

## Unit 1: Solving and Graphing Linear Inequalities

Time Frame in Weeks/Days: 24 days

Standards: 2.1, 2.2, 2.5, 2.8

Assessment Anchors: M11.D.2-Represent and/or analyze mathematical situations using numbers, symbols, words, tables and/or graphs

Sub-Anchors	Eligible Content	Skills	Strategies/Activities	Resources	Assessments
M11.D.2.1 Write, solve, and /or graph linear equalities and inequalities using various methods (addition, subtraction, multiplications, and division).	<p>M11.D.2.1.1 Solve compound inequalities and/or graph their solution sets on a number line (may include absolute value inequalities)</p> <p>M11.D.2.1.2 Identify or graph functions, linear equations or linear inequalities on a coordinate plane.</p> <p>M11.D.2.1.3 Write, solve, and/or apply a linear equation (including problem situations).</p> <p>M11.D.2.1.1 Solve simple multi-step inequalities Solve and graph compound inequalities involving 'and' 'or'</p> <p>M11.D.2 Solve absolute-value equations</p>		<p>Graph an inequality in one variable</p> <p>Use addition and subtraction to solve an inequality</p> <p>Multiply and divide by a positive or negative number to solve.</p> <p>Solve simple multi-step inequalities</p> <p>Use the distributive property</p> <p>Write and solve compound inequalities using 'and' &amp; 'or'</p> <p>Solve multi-step compound inequalities</p> <p>Solve absolute value equations:  <math> x  = 5</math>, <math> x + 3  = 5</math>,  <math> 4x - 6  - 7 = -5</math></p>	McDougal Littell Algebra 1 Concepts and Skills, Vol. 2 Chapter 6 review pages	<p>Oral Assessment</p> <p>Written Assessment</p> <p>Open-ended questions</p> <p>Journal entries</p> <p>Projects</p> <p>Self assessment</p> <p>Ticket out</p> <p>Lesson Essential Questions:</p> <p>-How can algebraic properties be applied to solving inequalities?</p> <p>-How can a word problem be expressed as an inequality?</p> <p>-How are the graphs of linear equations and linear inequalities similar/different? -</p> <p>How do the words "and" and "or" effect the solution of a compound inequality?</p> <p>-How do you distinguish a function from a relation?</p>

	M11.D.2.1.1 Solve absolute-value inequalities in one variable		Write an absolute value inequality Rewrite the absolute value inequality as two inequalities Solve absolute value inequalities		<p>-How do we graph equations using slopes and intercepts?</p> <p>-How do we derive the equation of a line?</p> <p>-How are algebraic properties applied when solving linear equations? What is the relationship between the x-intercept and the solution to the equation?</p>
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**Core Terminology:** Graph of an inequality, equivalent inequalities, addition property of inequality, subtraction property of inequality, multiplication property of inequality, division property of inequality, compound inequality, relation, function, domain, range, mapping diagram, vertical line test, independent variable, dependent variable, functional notation, x-intercept, y-intercept, slope, standard form, point-slope form, slope-intercept form, direct variation, constant of variation, parallel lines, perpendicular lines, inverse of a function, direct variation, constant of variation, regression, correlation, linear model, scatter plot, trend line, boundary line, feasible region, linear inequality, compound inequality, absolute value inequality

Unit 2: Systems of Linear Equations and Inequalities

Time Frame in Weeks/Days: 24 days

Standards: 2.2, 2.5, 2.8

Assessment Anchors: M11.D.2-Represent and/or analyze mathematical situations using numbers, symbols, words, tables, and/or graphs

Sub-Anchors	Eligible Content	Skills	Strategies/Activities	Resources	Assessments
M11.D.2.1 Write, solve, and/or graph linear equations and inequalities using various methods.	M11.D.2.1.2 Review graphing lines using slope-intercept form  M11.D.2.1.4 Graph linear systems  M11.D.2.1.4 Solve linear systems by substitution  M11.D.2.1.4 Solve linear systems by linear combinations  M11.D.2.1.4 Linear systems and problem solving  M11.D.2.1.4 Special types of linear systems	Solve a linear system using graph and check  Solve a linear system using substitution  Substitution by solving for y first  Substitution by solving for x first  Solve a linear system by linear combinations Add the equations Multiply, then add the equations  Identify how many solutions a linear system has, one solution, no solution, infinitely many solutions	Review graphing lines using slope-intercept form  Find the point of intersection  Use linear systems to solve real-life problems  Choose a solution method	McDougal Littell Algebra 2 Concepts and Skills Chapter 2, 3, 11	Oral assessment  Written assessments in the form of but not limited to tests and quizzes  Open-ended questions  Journal entries  Projects  Self assessment  Ticket Out  Lesson Essential Questions:  How the techniques of substitution, linear combinations, and graphing are used to solve systems of equations?  How would you use the substitution method when solving a system of three variables?  How would you use elimination to solve a system of three variables?  How do you solve a system of linear inequalities?

<p><b>MATRIX</b> (not addressed in anchors or eligible content)</p>	<p>M11.D.2.1 Graph linear inequalities in two variables</p> <p>M11.D.2.1 Systems of linear inequalities</p> <p>Organize data in a matrix</p>	<p>Solve matrices</p>	<p>Graph a system of inequalities</p> <p>Add/subtract a matrix</p> <p>Multiplication and division of a matrix</p> <p>Scalar multiplication</p> <p>Determinant and inverse of 2x2 and 3x3 matrix</p>		<p>-How do we use a system of linear inequalities to solve a linear programming problem?</p> <p>How do you perform matrix addition and subtraction?</p> <p>How do you perform matrix multiplication and scalar multiplication?</p> <p>How do you find the determinant of a 2X2 or a 3X3 matrix?</p> <p>How do you find the inverse of a 2X2 or a 3X3 matrix?</p> <p>How do you write a system as a matrix equation?</p> <p>How do you solve a system of equations using matrices and determinants?</p>
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**Core Terminology:** consistent, independent, dependent, inconsistent, equivalent systems, linear systems, substitution, linear combination, elimination, linear programming, feasible region, vertices, constraints, objective function, optimization, matrix, matrix element, matrix addition, zero matrix, matrix equation, equal, matrices, matrix multiplication, scalar, scalar product, square matrix, multiplicative identity, matrix, multiplicative inverse of a matrix, determinant, coefficient matrix, variable matrix, constant matrix, augmented matrix, Cramer's Rule

## Unit 3: Exponents and Exponential Functions

Time Frame in Weeks/Days: 40 days

Standards: 2.1, 2.2, 2.8

Assessment Anchors: M11.A.2 - M11.D.1 - M11.D.3- M11.D.4 - M11.E.4

Sub-Anchors	Eligible Content	Skills	Strategies/Activities	Resources	Assessments
<p>M11.A.2.2 Use exponents, roots and/or absolute value to solve problems</p> <p>M11.D.1.1 Analyze and/or use patterns or relations</p> <p>M11.D.3.1 Describe and/or determine change.</p> <p>M11.D.4.1 Interpret and/or use linear, quadratic and/or exponential functions and their equations, graphs, or tables</p> <p>M11.E.4.1 Make predictions using data displays and probability</p>	<p>M.11.A.2.2.2 Multiplication properties of exponents</p> <p>M.11.A.2.2.1 Evaluate powers that have zero and negative exponents</p> <p>M11.D.4.1.1 Graphs of exponential functions</p> <p>M.11.A.2.2.2 Division properties of exponents</p> <p>M.11.A.1.1.3</p>		<p>Use the product of powers property</p> <p>Use the power of a power property</p> <p>Use the power of a product property</p> <p>Evaluate and simplify exponential expressions combining multiplication and zero and negative exponent properties</p> <p>Graph an exponential function when <math>b &gt; 1</math></p> <p>Graph an exponential function when <math>0 &lt; b &lt; 1</math></p> <p>Find the domain and range of exponential functions</p> <p>Use the quotient of powers property and the power of a quotient property</p> <p>Simplify expressions using multiple properties including expressions with negative exponents</p> <p>Write numbers in decimal</p>	<p>McDougal Littell Algebra 1 Concepts and Skills, Vol. 2 Chapter 8</p>	<p>-Oral assessment</p> <p>-Written assessments in the form of but not limited to tests and quizzes</p> <p>-Open-ended questions</p> <p>-Journal entries</p> <p>-Projects</p> <p>-Self assessment</p> <p>-Ticket Out</p> <p> Lesson Essential Questions:</p> <p>-How can we give meaning to exponents that are not integers?</p> <p>-What are exponential functions and what are the characteristics of their graphs?</p> <p>-What are the similarities and differences between exponential growth and decay functions?</p> <p>-What are real world applications of exponential functions?</p> <p><b>Lesson Essential Questions:</b></p> <p>-What is the inverse of a function and how do you find it?</p> <p>-How do we find the inverse of an exponential function?</p> <p>-What is a logarithm and how does it relate to exponential</p>

	<p>Use scientific notation</p> <p>M11.D.4.1.1 Write and graph exponential growth and decay functions</p> <p>M11.E.4.1.1 Estimate or calculate to make predictions based on a circle line, bar graph, of given situation</p> <p>M11.D.1.1.1 Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically</p>		<p>form from scientific notation</p> <p>Write numbers in scientific notation</p> <p>Perform operations with scientific notation</p> <p>Write an exponential growth model <math>y = C(1 + r)^t</math></p> <p>Find the balance in an account using <math>A = P(1 + r)^t</math></p> <p>Use an exponential growth model for population</p> <p>Graphs: exponential growth and decay model</p> <p>Write an exponential decay model and graph</p> <p>Arithmetic sequence</p> <p>Geometric sequence</p> <p>n th term</p>		<p>functions?</p> <p>-How can we use logarithms to solve exponential equations?</p> <p>-What are the characteristics of the graph of a logarithmic function?</p> <p>-What are the rules for working with logarithms?</p> <p>-What is an arithmetic sequence?</p> <p>-What is a geometric sequence?</p> <p>-How do you find the nth term of a sequence?</p> <p>What are the similarities and differences between sequences and series?</p> <p>What methods can be used to find the sums of arithmetic and geometric series?</p>
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**Core Terminology:** Product of Powers, Power of a Power, Power of a Product, zero exponents, negative exponents, exponent, exponential function, exponential growth, exponential decay, growth factor, asymptote, inverse, logarithm, radical, index, power, root, radicand, sequence, common difference, common ratio, arithmetic, geometric, nth term, recursion formula, explicit formula, series, convergent, divergent, infinite

Unit 4: Quadratic Equations and Functions

Time Frame in Weeks/Days: 40 days

Standards: 2.1, 2.2, 2.5, 2.8

Assessment Anchors: M.11.A.1 - M.11.A.2 - M.11.A.3 - M.11.D.1 - M.11.D.2 - M.11.D.4

Sub-Anchors	Eligible Content	Skills	Strategies/Activities	Resources	Assessments
M.11.A.1.1 Represent and/or use numbers in equivalent forms	M.11.A.1.1.1 Find the square root of an integer to the nearest tenth using a calculator or estimation	Find the square roots of numbers Evaluate a radical expression	Determine methods can be used to solve a quadratic equation Relate the solutions of quadratic equations to the graph of a quadratic function		Please do Now Ticket Out Quizzes
M.11.A.2.2 Use exponents, roots, and/or absolute value to solve problems	M11.A.1.1.3 Simplify square roots	Simplify radical expressions Rationalize the denominator	Graph a quadratic function using transformations of the parent function $y=x^2$		Exams Computer based assessment system
M.11.A.3.2 Use estimation strategies in problem solving situations	M11.A.3.2.1 Use estimation to solve problems	<b>Properties:</b> Product Property of Radicals Quotient Property of Radicals	Simplify Quadratic Formula solutions when the discriminant is negative Explain how complex solutions tell us about the graph of a quadratic function		
M.11.D.1.1 Analyze and/or use patterns or relations	M11.A.2.2.1 Simplify/evaluate expressions involving positive/negative exponents, roots and/or absolute value (may contain all types of real numbers-exponents should not exceed power of 10)	Simplify with the product property Simplify with the quotient property	Use quadratic functions to solve real life problems that involve maximum and minimum values		
M.11.D.2.1 Write, solve, and/or graph linear equations and inequalities using various methods		Solve quadratic equations by finding square roots Solve $x^2=d$ by finding square roots	Explain how can quadratics be used to represent the motion of falling objects		
M.11.D.4.1 Interpret and/or use linear, quadratic and/or exponential functions and their equations, graphs, or tables	M11.D.4.1.1 Match the graph of a given function to its table or equations	Solve quadratic equations using square roots Rewrite before finding square roots Graph a quadratic function with a positive a-			

	<p>M11.D.2.1. Write, solve, and/or graph linear equations and inequalities using various methods.</p>	<p>value and with a negative a-value</p> <p>Solve quadratic equations using the quadratic formula</p> <p>Write in standard form, then use the quadratic formula</p> <p>Sketch the graph of a quadratic function</p> <p>Use a graph to find or check a solution of a quadratic equation</p> <p>Estimate a solution by graphing</p> <p>Use graphs to solve quadratic equations</p> <p>Use the discriminant to determine the number of solutions of a quadratic equation</p> <p>Model vertical motion</p> <p>Find the number of solutions by finding the value of the discriminant</p> <p>Find the number of x-intercepts</p>			
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**CORE TERMINOLOGY:** positive/negative square root, completing the square factoring, radicand, radical expression, transformation, translation Dilation, zero, roots, product property, functional notation, quadratic equation, quadratic function, standard form, parabola, discriminant, vertex vertex form, axis of symmetry, quadratic formula, root of the quadratic, complex number, imaginary number, complex plan, "i", conjugate, maximum/minimum, y-intercept



	<p>M.11.D.2.1.5 Solve quadratic equations using factoring</p> <p>M11.A.1.2.1 Find the Greatest Common Factor (GCF) and/or the Least Common Denominator (LCD) for sets of monomials</p> <p>M11.A.1.2.1 Find the Greatest Common Factor (GCF) and/or the Least Common Denominator (LCD) for sets of monomials</p>	<p>Solve and graph quadratic equations in factored form</p> <p>Solve quadratic equations</p> <p>Solve a repeated factor equation</p> <p>Solve a factored cubic equation</p> <p>Factor Special Products</p> <p>Patterns</p> <p>Difference of two squares patterns</p> <p>Perfect square trinomial pattern</p>	<p>Graph a factored equation</p> <p>Factor trinomials of the form <math>ax^2 + bx + c</math></p> <p>Factor when b and c are positive and when b and c are negative</p> <p>Factor when b is negative and c is positive</p> <p>Factor when b is positive and c is negative</p> <p><b>Factor trinomials of the form <math>ax^2 + bx + c</math></b></p> <p>Factor when a and c are prime numbers and when a and c are not prime numbers</p> <p>Factor with a common factor for a, b and c</p> <p>Perfect square trinomial</p> <p>Factor the difference of two squares</p> <p>Factor perfect square trinomials</p> <p>Factor out a constant first</p> <p>Solve a quadratic equation using special patterns</p>		<p>-How can we determine the domain and range of functions represented in any form (numerically, algebraically, graphically)?</p> <p>-How can we combine two functions?</p>
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**Core Terminology:** Monomial, degree, degree of monomial, factoring, quadratic formula, polynomial, polynomial function, degree of a polynomial, sum/difference pattern, binomial, square of a binomial, trinomial, perfect square trinomial, factor theorem, relative minimum, relative maximum  
 Multiplicity, function notation, composite, domain, range, vertical line test, factored form, zero-product property

Unit 6: Data Analysis and Probability (Statistics and Probability Concepts)

Time Frame in Weeks/Days: 5-10 days

Standards: 2.2, 2.6, 2.7

Assessment Anchors: M11.E.1- M11.E.2 -M11.E.3 - M11.E.4

Sub-Anchors	Eligible Content	Skills	Strategies/ Activities	Resources	Assessments
M11.E.1.1 Appropriate display and/or use data in problem-solving settings	M11.E.1.1.1 Create and/or use appropriate graphical representations of data, including box-and-whisker plots, stem-and-leaf plots or scatter plots  M11.E.1.1.2 Analyze data and/or answer questions based on display data (box-and-whisker plots, stem-and-leaf plots or scatter plots).		Use measures of central tendency and dispersion to describe sets of data. Use a variety of functions to model bivariate data from tables or scatter plots. Solve problems dealing with chance and random events using concepts of probability or making predictions from data.		Oral assessment  Written assessments in the form of but not limited to tests and quizzes  Open-ended questions  Journal entries  Projects  Self assessment  Ticket Out   Lesson Essential Questions:  How are mean, median, mode, range, and quartiles used in box-and-whisker plots? How do you calculate mean, median and mode when data is displayed in a stem-and-leaf plot? How do you determine whether to display data in a stem-and-leaf plot, a box-and-whisker
M11.E.2.1 Use measures of central tendency to describe a set of data.	M11.E.2.1.1 Calculate or select the appropriate measure of tendency (mean, median, and mode) of a set of data given or represented on a table, line plot, or stem-and-leaf plot.  M11.E.2.1.2 Calculate and/or				

<p>M11.E.3.1 Apply probability and/or odds to practical situations</p> <p>M11.E.3.2 Apply counting techniques in problem-solving settings.</p> <p>M11.E.4.1 Make predictions using displays and probability</p>	<p>interpret the range, quartiles and interquartile range of data.</p> <p>M11.E.2.1.3 Describe how outliers affect measures of central tendency</p> <p>M11.E.3.1.1 Find probabilities for independent, dependent or compound events and represent as a fraction, decimal, or percent.</p> <p>M11.E.3.1.2 Find, convert, and/or compare the probability and/or odds of a simple event.</p> <p>M11.E.3.2.1 Determine the number of permutations and/or combinations or apply the fundamental counting principle. (Formula provided on the reference sheet.)</p> <p>M11.E.4.1.1 Estimate or calculate to make predictions based on a circle, line, bar graph or given situation</p> <p>M11.E.4.1.2 Use probability to</p>				<p>plot or a scatter plot?</p> <p>How do you decide when to use a permutation vs. a combination?</p> <p>How can we determine probabilities for independent, dependent or compound events and represent them in multiple forms?</p> <p>How do you use probability to predict outcomes?</p> <p>What is the difference between odds and probability?</p>
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	predict outcomes				
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**Core Terminology:** mean, median, mode, box-and-whisker plot, stem-and-leaf plot, scatter plot, range, standard deviation, interquartile range, quartile, outliers, permutation, combination, independent, dependent, compound events, odds, simple event

Enrichment Options: