

LITCHFIELD PUBLIC SCHOOLS
Core Curriculum Scope and Sequence
Algebra II

Essential Questions				
<ul style="list-style-type: none"> • How do patterns and functions help us describe data and physical phenomena and solve a variety of problems? • How are quantitative relationships represented by numbers? • How do geometric relationships and measurements help us to solve problems and make sense of our world? • How can collecting, organizing and displaying data help us analyze information and make reasonable predictions and informed decisions? 				
	CT Frameworks/ Standards	Content and Skill Objectives Students will be able to:	Assessments	Resources
UNIT 1 EQUATIONS AND INEQUALITIES 4 WEEKS	Solving Equations and Inequalities CT(Core)1.3a(2) Determine equivalent representations of an algebraic equation or inequality to simplify and solve problems. CT(Core) 2.1a(1) Compare, locate, label and order real numbers on number lines, scales, coordinate grids and measurement tools. CT(Core) 2.1a(2) Select and use an appropriate form of number to solve practical problems involving order, magnitude, measures, labels, locations and scales. CT(Core) 2.2a(1) Select and use appropriate methods for computing to	<ul style="list-style-type: none"> • Apply the order of operations to evaluate expressions and formulas. • Classify real numbers. • Solve multistep equations and formulas for a specified variable. • Create algebraic expressions and equations to problem solve. • Solve multistep inequalities. • Solve ‘and/or’ compound inequalities. • Express solutions to inequalities in set builder and interval notation. • Evaluate absolute value expressions. • Solve absolute value equations. • Solve absolute value inequalities. 	Homework: Assigned daily. Quick Quizzes: Covers at least one objective given regularly as an unscheduled quiz based on the content taught and reviewed in class. Scheduled Quiz: given on a scheduled basis. Common Unit Assessment: Assesses computation as well as critical thinking and problem solving skills related to objectives. Peer Evaluation	Textbook: Glencoe, Algebra II Resource Workbooks TI-83/84 Graphing Calculator SMARTBoard Glencoe On-line www.glencoe.com www.kutasoftware.com SAT problems CAPT problems -City Construction -Coffee Special

	<p>solve problems in a variety of contexts. CT(Core) 2.2a(2) Solve problems involving scientific notation and absolute value.</p>		Teacher Observation	
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<p>UNIT 2 LINEAR RELATIONS AND FUNCTIONS</p> <p>4 WEEKS</p>	<p>Linear Relations and Functions</p> <p>CT(Core)1.1a(3) Identify the characteristics of functions and relations, including domain and range.</p> <p>CT(Core)1.2a(1) Represent functions and relations on the coordinate plane.</p> <p>CT(Core)1.2a(2) Identify an appropriate symbolic representation for a function or relation displayed graphically or verbally.</p> <p>CT(Core)1.2a(3) Recognize and explain the meaning of the slope and x and y intercepts as they relate to a context, graph, table or equation.</p> <p>CT(Core)2.1b(1) Use technological tools such as graphing utilities to organize and analyze large amounts of numerical information.</p> <p>CT(Core) 4.1a(1) Collect real data and create meaningful graphical representations of the data.</p> <p>CT(Core)4.1a(2)</p>	<ul style="list-style-type: none"> Analyze and graph relations and functions. Evaluate functions at given values. Identify, graph and compare linear equations and functions. Express linear equations in multiple ways including standard form and slope intercept form. Apply the slope formula to determine the slope of a line. Identify the slope and y-intercept of linear equations to graph lines. Identify parallel and perpendicular lines by comparing slopes of equations. Evaluate the equations of lines parallel or perpendicular to given lines. Create and graph scatter plots on the TI-83. Determine and interpret linear regression formulas to make data predictions. Identify and graph multiple types of functions, including step, constant, identity, absolute value and piecewise functions. Analyze absolute value functions transformed from parent functions. Graph linear inequalities and absolute value inequalities. 	<p>Homework: Assigned daily.</p> <p>Quick Quizzes: Covers at least one objective given regularly as an unscheduled quiz based on the content taught and reviewed in class.</p> <p>Scheduled Quiz: given on a scheduled basis.</p> <p>Common Unit Assessment: Assesses computation as well as critical thinking and problem solving skills related to objectives.</p> <p>Peer Evaluation</p> <p>Teacher Observation</p>	<p>Textbook: Glencoe, Algebra II</p> <p>Resource Workbooks</p> <p>TI-83/84 Graphing Calculator</p> <p>SMARTBoard</p> <p>Glencoe On-line www.glencoe.com www.kutasoftware.com</p> <p>SAT problems</p> <p>CAPT problems -Walk to the Stadium -Hang Gliding -Crater Lake Rim Drive -Fertilizer for Corn -Hot Air Ballooning</p>

	<p>Develop, use and explain applications and limitations of linear and nonlinear models and regression in a variety of contexts. CT(Core)4.2a(1) Estimate an unknown value between data points on a graph and make predictions by extending the graph.</p>			
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<p>UNIT 3 SYSTEMS OF LINEAR EQUATIONS AND INEQUALITIES</p> <p>4 WEEKS</p>	<p>Systems of Linear Equations and Inequalities.</p> <p>CT(Core)1.3a(1) Model and solve problems with linear, quadratic and absolute value equations and linear inequalities.</p> <p>CT(Core)1.3a(2) Determine equivalent representations of an algebraic equation or inequality to simplify and solve problems.</p> <p>CT(Core)1.3a(3) Solve systems of two linear equations using algebraic or graphical methods.</p>	<ul style="list-style-type: none"> • Solve systems of linear equations using multiple methods—graphing and algebraic methods of substitution and elimination. • Solve systems of equations in three variables algebraically. • Solve systems of inequalities by graphing. • Analyze systems to determine the number of solutions. • Solve real life word problems using systems of linear equations. 	<p>Homework: Assigned daily.</p> <p>Quick Quizzes: Covers at least one objective given regularly as an unscheduled quiz based on the content taught and reviewed in class.</p> <p>Scheduled Quiz: given on a scheduled basis.</p> <p>Common Unit Assessment: Assesses computation as well as critical thinking and problem solving skills related to objectives.</p> <p>Peer Evaluation</p> <p>Teacher Observation</p>	<p>Textbook: Glencoe, Algebra II</p> <p>Resource Workbooks</p> <p>TI-83/84 Graphing Calculator</p> <p>SMARTBoard</p> <p>Glencoe On-line www.glencoe.com www.kutasoftware.com</p> <p>SAT problems</p> <p>CAPT problems -Industrial Electricity Use -Martha's Sales -Health Club -Two Savings Plans -Salary</p>

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UNIT 4 POLYNOMIALS 4 WEEKS	Polynomials CT(Core)2.1a(2) Select and use an appropriate form of number to solve practical problems involving order, magnitude, measures, labels, locations and scales. CT(Core)2.2a(2) Solve problems involving scientific notation and absolute value.	<ul style="list-style-type: none"> Identify monomial products and quotients and simplify by using multiplication, division and properties of exponents. Add, subtract, multiply and divide polynomials. Problem solve using scientific notation. Apply synthetic and long division to simplify polynomial quotients. Factor polynomials and simplify polynomial quotients through factoring. 	Homework: Assigned daily. Quick Quizzes: Covers at least one objective given regularly as an unscheduled quiz based on the content taught and reviewed in class. Scheduled Quiz: given on a scheduled basis. Common Unit Assessment: Assesses computation as well as critical thinking and problem solving skills related to objectives. Peer Evaluation Teacher Observation	Textbook: Glencoe, Algebra II Resource Workbooks SMARTBoard Glencoe On-line www.glencoe.com www.kutasoftware.com SAT problems CAPT problems -Bloodhound

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UNIT 5 ROOTS AND RADICALS 4 WEEKS	Roots and Radicals CT(Core)2.1a(1) Compare, locate, label and order real numbers on number lines, scales, coordinate grids and measurement tools. CT(Core)2.1a(2) Select and use an appropriate form of number to solve practical problems involving order, magnitude, measures, labels, locations and scales. CT(Core)2.2a(2) Perform operations with complex numbers, matrices, determinants and logarithms. CT(Core)2.2a(3) Develop and use a variety of strategies to estimate values of formulas, functions and roots; to recognize the limits of estimation and to judge the implications of the results.	<ul style="list-style-type: none"> • Simplify radical expressions. • Add, subtract, multiply and divide radical expressions. • Convert expressions with rational exponents to radical form and vice versa. • Solve equations containing radicals. • Simplify and calculate with complex numbers. 	Homework: Assigned daily. Quick Quizzes: Covers at least one objective given regularly as an unscheduled quiz based on the content taught and reviewed in class. Scheduled Quiz: given on a scheduled basis. Common Unit Assessment: Assesses computation as well as critical thinking and problem solving skills related to objectives. Peer Evaluation Teacher Observation	Textbook: Glencoe, Algebra II Resource Workbooks SMARTBoard Glencoe On-line www.glencoe.com www.kutasoftware.com SAT problems CAPT problems -Paper Range

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UNIT 6 QUADRATIC FUNCTIONS AND EQUATIONS 5 WEEKS	Quadratic Functions and Equations CT(Core)1.1a(4) Describe and compare properties and classes of linear, quadratic and exponential functions. CT(Core)1.3a(1) Model and solve problems with linear, quadratic and absolute value equations and linear inequalities.	<ul style="list-style-type: none"> Analyze quadratic functions by determining the axis of symmetry, the y-intercept, the vertex coordinates and the maximum or minimum value. Identify the zeros of a quadratic function to solve graphically. Solve quadratic equations algebraically by multiple methods including factoring, the square root property, completing the square and the quadratic formula. Convert quadratic functions from quadratic to vertex form. Analyze quadratic functions in vertex form to identify the vertex and the axis of symmetry. Solve quadratic inequalities by multiple methods including graphically and algebraically. 	Homework: Assigned daily. Quick Quizzes: Covers at least one objective given regularly as an unscheduled quiz based on the content taught and reviewed in class. Scheduled Quiz: given on a scheduled basis. Common Unit Assessment: Assesses computation as well as critical thinking and problem solving skills related to objectives. Peer Evaluation Teacher Observation	Textbook: Glencoe, Algebra II Resource Workbooks SMARTBoard Glencoe On-line www.glencoe.com www.kutasoftware.com SAT problems CAPT Problems -Eric's T-Shirt Shop

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UNIT 7 ADVANCED FUNCTIONS AND RELATIONS 3 WEEKS	Midpoint and Distance Formulas and Conic Sections CT(Extended)1.1a(3) Explore conic sections and their applications graphically and symbolically. CT(Extended)1.2a(1) Relate the graphical representation of a function to its function family and find equations, intercepts, maximum or minimum values, asymptotes and line of symmetry for that function. CT(Extended)1.2a(2) Recognize the effect of changes in parameters on the graphs of functions or relations.	<ul style="list-style-type: none"> • Calculate the midpoint of a line on the coordinate plane. • Calculate the distance between two points on the coordinate plane. • Write the equation of a horizontally oriented parabola in vertex form and interpret the equation graphically. • Write the equation of circles, ellipses and hyperbolas in standard form and analyze the given equations to identify particular specific features. 	Homework: Assigned daily. Quick Quizzes: Covers at least one objective given regularly as an unscheduled quiz based on the content taught and reviewed in class. Scheduled Quiz: given on a scheduled basis. Common Unit Assessment: Assesses computation as well as critical thinking and problem solving skills related to objectives. Peer Evaluation Teacher Observation	Textbook: Glencoe, Algebra II Resource Workbooks SMARTBoard Glencoe On-line www.glencoe.com www.kutasoftware.com SAT problems

	CT Frameworks/ Standards	Content and Skill Objectives Students will be able to:	Assessments	Resources
UNIT 8 POLYNOMIAL FUNCTIONS 4 WEEKS	Polynomial Functions CT(Core)1.2a(4) Evaluate and interpret the graphs of linear, exponential and polynomial functions. CT(Core)2.2a(3) Develop and use a variety of strategies to estimate values of formulas, functions and roots; to recognize the limitations of estimation; and to judge the implication of the results. CT(Extended) 1.1a(1) Describe and compare properties and classes of functions, including exponential, polynomial, rational, logarithmic and trigonometric. sketches, coordinates, vectors, function notation and matrices to examine the effects of transformations and their composites and to solve related geometric	<ul style="list-style-type: none"> Analyze the graphs of even or odd degree polynomial functions for end behavior and number of zeros. Evaluate polynomial function values using synthetic substitution. Determine whether a binomial is a factor of a polynomial by using synthetic substitution and the Factor and Remainder Theorem. Determine the number and type of roots of a polynomial equation by using the Fundamental Theorem of Algebra, Descartes Rule of Signs and the Rational Zero Theorem. Graph polynomial functions on the graphing calculator to locate real zeros. Identify complex zeros of a polynomial function by using the Complex Conjugate Theorem. Evaluate the sum, difference, product and quotient of functions. Evaluate the composition of relations and simplify the composition of functions. Determine the inverse of a function or a relation. 	Homework: Assigned daily. Quick Quizzes: Covers at least one objective given regularly as an unscheduled quiz based on the content taught and reviewed in class. Scheduled Quiz: given on a scheduled basis. Common Unit Assessment: Assesses computation as well as critical thinking and problem solving skills related to objectives. Peer Evaluation Teacher Observation	Textbook: Glencoe, Algebra II Resource Workbooks SMARTBoard Glencoe On-line www.glencoe.com www.kutasoftware.com SAT problems

	problems.	<ul style="list-style-type: none">• Determine inverses both graphically and algebraically.		
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	CT Frameworks/ Standards	Content and Skill Objectives Students will be able to:	Assessments	Resources
UNIT 9 RATIONAL EXPRESSIONS, EQUATIONS AND FUNCTIONS 3 WEEKS	Rational Expressions, Equations and Functions CT(Extended) 1.1a(1) Describe and compare properties and classes of functions, including exponential, polynomial, rational, logarithmic and trigonometric. CT(Extended)1.1a (5) Solve problems involving direct and inverse variation. CT(Extended) 1.2a(1) Relate the graphical representation of a function to its function family and find equations, intercepts, maximum or minimum values, asymptotes and line of symmetry for that function. CT(Extended)1.2a(2) Recognize the effects of changes in parameters on the graphs of functions or relations.	<ul style="list-style-type: none"> Identify and solve direct and inverse variation problems. Simplify, multiply and divide rational expressions by factoring and cross reduction of fractions. Simplify complex fractions. Add and subtract rational expressions by finding a common denominator. Solve rational equations by multiplying each side of the equation by the LCD. Identify possible solutions to a rational equation. Graph rational functions by determining vertical and horizontal asymptotes and point discontinuities. 	Homework: Assigned daily. Quick Quizzes: Covers at least one objective given regularly as an unscheduled quiz based on the content taught and reviewed in class. Scheduled Quiz: given on a scheduled basis. Common Unit Assessment: Assesses computation as well as critical thinking and problem solving skills related to objectives. Peer Evaluation Teacher Observation	Textbook: Glencoe, Algebra II Resource Workbooks SMARTBoard Glencoe On-line www.glencoe.com www.kutasoftware.com SAT problems