity Generator (CD) for Algebra 1 Graph Paper Scissors</p> <p>(McDougal Littell Algebra 1 Textbook: Section 11.4, pg. 736)</p>

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<b>2<sup>nd</sup> Nine Weeks</b>	<p>ALGEBRA, FUNCTIONS, AND GRAPH: Students will understand algebraic concepts and applications.</p> <p>D. Analyze changes in various contexts.</p>	<p><b>Introduction</b> 1.D.1. Analyze the effects of parameter changes on these functions: linear (e.g., changes in slope or coefficients) quadratic (e.g., <math>f[x-a]</math> changes coefficients and constants) exponential (e.g., changes caused by increasing <math>x[x + c]</math> or <math>[ax]</math>) polynomial (e.g., changes caused by positive or negative values of <math>a</math>, or in a constant <math>c</math>)</p> <p><b>Mastery</b> 1.D.2. Solve routine two- and three-step problems relating to change using concepts such as: exponents</p> <ul style="list-style-type: none"> <li>• factoring</li> <li>• ratio</li> <li>• proportion</li> <li>• average</li> <li>• percent</li> </ul> <p><b>Mastery</b> 1.D.3. Calculate the percentage of increase and decrease of a quantity.</p> <p><b>Mastery</b> 1.D.5. Estimate the rate of change of a function or equation by finding the slope between two points on the graph.</p>	<p><u>The Shadow Knows</u> Using the activity provided from the website, students will be able to determine heights of objects that cannot be directly measured by using proportion. <b>Assessment: Students will write answers to the following questions. What applications would this activity have in the business world? What occupations would need this skill to do their job? (All resources for activity available on website).</b> <b>(Comm., Con., Rep., R&amp;P)</b></p> <p><u>Slope and Y-Intercept</u> Students will complete: <i>Exploring Slope and y-Intercept</i> (Activity 4.5). These activities are located on Activity Generator for Algebra 1. Student will find the slopes and y-intercepts of lines. <b>(Rep., Con.)</b> <b>Assessment: Student will submit the completed table for a grade.</b></p>	<p>The Shadow Knows: Teacher Notes <a href="http://fcit.usf.edu/fcat8m/resource/activity/shadowt.htm">http://fcit.usf.edu/fcat8m/resource/activity/shadowt.htm</a> The Shadow Knows: Student Worksheet <a href="http://fcit.usf.edu/fcat8m/resource/activity/shadows.pdf">http://fcit.usf.edu/fcat8m/resource/activity/shadows.pdf</a></p> <p>McDougal Littell Activity Generator (CD) for Algebra 1</p> <p>(McDougal Littell Algebra 1 Textbook: Section 4.4, pg. 235)</p> <p>(McDougal Littell Algebra 1 Textbook: Section 4.5, pg. 244)</p> <p><u>Finding the Slope of a Line Given 2 Points</u> <a href="http://www.coolmath.com/algebra/crunder/slope.htm">http://www.coolmath.com/algebra/crunder/slope.htm</a> <u>Finding the Slope and Line from the Equations</u> <a href="http://www.coolmath.com/algebra/crunder/slope2.htm">http://www.coolmath.com/algebra/crunder/slope2.htm</a> Animated On-line games.</p>

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<b>2<sup>nd</sup> Nine Weeks</b>	<p><b>DATA ANALYSIS AND PROBABILITY:</b> Students will understand how to formulate questions, analyze data, and determine probabilities.</p> <p>A. Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.</p>	<p><b>Mastery</b> 3.A.1. Understand the differences between the various methods of data collection.</p> <p><b>Mastery</b> 3.A.2. Know the characteristics of a well-designed and well-conducted survey:</p>	<p><u>Activities and Games for Data</u> On-line activities for students to create various types of data collection. <b>Bar Graph</b> <a href="http://www.amblesideprimary.com/ambleside/mentalmaths/grapher.html">http://www.amblesideprimary.com/ambleside/mentalmaths/grapher.html</a></p> <p><b>Circle Graph</b> <a href="http://www.scweb4free.com/circle.html">http://www.scweb4free.com/circle.html</a></p> <p><b>Create Any Type Graph</b> <a href="http://nces.ed.gov/nceskids/createagraph/">http://nces.ed.gov/nceskids/createagraph/</a></p> <p><b>Assessment: In groups of three to four, students will collect data from a class survey. Then they will analyze the data and create a histogram.</b> (Comm., Rep., Con., Prob. Sol.)</p> <p><u>Spaghetti Bridges</u> Students working in pairs will simulate testing the strength of bridge beams using spaghetti, pennies, and a cup. After this activity, students will be able to collect, graph, and interpret data. <b>Assessment: In groups, students will answer the following questions: 1. Explain how they knew the graph was linear. 2. Using the equation, find the number of pennies needed to break a bridge of 75 pieces of spaghetti.</b> (Con., Prob. Sol., Comm., Con., Rep.)</p>	<p><u>Data Website</u> <a href="http://www.k111.k12.il.us/King/math.htm#Graphing/%20Data%20Collections">http://www.k111.k12.il.us/King/math.htm#Graphing/%20Data%20Collections</a></p> <p>(McDougal Littell Algebra 1 Textbook: Skills Review Handbook, pg. 933-935)</p> <p><u>Spaghetti Bridges: Teacher Notes</u> <a href="http://fcit.usf.edu/fcat8m/resource/activity/spaggett.pdf">http://fcit.usf.edu/fcat8m/resource/activity/spaggett.pdf</a></p> <p><u>Spaghetti Bridges: Student Worksheet</u> <a href="http://fcit.usf.edu/fcat8m/resource/activity/spaghets.pdf">http://fcit.usf.edu/fcat8m/resource/activity/spaghets.pdf</a></p> <p>Materials: Plastic cups, uncooked spaghetti, pennies</p> <p>(McDougal Littell Algebra 1 Textbook: Section 5.6, pg. 325)</p>

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<b>3<sup>rd</sup> Nine Weeks</b>	<p>GEOMETRY AND TRIGONOMETRY: Students will understand geometric concepts and applications.</p> <p>C. Apply transformations and use symmetry to analyze mathematical situations.</p>	<p><b>Introduction</b> 2.C.1. Describe the effect of rigid motions on figures in the coordinate plane and space that include rotations, translations, and reflections: determine whether a given pair of figures on a coordinate plane represents the effect of a translation, reflection, rotation, and/or dilation sketch the planar figure that is the result of a given transformation of this type</p> <p><b>Introduction</b> 2.C.2. Deduce properties of figures using transformations that include translations, rotations, reflections, and dilations in a coordinate system:</p>	<p><u>The Four Types of Symmetry in the Plane</u> Students will examine pictures of rotation, translation, reflection, and glide reflection. Definitions of each are also reviewed. <b>Assessment: In pairs, students will demonstrate the ability to show each type of symmetry using a mirror and/or graph paper. (Comm., Rep.)</b></p> <p><u>Reflections</u> Students will compare and contrast transformations, such as reflections and rotations, that do not change the figure itself, only its position or orientation and assess what caused the changes. <b>(Rep., R&amp;P, Comm., Con, Prob. Sol.)</b> <b>Assessment: Student will recognize various transformations on a quiz. (All materials available from website.)</b></p>	<p><u>The Four Types of Symmetry in the Plane</u> <a href="http://mathforum.org/sum95/suzanne/symsusan.html">http://mathforum.org/sum95/suzanne/symsusan.html</a></p> <p>Mirror Graph Paper</p> <p>(McDougal Littell Algebra 1 Textbook: Skills Review Handbook, pg. 922)</p> <p><u>Reflection – Teacher Notes</u> <a href="http://fcit.usf.edu/fcat8m/resource/activity/reflectt.pdf">http://fcit.usf.edu/fcat8m/resource/activity/reflectt.pdf</a></p> <p><u>Reflection – Student Worksheet</u> <a href="http://fcit.usf.edu/fcat8m/resource/activity/reflects.pdf">http://fcit.usf.edu/fcat8m/resource/activity/reflects.pdf</a></p> <p><u>Reflection – Stencil</u> <a href="http://fcit.usf.edu/fcat8m/resource/activity/reflsten.pdf">http://fcit.usf.edu/fcat8m/resource/activity/reflsten.pdf</a></p> <p>Graph Paper Protractor Ruler Colored Pencils</p> <p><u>Interactive Transformations</u> <a href="http://www.mathsnet.net/transform/index.html">http://www.mathsnet.net/transform/index.html</a></p> <p>(McDougal Littell Algebra 1 Textbook: Skills Review Handbook, pg. 922 and Extension 4.1, pg. 213)</p>

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<b>3<sup>rd</sup> Nine Weeks</b>	<p><b>DATA ANALYSIS AND PROBABILITY:</b> Students will understand how to formulate questions, analyze data, and determine probabilities.</p> <p>C. Develop and evaluate inferences and predictions that are based on data.</p>	<p><b>Mastery</b> 3.C.1. Compare and draw conclusions between two or more sets of univariate data using basic data analysis techniques and summary statistics.</p> <p><b>Introduction</b> 3.C.2. Draw conclusions concerning the relationships among bivariate data:</p> <p><b>Introduction</b> 3.C.3. Use simulations to explore the variability of sample statistics from a known population and construct sampling distributions.</p>	<p><u>Exploring the Distribution of Data</u> Students will complete: <i>Exploring the Distribution of Data</i> (Activity 13.6). These activities are located on Activity Generator for Algebra 1. The student will explore data and calculate the mean. <b>Assessment: Student will write the steps involved in determining the mean, median, mode, and range when given a set of data. Then the student will explain how to determine the mean, median, mode, and range of a given set of data in a brief written summary. (Comm., Rep., Con.)</b></p> <p><u>Collecting and Displaying Data</u> Students will complete: <i>Collecting and Displaying Data</i> (Activity 13.7). These activities are located on Activity Generator for Algebra 1. The student will create a histogram from a frequency table. <b>Assessment: Students will create questions that can be answered by analyzing the histogram. Students may also be given written questions to answer regarding a histogram. In order to answer the questions, the student will analyze the data displayed in the histogram. (Rep., Prob. Sol., Comm., R&amp;P, Con.)</b></p>	<p>McDougal Littell Activity Generator (CD) – Algebra 1 Rope Graphing Calculator Meter Stick</p> <p>(McDougal Littell Algebra 1 Textbook: Section 13.6, pg. 875)</p> <p>McDougal Littell Activity Generator (CD) – Algebra 1 Sticky Notes Graph Paper</p> <p>(McDougal Littell Algebra 1 Textbook: Section 13.7, pg. 881)</p>

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<b>3<sup>rd</sup> Nine Weeks</b>	<p>ALGEBRA, FUNCTIONS, AND GRAPH: Students will understand algebraic concepts and applications.</p> <p>A. Represent and analyze mathematical situations and structures using algebraic symbols.</p>	<p><b>Mastery</b> 1.A.11. Simplify square roots and cube roots with monomial radicands that are perfect squares or perfect cubes (e.g., <math>9a^2x^4</math>).</p> <p><b>Mastery</b> 1.A.12. Calculate powers and roots of real numbers, both rational and irrational.</p> <p><b>Mastery</b> 1.A.14. Factor polynomials, difference of squares and perfect square trinomials, and the sum and difference of cubes.</p> <p><b>Mastery</b> 1.A.15. Simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms.</p> <p><b>Mastery</b> 1.A.16. Manipulate simple expressions with + and - exponents.</p> <p><b>Mastery</b> 1.A.17. Use the four basic operations (+, -, x, /)</p>	<p><u>Making Matching Grid Games</u> This game is similar to Match. The pre-made grid is used for multiplying or factoring polynomials. The students will work together with partner to arrange the grid correctly. <a href="http://regentsprep.org/Regents/math/teachers/Tgrid.htm">http://regentsprep.org/Regents/math/teachers/Tgrid.htm</a> <b>Assessment: Student will complete puzzle with partner. The teacher will use the key grid to check each set of partners' grid. Then each group will create a new puzzle set with a minimum of eight tiles. (Comm., Rep.,)</b></p> <p><u>Factoring with Algebra Tiles</u> Students will complete: <i>Factoring with Algebra Tiles</i> and <i>More Factoring with Algebra Tiles</i> (Activity 9.5, 9.6). These activities are located on Activity Generator for Algebra 1 <b>Assessment: The student will be given 10 problems. With Algebra tiles, the student will factor trinomials into the product of two binomials. Each student will demonstrate one problem factoring activity to the class and justify the steps that are taken. (Comm., R&amp;P, Rep. )</b></p>	<p><u>Grid Games</u> <a href="http://regentsprep.org/Regents/math/teachers/Tgrid.htm">http://regentsprep.org/Regents/math/teachers/Tgrid.htm</a> Print off grids from website.</p> <p>(McDougal Littell Algebra 1 Textbook: Section 9.2, pg. 562)</p> <p>McDougal Littell Activity Generator (CD) for Algebra 1 Algebra Tiles</p> <p>(McDougal Littell Algebra 1 Textbook: Section 9.5, pg. 582)</p> <p>(McDougal Littell Algebra 1 Textbook: Section 9.6, pg. 592)</p>

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<b>3<sup>rd</sup> Nine Weeks</b>	<p>ALGEBRA, FUNCTIONS, AND GRAPH: Students will understand algebraic concepts and applications.</p> <p>C. Use mathematical models to represent and understand quantitative relationships.</p>	<p><b>Introduction</b> 1.C.1. Model real-world phenomena using linear and quadratic equations and linear inequalities (e.g., apply algebraic techniques to solve rate problems, work problems, and percent mixture problems; solve problems that involve discounts, markups, commissions, and profit and compute simple and compound interest; apply quadratic equations to model throwing a baseball in the air).</p> <p><b>Mastery</b> 1.C.2. Use a variety of computational methods (e.g., mental arithmetic, paper and pencil, technological tools).</p> <p><b>Mastery</b> 1.C.3. Express the relationship between two variables using a table with a finite set of values and graph the relationship.</p>	<p><u>Mixture Problems</u> Students will analyze the four steps of solving the mixture problem below. How many quarts of 100% antifreeze and a 50% antifreeze and 50% water mix should be combined in to make 16 quarts of a 70% antifreeze and 30% water mix? Answer: 6.4 quarts of 100% antifreeze and 9.6 quarts of 50% antifreeze and 50% water mix <b>Assessment: Similar problems will be included on quiz (Quiz made using the McDougal Littell Test Generator). Students will detail each step in the solution.</b> <b>(Con., Comm., Prob. Sol., R&amp;P)</b></p>	<p>(McDougal Littell Algebra 1 Textbook: Section 7.2, pg. 439)</p>

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Calendar	Strand/Standard/ Benchmark	Performance Standard/ Essential Question	Suggested Student Activities/Assessments	Resources/Materials
<b>4<sup>th</sup> Nine Weeks</b>	<p><b>DATA ANALYSIS AND PROBABILITY:</b> Students will understand how to formulate questions, analyze data, and determine probabilities.</p> <p>D. Understand and apply basic concepts of probability.</p>	<p><b>Mastery</b> 3.D.1. Explain the concept of a random variable.</p> <p><b>Mastery</b> 3.D.2. Understand the concept of probability as relative frequency.</p> <p><b>Mastery</b> 3.D.3. Use simulations to compute the expected value and probabilities of random variables in simple cases.</p> <p><b>Mastery</b> 3.D.4. Distinguish between independent and dependent events.</p> <p><b>Mastery</b> 3.D.5. Understand how to compute the probability of an event using the basic rules of probability:</p>	<p><u>Probability Games</u> Website has multiple listing of probability games on-line. Students can play games independently to learn about probability. <b>Assessment: In groups, students will create a probability game. The students will then play the game and as a class activity complete a PLUS/DELTA tool (Baldrige) with guidance from the teacher.</b> <b>(Comm., Prob. Sol., R&amp;P, Rep.)</b></p> <p><u>Probability Investigations</u> Students will complete Probability Activities: <i>Find a Probability, Simulating Events and Finding Probabilities, Investigating Samples A</i> (Activity 13.1, 13.4, 13.5). These activities are located on Activity Generator for Algebra 1 <b>Assessment: Given a probability manipulative (spinner, dice, marbles, cards, etc), students will, with a partner, write 5 probability questions as well as answer the questions they wrote. Then students will exchange questions with other students and complete the questions exchanged. The students will evaluate each others work using a rubric supplied by the teacher.</b> <b>(Comm., Prob. Sol., R&amp;P, Rep.)</b></p>	<p>Link to Access Probability Games – must click on <i>probability</i> to access games <a href="http://www.shodor.org/interactivate/activities/">http://www.shodor.org/interactivate/activities/</a> Spinners Coins Marbles Cards</p> <p>McDougal Littell Activity Generator for Algebra 1 Paper bags Spinners Colored Tiles Scrap Paper Number Cubes Graphing Calculator</p> <p>(McDougal Littell Algebra 1 Textbook: Section 13.1, pg. 843)</p> <p>(McDougal Littell Algebra 1 Textbook Section 13.4, pg. 861)</p> <p>(McDougal Littell Algebra 1 Textbook Section 13.5, pg. 871)</p> <p><u>Probability Games</u> <a href="http://www.betweenwaters.com/probab/probab.html">http://www.betweenwaters.com/probab/probab.html</a></p>

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<b>4<sup>th</sup> Nine Weeks</b>	<p>DATA ANALYSIS AND PROBABILITY: Students will understand how to formulate questions, analyze data, and determine probabilities.</p> <p>B. Select and use appropriate statistical methods to analyze data.</p>	<p><b>Mastery</b> 3.B.3. For univariate data, be able to display the distribution and describe its shape using appropriate summary statistics, and understand the distinction between a statistic and a parameter:</p> <ul style="list-style-type: none"> <li>• construct and interpret frequency tables histograms, stem and leaf plots, and box and whisker plots</li> <li>• calculate and apply measures of central tendency (mean, median, and mode) and measures of variability (range, quartiles, standard deviation)</li> <li>• compare distributions of univariate data using back-to-back stem and leaf plots and parallel box and whisker plots</li> </ul> <p><b>Mastery</b> 3.B.4. For bivariate data, be able to display a scatter plot and describe its shape:</p>	<p><u>Examining a Box-and-Whisker Plot</u> Students will complete: <i>Examining a Box-and-Whisker Plot</i> (Activity 13.8). These activities are located on Activity Generator for Algebra 1. The student will construct stem and leaf plot and use this information to construct a box-and-whisker plot. <b>Assessment: Student write a paragraph explaining how to determine the mean, median, mode, quartiles, central tendency and standard deviation when given a set of data.</b> <b>(Rep., Comm., R&amp;P, Prob. Sol.)</b></p> <p><u>Exploring Scatter Plots and Functions</u> Students will complete <i>Exploring Scatter Plots and Functions</i> (Activity 1.7). This activity is located on Activity Generator for Algebra 1. Through this activity, students (working with a partner) will explore collecting data and making a scatter plot. <b>Assessment: Student will make a scatter plot and determine whether or not the graph is a function. The student will determine the domain and range.</b> <b>(Rep., Comm., Prob. Sol.)</b></p>	<p>McDougal Littell Activity Generator (CD) – Algebra 1</p> <p>(McDougal Littell Algebra 1 Textbook Section 13.8, pg. 887)</p> <p>McDougal Littell Activity Generator (CD) for Algebra 1 Tape Measure</p> <p>(McDougal Littell Algebra 1 Textbook Section 1.7, pg.43)</p>

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Calendar	Strand/Standard/ Benchmark	Performance Standard/ Essential Question	Suggested Student Activities/Assessments	Resources/Materials
<b>4<sup>th</sup> Nine Weeks</b>	<p>ALGEBRA, FUNCTIONS, AND GRAPH: Students will understand algebraic concepts and applications.</p> <p>B. Understand patterns, relations, functions, and graphs.</p>	<p><b>Mastery</b> 1.B.9. Understand symmetry of graphs.</p> <p><b>Introduction</b> 1.B.10. Analyze and describe middle and end (asymptotic) behavior of linear, quadratic, and exponential functions, and sketch the graphs of functions.</p> <p><b>Introduction</b> 1.B.11. Work with composition of functions (e.g., find f of g when <math>f(x) = 2x - 3</math> and <math>g(x) = 3x - 2</math>), and find the domain, range, intercepts, zeros, and local maxima or minima of the final function.</p> <p><b>Introduction</b> 1.B.12. Use the quadratic formula and factoring techniques to determine whether the graph of a quadratic function will intersect the x-axis in zero, one, or two points.</p> <p><b>Introduction</b> 1.B.13. Apply quadratic equations to physical phenomena (e.g., the motion of an object under the force of gravity).</p>	<p><u>Design and Math: Fashion Design – Patterns and Weaving</u> Students will investigate the use of the quadratic formula in weaving patterns, and look for mathematical patterns to solve problems in weaving designs. <b>Assessment: Students will solve a real-life situation using the quadratic formula. The student will write a brief paragraph assessing how the real-life situation was solved using the quadratic formula. (Con., R&amp;P, Prob. Sol., Comm., Rep.)</b></p>	<p><u>Design and Math: Fashion Design – Patterns and Weaving</u> <a href="http://fcit.usf.edu/fcat8m/resource/activity/shadows.pdf">http://fcit.usf.edu/fcat8m/resource/activity/shadows.pdf</a> Worksheets available for completing activity.</p> <p><u>Quadratic Formula Calculator</u> <a href="http://www.coolmath.com/calculators/quadratic.htm">http://www.coolmath.com/calculators/quadratic.htm</a> <u>Solving Quadratics: The Quadratic Formula</u> <a href="http://www.coolmath.com/algebra/crunder/quad4.htm">http://www.coolmath.com/algebra/crunder/quad4.htm</a></p> <p>(McDougal Littell Algebra 1 Textbook Section 10.6, pg. 671)</p> <p><u>Solving Quadratics: By Factoring</u> <a href="http://www.coolmath.com/algebra/crunder/quad1.htm">http://www.coolmath.com/algebra/crunder/quad1.htm</a></p> <p>(McDougal Littell Algebra 1 Textbook Section 9.5, pg. 583)</p> <p><u>Solving Quadratics: By the Square Root</u> <a href="http://www.coolmath.com/algebra/crunder/quad3.htm">http://www.coolmath.com/algebra/crunder/quad3.htm</a> Animated On-line Games.</p> <p>(McDougal Littell Algebra 1 Textbook Section 10.4, pg. 652)</p>

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Process Standards are cited at the end of each assessment as follows:

Problem Solving (Prob. Sol.)  
Reasoning and Proof (R&P)  
Communication (Comm.)  
Connections (Con.)  
Representation (Rep.)

Resources:

- Order of Operations Puzzle: <http://www.vak12ed.edu/Div/Winchester/jhhs/math/lessons/algebra/pemdas.html>
- Game *Ten Wins* for working with expressions: <http://www.vak12ed.edu/Div/Winchester/jhhs/math/lessons/algebra/tenwins.html>
- Templates for creating dominoes for Algebra activities: <http://www.sln.org.uk/math/sr.htm>
- Activity for area, slope, angles: <http://www.vak12ed.edu/Div/Winchester/jhhs/math/puzzles/wreck.html>
- Teacher/Student resource: Math for Morons Like Us <http://library.thinkquest.org/20991/home.html> (This is a good web site for new teachers or teachers who might need a little refreshing on a particular problem. This site covers the areas from Pre-Algebra up to Calculus. Students may also find this site helpful.)
- Algebra Games/Activities/Lessons: <http://www.coolmath.com/algebra/>
- Algebra 1 Games: <http://www.quia.com/shared/search>
- Really Cool Math Websites! Cool Algebra Sites! Math Puzzles and Cool Math Brain Teasers Sites! Cool Math Web Quest Sites! Cool Math Humor! Cool Elementary, Middle School, and High School Math Teacher Resources!  
<http://cte.jhu.edu/techacademy/web/2000/heal/siteslist.htm>
- Online Graphing Calculators: [http://www.webgraphing.com/?goog=free\\_online\\_graphing&gclid=CPPn8Omq3IwCFQIpFQod1g\\_scw](http://www.webgraphing.com/?goog=free_online_graphing&gclid=CPPn8Omq3IwCFQIpFQod1g_scw)
- Lots of math resources: <http://www.homeschoolmath.net/>
- Math humor/jokes: <http://www.math.utah.edu/~cherk/mathjokes.html>
- Lots of math resources (SAT/ACT test prep, AP, math tutoring, MATH CARTOONS): [www.charlottesmathtutor.com](http://www.charlottesmathtutor.com)