



OFFICE OF CURRICULUM, INSTRUCTION & PROFESSIONAL DEVELOPMENT

HIGH SCHOOL COURSE OUTLINE

(Revised April 2012)

Department	Mathematics	Course Title	Intermediate Algebra 1-2		Course Code	3045			
Grade Level	9 – 12	Short Title	Algebra Inter 1-2		Grad Requirement			No	
Course Length	2 semesters	Credits per Semester	5	Approved for Honors	No	Required	No	Elective	Yes
Prerequisites	C or better in Geometry 1-2								
Co-requisites	None								
Articulated with LBCC	No		Articulated with CSULB			No			
Meets UC “a-g” Requirement	Yes (c)		Meets NCAA Requirement			Yes			

COURSE DESCRIPTION:

This course reviews the applications and language of the first year of Algebra with increased emphasis on number systems, functions, and graphs. Language and symbolism are expanded to encompass new concepts. The content includes such topics as relations and functions, quadratic equations, conic sections, matrices, logarithms, and sequences and series.

COURSE PURPOSE: GOALS

- CONTENT**
- Students will learn all of the California State Standards for Algebra II. This discipline complements and expands the mathematical content and concepts of Algebra I and Geometry.
- SKILLS**
- Students who master Algebra II will gain experience with algebraic solutions of problems in various content areas, including the solution of systems of quadratic equations, logarithmic and exponential functions, the binomial theorem, and the complex number system.
- LITERACY**
- Students communicate precisely about quantities, logical relationships, and unknown values through the use of signs, symbols, models, graphs, and mathematical vocabulary.
 - Regular opportunities are provided for students to communicate through oral and written explanations of math concepts.
- APPLICATIONS**
- Students learn to apply mathematics to everyday life, develop an interest in pursuing advanced studies in mathematics, and in a wide array of mathematically related career choices.

COURSE PURPOSE: EXPECTED OUTCOMES

Students are expected to perform at a proficient level on a variety of tasks and assessments addressing both the content and skill standards for Intermediate Algebra 1-2. Levels of proficiency are defined near the end of this course outline under Performance Criteria.

Algebra II

- 1.0* Students solve equations and inequalities involving absolute value. (CST)
- 2.0* Students solve systems of linear equations and inequalities (in two or three variables) by substitution, with graphs, or with matrices. (CST) (PSAT)
- 3.0* Students are adept at operations on polynomials, including long division. (CST)
- 4.0* Students factor polynomials representing the difference of squares, perfect square trinomials, and the sum and difference of two cubes. (CST) (PSAT)
- 5.0* Students demonstrate knowledge of how real and complex numbers are related both arithmetically and graphically. In particular, they can plot complex numbers as points in the plane. (CST)
- 6.0* Students add, subtract, multiply, and divide complex numbers. (CST)
- 7.0* Students add, subtract, multiply, divide, reduce, and evaluate rational expressions with monomial and polynomial denominators and simplify complicated rational expressions, including those with negative exponents in the denominator. (CST)
- 8.0* Students solve and graph quadratic equations by factoring, completing the square, or using the quadratic formula. Students apply these techniques in solving word problems. They also solve quadratic equations in the complex number system. (CST)
- 9.0* Students demonstrate and explain the effect that changing a coefficient has on the graph of quadratic functions; that is, students can determine how the graph of a parabola changes as a , b , and c vary in the equation $y = a(x - b)^2 + c$. (CST)
- 10.0* Students graph quadratic functions and determine the maxima, minima, and zeros of the function. (CST)
- 11.0* Students prove simple laws of logarithms. (CST)
- 12.0* Students know the laws of fractional exponents, understand exponential functions, and use these functions in problems involving exponential growth and decay. (CST)
- 13.0 Students use the definition of logarithms to translate between logarithms in any base. (CST)
- 14.0 Students understand and use the properties of logarithms to simplify logarithmic numeric expressions and to identify their approximate values. (CST)
- 15.0* Students determine whether a specific algebraic statement involving rational expressions, radical expressions, or logarithmic or exponential functions is sometimes true, always true, or never true. (CST)
- 16.0 Students demonstrate and explain how the geometry of the graph of a conic section (e.g., asymptotes, foci, eccentricity) depends on the coefficients of the quadratic equation representing it. (CST)
- 17.0 Given a quadratic equation of the form $ax^2 + by^2 + cx + dy + e = 0$, students can use the method for completing the square to put the equation into standard form and can recognize whether the graph of the equation is a circle, ellipse, parabola, or hyperbola. Students can then graph the equation. (CST)
- 18.0* Students use fundamental counting principles to compute combinations and permutations. (CST) (PSAT)
- 19.0* Students use combinations and permutations to compute probabilities. (CST) (PSAT)
- 20.0* Students know the binomial theorem and use it to expand binomial expressions that are raised to positive integer powers. (CST)
- 21.0 Students apply the method of mathematical induction to prove general statements about the positive integers. (CST)
- 22.0 Students find the general term and the sums of arithmetic series and of both finite and infinite geometric series. (CST) (PSAT)
- 23.0* Students derive the summation formulas for the arithmetic series and for both finite and infinite geometric series. (NA**)
- 24.0 Students solve problems involving functional concepts, such as composition, defining the inverse function and performing arithmetic operations on functions. (CST)
- 25.0 Students use properties from number systems to justify steps in combining and simplifying functions. (CST)

Probability and Statistics

- 1.0 Students know the definition of the notion of *independent events* and can use the rules for addition, multiplication, and complementation to solve for probabilities of particular events in finite sample spaces. (CST)
- 2.0 Students know the definition of *conditional probability* and use it to solve for probabilities in finite sample spaces. (CST)
- 7.0 Students compute the variance and the standard deviation of a distribution of data. (CST)

* Key standards (*Mathematics Framework for California Public Schools*) comprise a minimum of 70% of the California Standards Test

CST Standard assessed on the California Standards Test

PSAT Standard assessed on the Preliminary Scholastic Aptitude Test

COURSE PURPOSE: EXPECTED INTEGRATED OUTCOMES

Students are also expected to proficiently apply common skills that are relevant across curriculum areas and career pathways. The following are those skills most applicable to Intermediate Algebra 1-2.

CTE Foundation Standards: from the California Career Technical Education Model Curriculum Standards, adopted by the California State Board of Education in May, 2005.

Foundation Standard 2: CommunicationsWritten and Oral English Language Conventions (Grades 9 and 10)

- 1.4 Produce legible work that shows accurate spelling and correct use of the conventions of punctuation and capitalization.
- 1.1 Formulate judgments about the ideas under discussion and support those judgments with convincing evidence.
- 1.7 Use props, visual aids, graphs, and electronic media to enhance the appeal and accuracy of presentations.
- 1.12 Evaluate the clarity, quality, effectiveness, and general coherence of a speaker's important points, arguments, evidence, organization of ideas, delivery, diction, and syntax.

Foundation Standard 3: Career Planning and Management

- 3.5 Understand the past, present, and future trends that affect careers, such as technological developments and societal trends, and the resulting need for lifelong learning.
- 3.6 *Know important strategies for self-promotion in the hiring process, such as job applications, resume writing, interviewing skills, and preparation of a portfolio.*

Foundation Standard 4: Technology

- 4.2 Understand the use of technological resources to gain access to, manipulate, and produce information, products, and services.

Foundation Standard 5: Problem Solving and Critical Thinking

- 5.1 Apply appropriate problem-solving strategies and critical thinking skills to work-related issues and tasks.
- 5.3 *Use critical thinking skills to make informed decisions and solve problems.*

Foundation Standard 7: Responsibility and Flexibility

- 7.1 Understand the qualities and behaviors that constitute a positive and professional work demeanor.
- 7.2 *Understand the importance of accountability and responsibility in fulfilling personal, community, and workplace roles.*
- 7.3 Understand the need to adapt to varied roles and responsibilities.
- 7.4 Understand that individual actions can affect the larger community.

Foundation Standard 8: Ethics and Legal Responsibilities

- 8.2 Understand the concept and application of ethical and legal behavior consistent with workplace standards.
- 8.3 *Understand the role of personal integrity and ethical behavior in the workplace.*

Foundation Standard 9: Leadership and Teamwork

- 9.1 Understand the characteristics and benefits of teamwork, leadership, and citizenship in the school, community, and workplace setting.
- 9.3 *Understand how to organize and structure work individually and in teams for effective performance and the attainment of goals.*
- 9.4 Know multiple approaches to conflict resolution and their appropriateness for a variety of situations in the workplace.
- 9.5 Understand how to interact with others in ways that demonstrate respect for individual and cultural differences and for the attitudes and feelings of others.

The italicized standards are the CTE "Power" Standards addressed across the content areas.

OUTLINE OF CONTENT AND SUGGESTED TIME ALLOTMENT:

The Task Analysis and Key Vocabulary presented here are drawn from the Mathematics Framework for California Public Schools, which defines the intent and scope of the Mathematics Content Standards. For additional information on the context and the benchmark standards to assess, refer to the Blueprints for the Algebra II Content Standards Test (CST). Content sequencing, activities, and time allocations are only suggestions and may be adjusted to suit school site curriculum plans, available materials, and student needs.

- AI** refers to the Algebra I standards of the CA Mathematics Content Standards
All refers to the Algebra II standards of the CA Mathematics Content Standards
G refers to the Geometry standards of the CA Mathematics Content Standards
PS refers to the Probability and Statistics standards of the CA Mathematics Content Standards
FS refers to the Foundation Standards of the CA CTE Pathway Standards

Tools of Algebra		6 Days (3 Blocks)	
<i>Sample Essential Question:</i> When engineers design a part, they specify the allowable variation, or tolerance, in the size of the part. What equation or inequality is necessary to determine the correct specifications?			
Content Standards		Performance Standard Measures <i>(Reflects rigor and integration of CTE Foundation Standards and may vary by SLC)</i>	Instructional Support
Students Know... (Content)	Students are Able to... (Skill)	Students Demonstrate Knowledge and Skill	
... the basic concepts and properties of real numbers, how to solve and graph one-variable equations and inequalities, and how to solve equations and inequalities that involve absolute value.	Identify and use the properties of real numbers. (All-11.2) Simplify and evaluate algebraic expressions. (Reviews Gr.7:AF 1.0) Solve linear equations and inequalities, stating any restrictions on the variables, and graphing the solution. (Reviews AI-5.0) Solve absolute value equations and inequalities and graph their solution. (All-1.0) Use critical thinking skills to make informed decisions and solve problems. (FS-5.3)	<u>Suggested Activities:</u> <ul style="list-style-type: none"> Prentice Hall Intermediate Algebra Textbook, A-Frame Bookshelf, p. 51 Collaborative Study Group for Chapter 1 - Sections 1 to 3 <i>(LBUSD Math Intranet/Instructional Tools/Intermediate Algebra Supplemental Resources)</i> 	<u>BASIC TEXTBOOK CORRELATION:</u> 1-1, 1-2, 1-3, 1-4, 1-5 <u>KEY VOCABULARY:</u> Absolute value Multiplicative Absolute value inverse of a real Opposite number Reciprocal Additive inverse Solution of an Algebraic equation expression Term Coefficient Tolerance Compound Variable inequality Variable Evaluate expression Extraneous solution
			<u>SUPPLEMENTAL MATERIALS CORRELATION:</u> LBUSD Math Intranet/ Instructional Tools/ Intermediate Algebra Supplemental Resources: <ul style="list-style-type: none"> Collaborative Study Group for Chapter 1 in Algebra 1-2 Prentice Hall Algebra 2 Textbook: <ul style="list-style-type: none"> A-Frame Bookshelf, p. 51

Functions, Equations, and Graphs		9 Days (4.5 Blocks)																									
<p><i>Sample Essential Question:</i> <i>How does the study of linear functions help in the design and building of bridges?</i></p>																											
Content Standards		Performance Standard Measures <i>(Reflects rigor and integration of CTE Foundation Standards and may vary by SLC)</i>	Instructional Support																								
Students Know... (Content)	Students are Able to... (Skill)	Students Demonstrate Knowledge and Skill																									
<p>... how to work with two-variable equations and inequalities, how to represent function relationships by writing and graphing linear equations and inequalities.</p>	<p>Find the domain and range of a relation, graph it and determine whether or not it is a function. (Reviews AI-16.0)</p>	<p><u>Suggested Activity:</u></p> <ul style="list-style-type: none"> Barbie Bungee Jump <i>(LBUSD Math Intranet/Instructional Tools/Intermediate Algebra Supplemental Resources)</i> 	<p>BASIC TEXTBOOK CORRELATION: 2-1, 2-2, 2-5, 2-6, 2-7</p> <p>KEY VOCABULARY:</p> <table border="0"> <tr> <td>Absolute value function</td> <td>Parent function</td> </tr> <tr> <td>Dependent variable</td> <td>Point-slope form</td> </tr> <tr> <td>Domain</td> <td>Range</td> </tr> <tr> <td>Function</td> <td>Relation</td> </tr> <tr> <td>Function notation</td> <td>Slope</td> </tr> <tr> <td>Independent variable</td> <td>Slope-intercept form</td> </tr> <tr> <td>Linear equation</td> <td>Standard form</td> </tr> <tr> <td>Linear function</td> <td>Translation</td> </tr> <tr> <td>Linear inequality</td> <td>Vertex</td> </tr> <tr> <td>Mapping diagram</td> <td>Vertical-line test</td> </tr> <tr> <td></td> <td>X-intercept</td> </tr> <tr> <td></td> <td>y-intercept</td> </tr> </table> <p>SUPPLEMENTAL MATERIALS CORRELATION: LBUSD Math Intranet/ Instructional Tools/ Intermediate Algebra Supplemental Resources:</p> <ul style="list-style-type: none"> Barbie Bungee Jump 	Absolute value function	Parent function	Dependent variable	Point-slope form	Domain	Range	Function	Relation	Function notation	Slope	Independent variable	Slope-intercept form	Linear equation	Standard form	Linear function	Translation	Linear inequality	Vertex	Mapping diagram	Vertical-line test		X-intercept		y-intercept
	Absolute value function			Parent function																							
	Dependent variable			Point-slope form																							
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Linear function	Translation																										
Linear inequality	Vertex																										
Mapping diagram	Vertical-line test																										
	X-intercept																										
	y-intercept																										
<p>Find the slope, x- and y- intercept, and write the equation of a line. (Reviews AI-7.0)</p>																											
<p>Recognize the equation of an absolute value function, graph the function, and translate the graph on the coordinate plane. (Reviews AI-6.0 and G22.0)</p>																											
<p>Graph linear and absolute value inequalities and write an inequality by examining the graph. (Reviews AI-6.0)</p>																											
<p>Use critical thinking skills to make informed decisions and solve problems. (FS-5.3)</p>																											
<p>Understand the need to adapt to varied roles and responsibilities. (FS-7.3)</p>																											
<p>Understand how to organize and structure work individually and in teams for effective performance and the attainment of goals. (FS-9.3)</p>																											

Linear Systems**9 Days (4.5 Blocks)**

Sample Essential Question:

How can the knowledge of systems of equations be used in solving real-world problems, such as, deciding on the planting of trees to maximize carbon dioxide absorption?

Content Standards		Performance Standard Measures <i>(Reflects rigor and integration of CTE Foundation Standards and may vary by SLC)</i>	Instructional Support
Students Know... (Content)	Students are Able to... (Skill)	Students Demonstrate Knowledge and Skill	
... linear systems of equations and inequalities in two-variables, and linear systems of equations in three-variables.	Solve systems of equations by graphing and algebraically. (AII-2.0)	<u>Key Assignment:</u> <ul style="list-style-type: none"> Linear Programming (Described in Key Assignments following the Outline of Content) <i>(LBUSD Math Intranet/Instructional Tools/Intermediate Algebra Supplemental Resources)</i> <u>Suggested Activities:</u> <ul style="list-style-type: none"> Prentice Hall Intermediate Algebra Textbook, Writing Extended Responses Example, p. 156 Comparing Graphs <i>(LBUSD Math Intranet/Instructional Tools/Intermediate Algebra Supplemental Resources)</i> 	<u>BASIC TEXTBOOK CORRELATION:</u> 3-1, 3-2, 3-3, 3-4, 3-6 <u>KEY VOCABULARY:</u> Constraints Linear Coordinate programming space Linear system Dependent Objective system function Equivalent Ordered triples systems System of Feasible region equations Inconsistent system Independent system
	Solve systems of inequalities by graphing. (AII-2.0)		
	Model real-world situations with linear programming. (AII-2.0)		
	Solve systems of equations with three variables. (AII-2.0)		
	Produce legible work that shows accurate spelling and correct use of the conventions of punctuation and capitalization. (FS-1.4)		
	Formulate judgments about the ideas under discussion and support those judgments with convincing evidence. (FS-1.1)		
Use critical thinking skills to make informed decisions and solve problems. (FS-5.3)		<u>SUPPLEMENTAL MATERIALS CORRELATION:</u> LBUSD Math Intranet/ Instructional Tools/ Intermediate Algebra Supplemental Resources: <ul style="list-style-type: none"> Linear Programming Comparing Graphs Prentice Hall Algebra 2 Textbook: <ul style="list-style-type: none"> Writing Extended Responses Example, p. 156 	

Quadratic Equations and Functions		19 Days (9.5 Blocks)																					
<p>Sample Essential Question: How are complex numbers used in the study of quadratic functions?</p>																							
Content Standards		Performance Standard Measures <i>(Reflects rigor and integration of CTE Foundation Standards and may vary by SLC)</i>	Instructional Support																				
Students Know... (Content)	Students are Able to... (Skill)	Students Demonstrate Knowledge and Skill																					
... how to use quadratic functions to model real-world data, solving for answers to real-world situations.	<p>Model data with quadratic functions and understand their properties. (AII-9.0)</p> <p>Apply the properties of quadratic functions by graphing and translating parabolas. (AII-10.0)</p> <p>Solve quadratic equations by factoring, finding the square root, completing the square and using the quadratic formula. (AII-4.0, AII-8.0)</p> <p>Add, subtract, multiply and divide complex numbers, graph them in the complex number plane, and solve quadratics over the complex number system. (AII-5.0, AII-6.0, AII-8.0)</p> <p>Apply quadratic functions to real-world situations. (AII-8.0)</p> <p>Produce legible work that shows accurate spelling and correct use of the conventions of punctuation and capitalization. (FS-1.4)</p> <p>Formulate judgments about the ideas under discussion and support those judgments with convincing evidence. (FS-1.1)</p> <p>Use props, visual aids, graphs, and electronic media to enhance the appeal and accuracy of presentations. (FS-1.7)</p> <p>Use critical thinking skills to make informed decisions and solve problems. (FS-5.3)</p>	<p>Key Assignment:</p> <ul style="list-style-type: none"> Quadratic Project (Described in Key Assignments following the Outline of Content) <i>(LBSD Math Intranet/Instructional Tools/Intermediate Algebra Supplemental Resources)</i> <p>Assessments: District Intermediate Algebra 1st Quarter Exam</p> <p>Suggested Activities:</p> <ul style="list-style-type: none"> Prentice Hall Hands-On-Activities, Activity 42: Powers of i Vertical Motion Problems <i>(LBSD Math Intranet/Instructional Tools/Intermediate Algebra Supplemental Resources)</i> 	<p>BASIC TEXTBOOK CORRELATION: 5-1, 5-2, 5-3, 5-4, 5-5, 5-6, 5-7, 5-8</p> <p>KEY VOCABULARY:</p> <table> <tr> <td>Absolute value of a complex number</td> <td>Parabola</td> </tr> <tr> <td>Axis of symmetry</td> <td>Perfect square trinomial</td> </tr> <tr> <td>Completing the square</td> <td>Quadratic Formula</td> </tr> <tr> <td>Complex number</td> <td>Quadratic function</td> </tr> <tr> <td>Complex number plane</td> <td>Standard form of a quadratic equation</td> </tr> <tr> <td>Difference of two squares</td> <td>Standard form of a quadratic function</td> </tr> <tr> <td>Discriminant</td> <td>Vertex form of a quadratic function</td> </tr> <tr> <td>Factoring</td> <td>Vertex of a parabola</td> </tr> <tr> <td>Greatest common factor (GCF) of an expression</td> <td>Zero of a function</td> </tr> <tr> <td>Imaginary number, i</td> <td>Zero Product Property</td> </tr> </table> <p>SUPPLEMENTAL MATERIALS CORRELATION: LBSD Math Intranet/ Instructional Tools/ Intermediate Algebra Supplemental Resources:</p> <ul style="list-style-type: none"> Quadratic Project Vertical Motion Problems <p>Prentice Hall Algebra 2 Textbook:</p> <ul style="list-style-type: none"> Hands-On Activities, Activity 42; Powers of i 	Absolute value of a complex number	Parabola	Axis of symmetry	Perfect square trinomial	Completing the square	Quadratic Formula	Complex number	Quadratic function	Complex number plane	Standard form of a quadratic equation	Difference of two squares	Standard form of a quadratic function	Discriminant	Vertex form of a quadratic function	Factoring	Vertex of a parabola	Greatest common factor (GCF) of an expression	Zero of a function	Imaginary number, i	Zero Product Property
Absolute value of a complex number	Parabola																						
Axis of symmetry	Perfect square trinomial																						
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Greatest common factor (GCF) of an expression	Zero of a function																						
Imaginary number, i	Zero Product Property																						

Polynomials and Polynomial Functions**13 Days (6.5 Blocks)**

Sample Essential Question:

How can a polynomial function determine how long a kicked soccer ball will stay in the air before hitting the ground?

Content Standards		Performance Standard Measures <i>(Reflects rigor and integration of CTE Foundation Standards and may vary by SLC)</i>	Instructional Support
Students Know... (Content)	Students are Able to... (Skill)	Students Demonstrate Knowledge and Skill	
... how to write and graph polynomial functions and to solve polynomial equations and problems involving permutations, combinations, and binomial probability.	Define and identify polynomial functions, write them in standard and factored form, and find their zeros. (All-10.0, All-3.0)	Suggested Activity: <ul style="list-style-type: none"> Prentice Hall Hands-On-Activities, Activity 30: Permutations and Combinations 	BASIC TEXTBOOK CORRELATION: 6-1, 6-2, 6-3, 6-4, 6-7, 6-8 KEY VOCABULARY: Binomial Permutation Theorem Polynomial Combination Polynomial Degree function Degree of a Relative polynomial maximum Difference of Relative cubes minimum Expand Remainder Factor Theorem Theorem Multiple zero Standard form of Multiplicity a polynomial n factorial Sum of cubes Pascal's Triangle Synthetic division SUPPLEMENTAL MATERIALS CORRELATION: Prentice Hall Algebra 2 Textbook: <ul style="list-style-type: none"> Hands-On Activities, Activity 30; Permutations and Combinations
	Divide polynomials and understand the Remainder Theorem. (All-3.0)		
	Solve polynomial equations. (All-4.0)		
	Apply their knowledge of polynomials to solve problems involving permutations and combinations, and then learn the Binomial Theorem. (All-18.0, All-19.0)		
	Use the Binomial Theorem. (All-20.0)		
	Use critical thinking skills to make informed decisions and solve problems. (FS-5.3)		
	Understand how to organize and structure work individually and in teams for effective performance and the attainment of goals. (FS-9.3)		

Radical Functions and Rational Exponents**18 Days (9 Blocks)**

Sample Essential Question:

How does the study of radical functions and rational exponents help in the use of formulas for energy, gravitational force, and the stopping distance of a moving car?

Content Standards		Performance Standard Measures <i>(Reflects rigor and integration of CTE Foundation Standards and may vary by SLC)</i>	Instructional Support												
Students Know... (Content)	Students are Able to... (Skill)	Students Demonstrate Knowledge and Skill													
... how to work with roots of expressions, how to add, subtract, multiply and divide radical expressions and functions, and how to solve and graph radical equations.	Understand the meaning of cube roots, fourth roots, fifth roots, and so on by finding the real roots of various expressions. (All-11.2, All-15.0)	<p>Assessment: District Intermediate Algebra 1st Semester Exam</p> <p>Suggested Activity:</p> <ul style="list-style-type: none"> Prentice Hall Intermediate Algebra Textbook, Investigation: Inverses, p. 400 	<p>BASIC TEXTBOOK CORRELATION: 7-1, 7-2, 7-3, 7-4, 7-5, 7-6, 7-7, 7-8</p> <p>KEY VOCABULARY:</p> <table> <tr> <td>Composite function</td> <td>Principal root</td> </tr> <tr> <td>Index</td> <td>Radical equation</td> </tr> <tr> <td>Inverse functions</td> <td>Radical function</td> </tr> <tr> <td>Inverse Relation</td> <td>Radicand</td> </tr> <tr> <td>Like radicals</td> <td>Rational exponent</td> </tr> <tr> <td>nth root</td> <td>Rationalize the denominator</td> </tr> </table> <p>SUPPLEMENTAL MATERIALS CORRELATION: Prentice Hall Algebra 2 Textbook:</p> <ul style="list-style-type: none"> Investigation: Inverses, p. 400 	Composite function	Principal root	Index	Radical equation	Inverse functions	Radical function	Inverse Relation	Radicand	Like radicals	Rational exponent	n th root	Rationalize the denominator
	Composite function			Principal root											
	Index			Radical equation											
	Inverse functions			Radical function											
	Inverse Relation			Radicand											
	Like radicals			Rational exponent											
	n th root			Rationalize the denominator											
	Simplify, add, subtract, multiply and divide radical expressions. (All-15.0)														
Understand rational exponents by simplifying expressions with rational exponents, converting to and from radical form and applying the properties of rational exponents. (All-7.0, All-12.0)															
Solve radical equations. (All-12.0)															
Add, subtract, multiply, and divide functions and understand their composition. (All-24.0, All-25.0)															
Understand an inverse function by writing its equation, graphing it on the coordinate plane, and solving real-life situations. (All-24.0, All-25.0)															
Graph radical functions and their translations. (All-15.0)															
Use critical thinking skills to make informed decisions and solve problems. (FS-5.3)															

Exponential and Logarithmic Functions**16 Days (8 Blocks)**

Sample Essential Question:

How do exponential functions or logarithmic equations determine the depreciation value of a used car or the magnitude of an earthquake?

Content Standards		Performance Standard Measures <i>(Reflects rigor and integration of CTE Foundation Standards and may vary by SLC)</i>	Instructional Support												
Students Know... (Content)	Students are Able to... (Skill)	Students Demonstrate Knowledge and Skill													
... how to use exponential functions to model real-world data, to graph exponential and logarithmic functions, and solve exponential and logarithmic equations.	<p>Use the properties of exponential functions by graphing both growth and decay models and writing equations of exponential functions given two points. (AII-12.0)</p> <p>Understand logarithms by writing equations in logarithmic form, evaluating logarithms, graphing logarithms, and identifying and using properties of logarithms. (AII-11.0, AII-11.1, AII-11.2, AII-14.0, AII-15.0)</p> <p>Solve exponential and logarithmic equations. (AII-13.0, AII-14.0)</p> <p>Apply knowledge of logarithms to natural logarithms, including problem solving. (AII-14.0, AII-15.0)</p> <p>Produce legible work that shows accurate spelling and correct use of the conventions of punctuation and capitalization. (FS-1.4)</p> <p>Formulate judgments about the ideas under discussion and support those judgments with convincing evidence. (FS-1.1)</p> <p>Use critical thinking skills to make informed decisions and solve problems. (FS-5.3)</p>	<p>Key Assignment:</p> <ul style="list-style-type: none"> Home Mortgage Project (Described in Key Assignments following the Outline of Content) <i>(LBUSD Math Intranet/Instructional Tools/Intermediate Algebra Supplemental Resources)</i> <p>Suggested Activities:</p> <ul style="list-style-type: none"> Exponential Growth/Decay Project <i>(LBUSD Math Intranet/Instructional Tools/Intermediate Algebra Supplemental Resources)</i> Prentice Hall Intermediate Algebra Textbook, Investigation: Properties of Logarithms, p. 446 	<p>BASIC TEXTBOOK CORRELATION: 8-1, 8-2, 8-3, 8-4, 8-5, 8-6</p> <p>KEY VOCABULARY:</p> <table> <tr> <td>Asymptote</td> <td>Exponential function</td> </tr> <tr> <td>Change of Base Formula</td> <td>Growth factor</td> </tr> <tr> <td>Common logarithm</td> <td>Logarithm</td> </tr> <tr> <td>Continuously compounded interest</td> <td>Logarithmic equation</td> </tr> <tr> <td>Decay factor</td> <td>Logarithmic function</td> </tr> <tr> <td>Exponential equation</td> <td>Natural logarithmic function</td> </tr> </table> <p>SUPPLEMENTAL MATERIALS CORRELATION: LBUSD Math Intranet/ Instructional Tools/ Intermediate Algebra Supplemental Resources:</p> <ul style="list-style-type: none"> Home Mortgage Project Exponential Growth/Decay Project <p>Prentice Hall Algebra 2 Textbook:</p> <ul style="list-style-type: none"> Investigation: Properties of Logarithms, p. 446 	Asymptote	Exponential function	Change of Base Formula	Growth factor	Common logarithm	Logarithm	Continuously compounded interest	Logarithmic equation	Decay factor	Logarithmic function	Exponential equation	Natural logarithmic function
Asymptote	Exponential function														
Change of Base Formula	Growth factor														
Common logarithm	Logarithm														
Continuously compounded interest	Logarithmic equation														
Decay factor	Logarithmic function														
Exponential equation	Natural logarithmic function														

Sequences and Series**13 Days (6.5 Blocks)***Sample Essential Question:**Patterns can be described by mathematical sequences. Which famous mathematical sequence is especially useful in the study of nature?*

Content Standards		Performance Standard Measures <i>(Reflects rigor and integration of CTE Foundation Standards and may vary by SLC)</i>	Instructional Support																				
Students Know... (Content)	Students are Able to... (Skill)	Students Demonstrate Knowledge and Skill																					
... arithmetic and geometric sequences and series and how to use them to solve real-world problems.	Identify and write recursive and explicit formulas. (AII-22.0)	<p>Assessment: District Intermediate Algebra 3rd Quarter Exam</p> <p>Suggested Activities:</p> <ul style="list-style-type: none"> • Prentice Hall Intermediate Algebra Textbook, Investigation: Geometry Sequences, p. 600 • Prentice Hall Intermediate Algebra Textbook, Investigation: Arithmetic Series, p. 607 • Prentice Hall Intermediate Algebra Textbook, Investigation: Geometry and Infinite Series, p. 613 	<p>BASIC TEXTBOOK CORRELATION: 11-1, 11-2, 11-3, 11-4, 11-5</p> <p>KEY VOCABULARY:</p> <table> <tr> <td>Arithmetic mean</td> <td>Geometric sequence</td> </tr> <tr> <td>Arithmetic sequence</td> <td>Geometric series</td> </tr> <tr> <td>Arithmetic series</td> <td>Limit</td> </tr> <tr> <td>Circumscribed rectangles</td> <td>Recursive formula</td> </tr> <tr> <td>Common difference</td> <td>Sequence</td> </tr> <tr> <td>Common ratio</td> <td>Series</td> </tr> <tr> <td>Converge</td> <td>Term</td> </tr> <tr> <td>Diverge</td> <td></td> </tr> <tr> <td>Explicit formula</td> <td></td> </tr> <tr> <td>Geometric mean</td> <td></td> </tr> </table> <p>SUPPLEMENTAL MATERIALS CORRELATION: Prentice Hall Algebra 2 Textbook:</p> <ul style="list-style-type: none"> • Investigation: Geometry Sequences, p. 600 • Investigation: Arithmetic Series, p. 607 • Investigation: Geometry and Infinite Series, p. 613 	Arithmetic mean	Geometric sequence	Arithmetic sequence	Geometric series	Arithmetic series	Limit	Circumscribed rectangles	Recursive formula	Common difference	Sequence	Common ratio	Series	Converge	Term	Diverge		Explicit formula		Geometric mean	
	Arithmetic mean			Geometric sequence																			
	Arithmetic sequence			Geometric series																			
	Arithmetic series			Limit																			
Circumscribed rectangles	Recursive formula																						
Common difference	Sequence																						
Common ratio	Series																						
Converge	Term																						
Diverge																							
Explicit formula																							
Geometric mean																							
Identify And write an arithmetic or geometric sequence or series, determine if they are finite or infinite, and evaluate and use them to solve real-world problems. (AII-22.0)																							
Determine if an infinite geometric series converges or diverges and find the limit. (AII-22.0)																							
Use critical thinking skills to make informed decisions and solve problems. (FS-5.3)																							

Probability and Statistics**9 Days (4.5 Blocks)**

Sample Essential Question:

How and when can the results of an experiment be considered reliable?

Content Standards		Performance Standard Measures <i>(Reflects rigor and integration of CTE Foundation Standards and may vary by SLC)</i>	Instructional Support
Students Know... (Content)	Students are Able to... (Skill)	Students Demonstrate Knowledge and Skill	
...probability and standard deviation.	Apply theoretical and experimental probability to real-world situations.	<u>Suggested Activities:</u> <ul style="list-style-type: none"> Prentice Hall Hands-On Activities, Activity 32: It's a Toss-Up Prentice Hall Intermediate Algebra Textbook, Investigation: Multiple Events, p. 519 Prentice Hall Intermediate Algebra Textbook, Investigation: Analyzing Data Spread, p. 656 	BASIC TEXTBOOK CORRELATION: 1-6 9-7 12-2, 12-4 KEY VOCABULARY: Conditional probability Dependent events Experimental probability Independent events Interquartile range Mean Measures of variation Median Mode Mutually exclusive events Range of a set of data Sample space Simulation Standard deviation Theoretical probability Z-score
	Determine if events are dependent or independent, whether or not they are mutually exclusive and find their probability. (PS-1.0)		
	Apply conditional probability to real-world problems. (PS-2.0)		
	Use standard deviation to understand real-world data. (PS-7.0)		
			SUPPLEMENTAL MATERIALS CORRELATION: Prentice Hall Algebra 2 Textbook: <ul style="list-style-type: none"> Hands-On Activities, Activity 32; It's a Toss Up Investigation: Multiple Events, p. 519 Investigation: Analyzing Data Spread, p. 656

Quadratic Relations**13 Days (6.5 Blocks)**

Sample Essential Question:

Which conic section describes the path of a sonic boom created by an airplane flying faster than the speed of sound?

Content Standards		Performance Standard Measures <i>(Reflects rigor and integration of CTE Foundation Standards and may vary by SLC)</i>	Instructional Support																		
Students Know... (Content)	Students are Able to... (Skill)	Students Demonstrate Knowledge and Skill																			
... how to identify the equations of conic section, graph each type of conic, and use them to model real-world problems.	<p>Identify which conic section, circle, ellipse, parabola, or hyperbola, is represented by the equation or graph, and use the method for completing the square to put the equation into standard form. (AII-17.0)</p> <p>Write the equation of a conic section given the graph or certain properties of that conic and use it to model real-world problems.</p> <p>Use the properties of conics sections. (AII-16.0)</p> <p>Graph the conic sections. (AII-17.0)</p> <p>Use critical thinking skills to make informed decisions and solve problems. (FS-5.3)</p>	<p>Key Assignment:</p> <ul style="list-style-type: none"> Conic Sections <i>(LBUSD Math Intranet/Instructional Tools/Intermediate Algebra Supplemental Resources)</i> <p>Suggested Activities:</p> <ul style="list-style-type: none"> Prentice Hall Hands-On-Activities, Activity 51: Drawing Ellipses Prentice Hall Hands-On-Activities, Activity 52: Conic Sections 	<p>BASIC TEXTBOOK CORRELATION: 10-1, 10-2, 10-3, 10-4, 10-5</p> <p>KEY VOCABULARY:</p> <table> <tr> <td>Center</td> <td>Hyperbola</td> </tr> <tr> <td>Circle</td> <td>Major axis</td> </tr> <tr> <td>Conic section</td> <td>Minor axis</td> </tr> <tr> <td>Co-vertices</td> <td>Radius</td> </tr> <tr> <td>Directrix</td> <td>Standard form of an equation of a circle</td> </tr> <tr> <td>Ellipse</td> <td>Transverse axis</td> </tr> <tr> <td>Focus of a parabola</td> <td>Vertices of an ellipse</td> </tr> <tr> <td>Focus of an ellipse</td> <td>Vertices of a hyperbola</td> </tr> <tr> <td>Focus of a hyperbola</td> <td></td> </tr> </table> <p>SUPPLEMENTAL MATERIALS CORRELATION: LBUSD Math Intranet/ Instructional Tools/ Intermediate Algebra Supplemental Resources:</p> <ul style="list-style-type: none"> Conic Sections <p>Prentice Hall Algebra 2 Textbook:</p> <ul style="list-style-type: none"> Hands-On Activities, Activity 51; Drawing Ellipses Hands-On Activities, Activity 52; Conic Sections 	Center	Hyperbola	Circle	Major axis	Conic section	Minor axis	Co-vertices	Radius	Directrix	Standard form of an equation of a circle	Ellipse	Transverse axis	Focus of a parabola	Vertices of an ellipse	Focus of an ellipse	Vertices of a hyperbola	Focus of a hyperbola	
Center	Hyperbola																				
Circle	Major axis																				
Conic section	Minor axis																				
Co-vertices	Radius																				
Directrix	Standard form of an equation of a circle																				
Ellipse	Transverse axis																				
Focus of a parabola	Vertices of an ellipse																				
Focus of an ellipse	Vertices of a hyperbola																				
Focus of a hyperbola																					

Matrices**11 Days (5.5 Blocks)**

Sample Essential Question:

How are matrices useful in the organization of data?

Content Standards		Performance Standard Measures <i>(Reflects rigor and integration of CTE Foundation Standards and may vary by SLC)</i>	Instructional Support
Students Know... (Content)	Students are Able to... (Skill)	Students Demonstrate Knowledge and Skill	
... how to represent real-world relationships using matrices and use operations such as addition and multiplication to develop new matrices.	Use matrices to represent real-world situations.	Assessment: District Intermediate Algebra EOC Exam Suggested Activity: <ul style="list-style-type: none"> Prentice Hall Hands-On-Activities, Activity 39: Matrix "Eggsperiment" 	BASIC TEXTBOOK CORRELATION: 4-1, 4-2, 4-3, 4-5, 4-7 KEY VOCABULARY: Coefficient matrix Multiplicative identify matrix Constant matrix Multiplicative inverse Determinant inverse matrix Equal matrices matrix Matrix Scalar Matrix addition Scalar product Matrix element Square matrix Matrix equation Variable matrix Matrix multiplication Zero matrix SUPPLEMENTAL MATERIALS CORRELATION: Prentice Hall Algebra 2 Textbook: <ul style="list-style-type: none"> Hands-On Activities, Activity 39; Matrix "Eggsperiment"
	Add, subtract, and multiply matrices.		
	Find the determinant and inverse of a 2 x 2 matrix.		
	Solve a system of equations using matrices. (AI-2.0)		
	Use critical thinking skills to make informed decisions and solve problems. (FS-5.3)		

KEY ASSIGNMENTS/ASSESSMENTS:

Daily Homework and In-class Assignments	Throughout the course, students will complete daily homework and in-class assignments from the math textbook and supplemental materials that will be used to assess their knowledge of the information learned during class time.
Content-Based Activities	Students will participate in a variety of in-class rigorous and relevant standards-based activities which may include investigations, discovery activities, cooperative group activities, and creative ways to summarize concepts learned.
Unit Tests	Common unit tests are developed by a team of Intermediate Algebra teachers at each high school site and administered to each student enrolled in the course. Tests include a variety of free-response and multiple choice items. Free-response items may be graded allowing an opportunity for students to receive partial credit if they demonstrate conceptual understanding, but make arithmetic errors. Tests include a variety of objective questions that assess basic knowledge of content, vocabulary, procedures, skills, conceptual understanding, or problem-solving ability.
Quarter Exams	Students taking Intermediate Algebra 1-2 in LBUSD take a district-developed 20-item multiple-choice quarter 1 and quarter 3 exam assessing proficiency in the state standards taught in the given quarter.
Comprehensive Semester Exam	Students taking Intermediate Algebra 1-2 in LBUSD take a district-developed 50-item multiple-choice exam assessing proficiency in the state standards taught in the first semester.
Comprehensive End of Course Exam	Students taking Intermediate Algebra 1-2 in LBUSD take a district-developed 50-item multiple-choice exam assessing proficiency in all of the state standards for Algebra 2.
Performance-Based Projects – especially Quad D and Service Learning	Students may complete rigorous and relevant standards-based projects which may integrate more than one subject area, relate to real-life or a career application, and may include service learning. The projects can be completed individually or in a small group, and can be completed during class time and/or at home. The projects can include a presentation to a small or group or the whole class. Service Learning activities involve research, preparation, action/demonstration, and reflection of experiential applications of the content and will be credited toward the district's high school Service Learning requirement. Students are expected to complete a Service Learning activity with a minimum of 5 hours, prior to the completion of this course. The learning (any products developed, reflection on the service) will be graded by the instructor as one of the performance based assessments; the service itself will not be graded or judged.

Key Assignments (Performance-Based Projects)**Quarter 1****Linear Programming** (LBUSD Math Intranet/Instructional Tools/Intermediate Algebra Supplemental Resources)

Students will be able to solve a word problem using the principles of linear programming. Given an application problem, students will create a system of constraints, graph the constraints, and write an objective equation to then optimize. Students will also create their own problem and solve it by following the same procedures.

Quarter 2**Quadratic Project** (LBUSD Math Intranet/Instructional Tools/Intermediate Algebra Supplemental Resources)

Students will create their own quadratic equation and then solve it by factoring, graphing, completing the square and using the quadratic formula. Students will compare and contrast each method, organizing their work into a book format, including illustrations and typed pages.

Quarter 3**Home Mortgage** (LBUSD Math Intranet/Instructional Tools/Intermediate Algebra Supplemental Resources)

Students will research the purchase price of a house choosing the size and location of their choice. Using this information, they will analyze different mortgage payment plans and career salary ranges that will allow them to purchase the home. Students will use the exponential and logarithmic functions to make predictions about the future value of the house and rates of appreciation/depreciation.

Quarter 4**Conic Sections** (LBUSD Math Intranet/Instructional Tools/Intermediate Algebra Supplemental Resources)

Students will compare and contrast the properties and graphs of each of the four conic sections: parabolas, circles, ellipses, and hyperbolas. Students will identify the conics written in general form and convert them to standard form. They will use the properties of conic sections to solve real-life applications.

INSTRUCTIONAL METHOD AND/OR STRATEGIES:

A variety of instructional strategies will be utilized to accommodate all learning styles:

Math-specific Methods:

1. lectures, structured note-taking, justification of reasoning
2. cooperative problem-solving, pair-teaching
3. activities, projects
4. manipulatives, drawing visual representations

Lesson Design & Delivery: Teachers will incorporate these components of lesson design during direct instruction and inquiry activities. The order of components is flexible, depending on the teacher's vision for the individual lesson. For instance, the objective and purpose, while present in the teacher's lesson plan, are not made known to the students at the beginning of an inquiry lesson.

Essential Elements of Effective Instruction Model for Lesson Design Using Task Analysis	Anticipatory Set Objective Standard Reference Purpose Input Modeling Check for Understanding Guided Practice Closure Independent Practice
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Some components may occur once in a lesson, but others will recur many times. Checking for understanding occurs continually; input, modeling, guided practice and closure may occur several times. There may even be more than one anticipatory set when more than one content piece is introduced.

Active Participation: Teachers will incorporate the principles of active participation and specific strategies to ensure consistent, simultaneous involvement of the minds of all learners in the classroom. Teachers should include both covert and overt active participation strategies, incorporating cooperative learning structures and brain research. Some of the possible active participation strategies include:

COVERT	OVERT (Oral)	OVERT (Written)	OVERT (Gestures)
• Recall	• Think (Write)/Pair/Share	• Restate in Notes	• Hand Signals
• Imagine	• Idea Wave	• Response Boards	• Model with Hand Motions
• Observe	• Choral Response	• Graphic Organizers	• Stand up/ Sit down
• Consider	• Give One, Get One	• Folded Paper	• Point to Examples
	• Socratic Seminar	• Ticket Out of Class	
	• Cooperative Discussion Groups		

Baldrige Quality Tools: Students can become more positively involved in their education through goal setting, self-assessment, and data tracking and analysis by making use of the following strategies:

BALDRIGE TOOL	PURPOSES
Affinity Diagram	– finding consensus, organizing complex information
Flowchart	– describing a process, planning a project, identifying problem steps in a process
Force Field Diagram	– identifying obstacles, finding causes and solutions to problems
Issues / Ideas Bin	– handling individual questions/requests without stopping a group activity, providing anonymous input, obtaining diverse input in specific areas.
Data Folder	– tracking goals and actual results
Plus / Delta	– tracking improvement efforts, identifying opportunities for change, finding out what's working and what's not working in a process, procedure, activity, etc.
Class Data Graphs	– displaying trends for goal setting

Diverse learning styles may be addressed by implementing combinations of the following:

Significant, Proven Strategies for ALL Intermediate Algebra Students

- | | | | |
|--|---|---|---|
| <input type="checkbox"/> Cooperative Problem-solving | <input type="checkbox"/> Short/Long-term projects | <input type="checkbox"/> Manipulatives | <input type="checkbox"/> Structured Note-taking |
| <input type="checkbox"/> Student Presentations | <input type="checkbox"/> Peer Teaching | <input type="checkbox"/> Drawing visual representations | |

Reading Strategies in Intermediate Algebra

- | | |
|--|--|
| <input type="checkbox"/> Vocabulary Development (including conceptual and non-linguistic components) | <input type="checkbox"/> Text Structures |
| <input type="checkbox"/> Anticipation Guides | <input type="checkbox"/> Reciprocal Teaching |
| <input type="checkbox"/> Pre-teaching | <input type="checkbox"/> Functional Text |
| <input type="checkbox"/> Pre-reading | |

SDAIE Strategies for English Learners

- | | |
|--|--|
| <input type="checkbox"/> Lower the Affective Filter (including Processing Time) | <input type="checkbox"/> Multiple Intelligences |
| <input type="checkbox"/> Tapping/Building Prior Knowledge (Graphic Organizers, Schema) | <input type="checkbox"/> Adapt the Text |
| <input type="checkbox"/> Acquisition Levels | <input type="checkbox"/> Manipulatives & Visuals |
| <input type="checkbox"/> Language Sensitivity | |
| <input type="checkbox"/> Grouping Strategies | |
| <input type="checkbox"/> Home/School Connection (including Cultural Aspects) | |

Strategies for Students with Disabilities

- | |
|---|
| <input type="checkbox"/> IEP Accommodations (refer to student's IEP document or IEP summary sheet) |
| <input type="checkbox"/> Curricular Adaptations (e.g., quantity, input, participation, time, level of difficulty, level of support, output, substitute curriculum, alternate goals) |
| <input type="checkbox"/> Think Alouds |
| <input type="checkbox"/> Small Group Instruction/Learning Centers |
| <input type="checkbox"/> Manipulatives & Visuals |
| <input type="checkbox"/> Peer Assisted Learning |

Differentiation for Advanced Learners

- | | |
|--|---|
| <input type="checkbox"/> Curriculum Compacting | <input type="checkbox"/> Acceleration |
| <input type="checkbox"/> Depth and Complexity | <input type="checkbox"/> Tiered Assignments |
| <input type="checkbox"/> Flexible Grouping | <input type="checkbox"/> Independent Study |

Please note that these strategies often overlap and should not be limited to specifically defined courses or student populations.

TEXTBOOKS:

Basic Textbook: Read in entirety Excerpts used Bellman, Allan, et al. Algebra 2. New Jersey: Pearson Prentice Hall, 2004.

SUPPLEMENTAL INSTRUCTIONAL MATERIALS:

In addition to the basic text, a variety of instructional tools will be used to meet the needs of all students.

RESOURCES:*Documents*

- LBUSD Pacing.....LBUSD Mathematics Curriculum Internet
- Intermediate Algebra 1-2 Supplemental ResourcesLBUSD Mathematics Curriculum Intranet
- STAR Testing Blueprints..... <http://www.cde.ca.gov/ta/tg/sr/blueprints.asp>
- CST Released Items..... <http://www.cde.ca.gov/ta/tg/sr/css05rtg.asp>

ASSESSMENT METHODS AND/OR TOOLS:

Student achievement in this course will be measured using multiple assessment tools including but not limited to:

Suggested Evaluation tools:

Source	Diagnostic (Diagnose)	Formative (Monitor)	Summative (Evaluate)
District Developed Assessments	Practice EOC Exam from previous math course	Practice Exams for Quarter 1, Quarter 2 or Semester 1, Quarter 3, and End-of-Course	Quarter 1 and 3 exam Semester 1 exam End-Of-Course Exam
Prentice Hall: <u>Algebra 2</u>	Check Skills You'll Need Lesson Quiz	Standardized Test Prep Mixed Review Lesson Quiz Mid-Chapter Quizzes Chapter Review	Chapter Test Cumulative Review Cumulative Chapter Test
Teacher Developed Assessments	Warm Up Quizzes Homework Checking for Understanding using Active Participation Cooperative Learning	Warm Up Quizzes Homework Checking for Understanding using Active Participation Cooperative Learning	Quizzes Chapter Tests

PERFORMANCE STANDARDS CRITERIA:

Defines how good is good enough on which measures to demonstrate achievement of content standards.

State Performance Standards:

The California State Board of Education has identified the following performance levels for the California Standards Test (CST) in Algebra II. The objective of Long Beach Unified School District is to have all students achieve at or above the Proficient Performance Standard (Level). The table below indicates the number correct, the estimated percent correct and the Reported Scaled Score (SS) on the Content Standards Test (based on 2009 data).

Far Below Basic	Below Basic	Basic	Proficient	Advanced Proficient
0 – 21 Correct	22 – 30 Correct	31 – 40 Correct	41 – 52 Correct	53 – 65 Correct
0% – 31%	31% – 44%	45% – 61%	62% – 79%	80% – 100%
SS 150 – 256	SS 257 – 299	SS 300 – 349	SS 350 – 415	SS 416 – 600

District Performance Standards:

The Long Beach Unified School District has common assessments and key assignments that are required for Algebra. The Performance Standard Criteria is shown in the tables below. The goal is to have all students achieve at or above the Proficient Level and receive a C or better in the course.

Assessments

	Far Below Basic (FBB)	Below Basic (BB)	Basic (B)	Proficient (P)	Advanced Proficient (AP)
District Assessments: <ul style="list-style-type: none"> • Quarter 1 • Semester 1 • Quarter 3 • End-of-Course 	0% – 32%	33% – 46%	47% – 61%	62% – 80%	81% – 100%

Key Assignments/Performance-Based Projects

F	D	C	B	A
Not Proficient 0 – 59%	Partial Proficient 60% – 69 %	Proficient 70% – 84%	Advanced Proficient 85% – 100%	
The student response makes little or no progress toward accomplishing the task.	The student response partially accomplishes the task.	The student response substantially accomplishes the task.	The student response thoroughly accomplishes the task.	

Classroom Performance Standards

The objective of instruction is to help all students achieve at or above the Proficient Level and receive a C or better in the course.

	F	D	C	B	A
	Not Proficient	Partial Proficient	Proficient	Advanced Proficient	
Assessment Tests and Quizzes	Less than 60%	60% – 69%	70% – 84%	85% – 100%	
Classwork/Activities	Less than 60%	60% – 69%	70% – 84%	85% – 100%	
Activities/Performance-Based Projects	Less than 60%	60% – 69%	70% – 84%	85% – 100%	
Homework	Less than 60%	60% – 69%	70% – 84%	85% – 100%	

Standard Grading Scale:

Advanced Proficient	A	90 – 100%
	B	80 – 89%
Proficient	C	70 – 79%
Partial Proficient	D	60 – 69%
Not Proficient	F	0 – 59%

Suggested Grade Weighting:

1. Assessment	60%
o Tests (including quarter exam)	35 – 60%
o Quizzes	0 – 25%
2. Semester Final Exam	10%
o First semester final exam in the first semester	
o End-of-course exam in the second semester	
3. Classwork/Activities	10 – 20%
o Notes	
o In-class assignments and activities	
4. Activities/Performance-Based Projects	5 – 10%
o Activities are standards-based and may include:	
• Investigations	
• discovery activities	
• cooperative group activities	
• creative ways to summarize concepts learned	
o Performance-Based Projects	
• Rigorous, standards-based activities	
• may integrate	
♦ more than one subject area	
♦ real-life or a career application	
♦ service learning	
• can be completed individually or in a small group	
• can be completed during class time and/or at home	
• can include a presentation to a small group or the whole class	
5. Homework	5 – 10%

Submitted by:	Becky Afghani
Submission Date:	
School/Office:	Math Curriculum Office
Curriculum Writing Team Members:	Chris Giovanello, Math Curriculum Office Jacob Bowker, Avalon K-12 School Sophath Kong, Wilson High School Teri O'Neill, Lakewood High School
Original Board Approval Date:	7/18/11
Revised Board Approval Date:	