



**HIGH SCHOOL COURSE OUTLINE**

<b>Course Code</b>	3168		<b>Course Title</b>	Algebra 1-2 SS		
<b>Department</b>	Mathematics		<b>Short Title</b>	Algebra 1-2 SS		
<b>Course Length</b>	5 Weeks		<b>Grade</b>	9-12	<b>Credits/Semester</b>	5
<b>Required for Graduation</b>	Yes	<b>Meets H.S. Grad Requirement</b>	Yes	<b>Elective Credit</b>		
<b>Meets UC "a-g" Requirement</b>	Yes (c)		<b>Meets NCAA Requirement</b>	Yes		
<b>Prerequisites</b>	A grade of D or F in the second semester of Algebra 1-2.					

**COURSE DESCRIPTION:**

This summer school course is offered to students who received a D or F in Algebra 1-2 during the second semester of the regular school year. The course will provide a brief overview of the first semester of the course while providing a concentration on the standard covered in the second semester. The course will use diagnostic testing to determine the Algebra concepts which students still need to master.

This course is an introduction to the language and applications of algebra, including development of the real number system, variables, mathematical expressions, linear equations, problem solving, inequalities, polynomials, special products and factoring, graphs, relations and functions, quadratic equations, rational and radical expressions, and basic statistics and probability. Algebra is required for graduation from high school.

**GOALS:** (Student needs the course is intended to meet)

Students will learn all of the California State Standards for Algebra. Symbolic reasoning and calculations with symbols are central in algebra. Through the study of algebra, the student will develop an understanding of the symbolic language of mathematics and the sciences. In addition, algebraic skills and concepts are developed and used in a wide variety of problem-solving situations.

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.

Students learn to apply mathematics to everyday life and develop an interest in pursuing advance studies in mathematics and in a wide array of mathematically related career choices.

**CONTENT STANDARDS:**

- 1.0 Students identify and use the arithmetic properties of subsets of integers and rational, irrational, and real numbers, including closure properties for the four basic arithmetic operations where applicable: (CST, PSAT)
- 2.0\* Students understand and use such operations as taking the opposite, finding the reciprocal, taking a root, and raising to a fractional power. They understand and use the rules of exponents. (CAHSEE, CST, PSAT)
- 3.0 Students solve equations and inequalities involving absolute values. (CAHSEE, CST)

- 4.0\* Students simplify expressions before solving linear equations and inequalities in one variable, such as  $3(2x-5) + 4(x-2) = 12$ . (CAHSEE, CST, PSAT)
- 5.0\* Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step. (CAHSEE, CST, PSAT)
- 6.0\* Students graph a linear equation and compute the  $x$ - and  $y$ -intercepts (e.g., graph  $2x + 6y = 4$ ). They are also able to sketch the region defined by linear inequality (e.g., they sketch the region defined by  $2x + 6y < 4$ ). (CAHSEE, CST)
- 7.0\* Students verify that a point lies on a line, given an equation of the line. Students are able to derive linear equations by using the point-slope formula. (CAHSEE, CST, PSAT)
- 8.0 Students understand the concepts of parallel lines and perpendicular lines and how those slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point. (CAHSEE, CST, PSAT)
- 9.0\* Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically. Students are able to solve a system of two linear inequalities in two variables and to sketch the solution sets. (CAHSEE, CST, PSAT)
- 10.0\* Students add, subtract, multiply, and divide monomials and polynomials. Students solve multistep problems, including word problems, by using these techniques. (CAHSEE, CST, PSAT)
- 11.0 Students apply basic factoring techniques to second- and simple third-degree polynomials. These techniques include finding a common factor for all terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials. (CST, PSAT)
- 12.0\* Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing them to the lowest terms. (CST)
- 13.0\* Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems by using these techniques. (CST)
- 14.0\* Students solve a quadratic equation by factoring or completing the square. (CST, PSAT)
- 15.0\* Students apply algebraic techniques to solve rate problems, work problems, and percent mixture problems. (CAHSEE, CST, PSAT)
- 16.0 Students understand the concepts of a relation and a function, determine whether a given relation defines a function, and give pertinent information about given relations and functions. (CST, PSAT)
- 17.0 Students determine the domain of independent variables and the range of dependent variables defined by a graph, a set of ordered pairs, or a symbolic expression. (CST)
- 18.0 Students determine whether a relation defined by a graph, a set of ordered pairs, or a symbolic expression is a function and justify the conclusion. (CST)
- 19.0\* Students know the quadratic formula and are familiar with its proof by completing the square. (CST)
- 20.0\* Students use the quadratic formula to find the roots of a second-degree polynomial and to solve quadratic equations. (CST)
- 21.0\* Students graph quadratic functions and know that their roots are the  $x$ -intercepts. (CST)
- 22.0 Students use the quadratic formula or factoring techniques or both to determine whether the graph of a quadratic function will intersect the  $x$ -axis in zero, one, or two points. (CST)
- 23.0\* Students apply quadratic equations to physical problems, such as the motion of an object under the force of gravity. (CST)
- 24.0 Students use and know simple aspects of a logical argument: (CST, PSAT)
- 25.0 Students use properties of the number system to judge the validity of results, to justify each step of a procedure, and to prove or disprove statements: (CST, PSAT)

## STATE PERFORMANCE STANDARDS

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

	Far Below Basic	Below Basic	Basic	Proficient	Advanced Proficient
%	0% - 26%	27% - 39%	40% - 54%	55% - 75%	76% - 100%
# Correct	Less than 17	18 - 25	26 - 35	36 - 49	50 - 65

## DISTRICT PERFORMANCE STANDARDS

The Long Beach Unified School District has common assessments and assignments that are required for Algebra. The Performance Standard Criteria is shown in the table below. The objective is to have all students achieve at or above the Proficient Level and receive a C or better in the course. Performance level is determined by the average of the Assessments or Assignments.

### Mathematics Performance Standard Criteria

Assessment/Assignments	Not Proficient 1	Partial Proficient 2	Proficient 3	Advanced Proficient 4
Integer Tests	Less than 80%	80% - 92% 56 of 70 Correct Completed in $\leq 15$ mins.	93% - 96% 65 of 70 Correct Completed in $\leq 10$ mins.	97% - 100% 68 of 70 Correct Completed in $\leq 5$ mins.
Graded Student Work	Average is a 1 or less than 60%	Average is a 2 or 60% - 69%	Average is a 3 or 70% - 84%	Average is a 4 or 85% - 100%
Standards Based Assessment	Less than 60%	60% - 69%	70% - 84%	85% - 100%
Written Response/OEM	1-2	3	4	5-6
End-Of-Course Exam	Less than 45%	45% - 59%	60% - 84%	85% - 100%

### Mathematics Performance Standard

Performance Level for each unit is determined by the average of the Graded Student Work, Standards Based Test and Open-Ended Math Score. Students record information in the Portfolio during the school year and at the end of the year complete the Overall Standards Performance Graph.

<b>Performance Level</b>	<b>4</b>				
	<b>3.5</b>				
	<b>3</b>				
	<b>2.5</b>				
	<b>2</b>				
	<b>1.5</b>				
	<b>1</b>				
	<b>0.5</b>				
	<b>0</b>				
		<b>Basic Operations</b>	<b>Linear Equations</b>	<b>Polynomials Factoring</b>	<b>Inequalities</b>

**OUTLINE OF CONTENT AND RECOMMENDED TIME ALLOTMENT:**

Content sequencing and time allocations are only suggestions and may be adjusted to suit school site curriculum plans and student needs.

Symbols used in this document:

M – McDougal Littell, Algebra 1 textbook

P – Prentice Hall, Algebra 1 textbook

( ) - Indicates California State Content Number

***Basic Operations on the Rational Number System***

California Content Standards		Adopted Textbook Correlation	Assessments <u>Algebra</u> <u>Assessment</u> <u>Portfolio</u> <u>Workbook</u>	Key Vocabulary and Recommended Aids	Time
Use rational number operations, apply order of operations, evaluate expressions by substitution, and find measures of central tendency.	Add, subtract, multiply and divide integers and rational numbers (1.0) Algebra AB	P 2-3 to 2-6 M 2.3 to 2.6	Pages 63, 64, 71, 72, 73	<b>Key Vocabulary:</b> Additive inverse Algebraic expression Analyze data Bimodal range Central tendency Base Difference Evaluate Exponent Grouping symbols Integers Less than Mean Median Mode More than Multiplicative inverse Power Product Quotient Rational Real numbers Reciprocal Set of data Substitute Sum Twice Variable Verbal expression  <b>Visuals &amp; Demos</b> Algebra Tiles Algeblocks Color Tiles Fraction Strips Fraction Circles Factor Trees Graph Paper Number Lines Two Color Chips Walk Number Lines	
	Apply order of operations (1.0) Algebra AB	P 1-1 M 1.3	Pages 63, 64		
	Find measures of central tendency (mean, median, and mode) Algebra AB	P Supplement; M Skills Review p 780	OEM 918 OEM 919 OEM 920		

### Identify and Apply Properties of Number Systems to Algebra

California Content Standards		Adopted Textbook Correlation	Assessments <u>Algebra</u> <u>Assessment</u> <u>Portfolio</u> <u>Workbook</u>	Key Vocabulary and Recommended Aids	Time
Apply and recognize associative, commutative, and distributive properties	Apply commutative and associative properties (1.0) (25.0) Algebra AB	P 1-5, 1-4 M 2.3, 2.5	Pages 3, 8, 70	<b>Key Vocabulary:</b> Additive identity Additive inverse Associative Coefficient Commutative Distributive Equivalent expression Evaluate Inverse Identity Multiplicative identity Multiplicative inverse Multiplicative property of zero  <b>Visuals &amp; Demos:</b> Algebra Tiles Algeblocks Number Lines	
	Recognize and apply the distributive property (1.0) (25.0) Algebra AB	P 1-5 M 2.6			
	Apply identities and inverse properties (1.0) (25.0) Algebra AB	P 1-2 M 2.3, 2.5			
	Apply absolute value and solve absolute value equations (3.0) Algebra AB	P 3-8 M 2.2	Pages 46, 84		

### Solve Linear Equations

California Content Standards		Adopted Textbook Correlation	Assessments <u>Algebra</u> <u>Assessment</u> <u>Portfolio</u> <u>Workbook</u>	Key Vocabulary And Recommended Aids	Time
Solve equations for a given variable, using the four properties of equality, including real world problems, and express solutions in set notation .	Use set notation to express solution sets Algebra AB	P 9-1 M Supplement		<b>Key Vocabulary:</b> Element Equation Inequality Intersection Member Null set Replacement set Set-builder notation Solution set Union Coefficient Consecutive integers Literal equation Solve for a variable Mixture Principal Profit Rate Boundary line Compound inequality Domain Half plane Inequality Intersection / union Is greater than Is less than Range Replacement set  <b>Visual &amp; Demos:</b> Algebra Tiles Algeblocks	1 Week
	Use addition, subtraction, multiplication and division properties to solve equations (4.0) (5.0) Algebra AB	P 3-1 to 3-5 M 3.1, 3.2	Pages 2, 5, 9, 11, 77, 84		
	Solve for a given variable (4.0) (5.0) Algebra AB	P 3-7 M 3.7	Pages 10, 30		
	Apply algebraic methods to solve real word problems such as rate, work, and percent problems (5.0, 15.0) Algebra AB	P 3-10, 8-5, 10-7 M 3.1 to 3.9	Pages 8, 9, 10, 13  OEM 902		

### Graph Linear Equations

California Content Standards		Adopted Textbook Correlation	Assessments <u>Algebra</u> <u>Assessment</u> <u>Portfolio</u> <u>Workbook</u>	Key Vocabulary And Recommended Aids	Time
Graph numbers and sets of numbers, linear equations, understand the concepts of relation, function, domain and range.	Graph numbers and sets of numbers on a number line  Algebra AB	P 2-1 M 2.1	Pages 46, 101, 102	<b>Key Vocabulary:</b> Real number line Real number Whole number Positive number Negative number Integer Opposite number Absolute value Graph Coordinate Domain/range Equation in standard form Solution X- and y-intercepts Slope-intercept form Slope Linear Function	1 Week
	Graph linear equations by point plotting (6.0)  Algebra AB	P 7-3 M 4.2	Pages 79, 81, 87		
	Graph linear equations by using slope-intercept method and the intercept-intercept method (6.0)  Algebra AB	P 7-3, 7-5 M 4.7	Pages 79, 80  OEM 912 OEM 903		
	Understand the concept of a relation and a function (16.0) (18.0)  Algebra AB	P 12.1 M 4.8	Page 33		
	Find the range and domain of a function (17.0)  Algebra AB	P 12-1, 12-2 M 8.3	Pages 12, 13, 34, 35		
Find slope from a graph, given two points, find equations of lines in standard form given two points or slope and y-intercept, write equations of parallel and perpendicular lines through a given point, and fit a line to data.	Find the slope of a line from the graph (7.0)  Algebra AB	P 7-4 M 4.5	Pages 4, 10	<b>Visuals &amp; Demos:</b> Number Lines Coordinate Plane Graph Aerobics	
	Find the slope of a line given two points (8.0)  Algebra AB	P 7-4 M 4.5	Pages 4, 10, 81, 82		
	Find the equation of a line in Standard Form given the slope and the y-intercept (7.0)  Algebra AB	P 7-3 M 5.1	Pages 4, 81, 82		
	Find the equation of a line in Standard Form given two points (8.0)  Algebra AB	P 7-6 M 5.3	Pages 5, 11, 82		
	Find the equation of a line in Standard Form parallel or perpendicular to a given line through a given point (8.0)  Algebra ABCD	P 7-8 M 5.6	Pages 5, 81, 82  OEM 913		
	Fit a line to data (line of best fit)  Algebra ABCD	P 7-7 M Supplement	Page 81		

### Solve and Graph Linear Inequalities

California Content Standards		Adopted Textbook Correlation	Assessments <u>Algebra</u> <u>Assessment</u> <u>Portfolio</u> <u>Workbook</u>	Key Vocabulary And Recommended Aids	Time
Solve inequalities for a given variable, using the four properties of equality and inequality, including real world problems, and express solutions in set notation	Solve linear inequalities (6.0)  Algebra ABCD	P 4-1 to 4-4 M 6.1- to 6.3	Pages 4, 5, 11, 12, 101, 102	<b>Key Vocabulary:</b> Inequality Intersection Union Compound inequality Domain Half plane Inequality Intersection / union Is greater than Is less than Range Replacement set  Visual & Demos: Number Lines Coordinate Plane Graph Aerobics	
	Solve absolute value inequalities (3.0)  Algebra ABCD	P 9-4 M 6.7	Page 103		
	Graph linear inequalities (6.0)  Algebra ABCD	P 9-5 M 4.7	Pages 6, 11, 45		

### Solve Systems of Linear Equations and Inequalities

Topics	California State Standards	Adopted Textbook Correlation	Assessments <u>Algebra</u> <u>Assessment</u> <u>Portfolio</u> <u>Workbook</u>	Key Vocabulary And Recommended Aids	Time
Solve systems of linear equations in two variables by graphing, substitution, and linear combination, and solve systems of linear inequalities.	Solve using the graphing method (9.0)  Algebra CD	P 8-1 M 7.1	Pages 83, 86	<b>Key Vocabulary:</b> Systems of equations Intersecting lines Parallel lines Linear combination Substitution	
	Solve using the addition or linear combination method (9.0)  Algebra CD	P 8-3 M 7.3	Pages 5, 11, 83		
	Solve using the substitution method (9.0)  Algebra CD	P 8-3 M 7.2	Pages 5, 12, 83	<b>Visuals &amp; Demos:</b> Graph Paper	
	Solving systems of inequalities (9.0)  Algebra CD	P 9-6 M 7.6	Pages 104, 105		

### Perform Basic Operations on Polynomials

	California Content Standards	Adopted Textbook Correlation	Assessments <u>Algebra</u> <u>Assessment</u> <u>Portfolio</u> <u>Workbook</u>	Key Vocabulary and Recommended Aids	Time
Add, subtract, and multiply polynomials, apply exponent rules, and use scientific notation	Add and subtract polynomials by combining similar terms (10.0)  Algebra CD	P 5-7, 5-8 M 10.1	Pages 1, 9, 91	<b>Key Vocabulary:</b> Polynomial Binomial Constants Difference of squares  FOIL Monomial Square a binomial Square of a sum Trinomial	1 Week
	Multiply polynomials (10.0)  Algebra CD	P 5-9 to 5-11 M 10.2	Pages 1, 2, 3, 12, 36, 37, 53  OEM 909		

California Content Standards	Adopted Textbook Correlation	Assessments <u>Algebra Assessment Portfolio Workbook</u>	Key Vocabulary and Recommended Aids	Time
Apply rules of positive and negative exponents (2.0)  Algebra CD	P 5-1, 5-2 M 8.1-8.7	Pages 1, 2, 3, 8, 12, 54, 55, 91, 92	Power of a monomial Power of power Product of powers <b>Visuals &amp; Demos:</b> <b>Algebra Tiles</b> <b>Algeblocks</b>	
Use scientific notation to solve problems  Algebra CD	P 5-4 M 8.5			

### **Factor Polynomials**

California Content Standards	Adopted Textbook Correlation	Assessments <u>Algebra Assessment Portfolio Workbook</u>	Key Vocabulary And Recommended Aids	Time
Factor trinomials completely using the greatest common factor and other factoring patterns  Algebra CD	P 6-1 M 10.8	Pages 1, 9, 93	<b>Key Vocabulary:</b> Composite Distributive property Factor Greatest common factor  Prime Difference of squares Perfect square Zero product property Quadratic equation  <b>Visuals &amp; Demos:</b> <b>Diamond Model</b> <b>Facto Trees</b> <b>Color Tiles</b>	
Factor trinomials (11.0)  Algebra CD	P 6-3 to 6-5 M 10.5, 10.6	Pages 3, 12, 93		
Factor completely by applying several different factor patterns (11.0)  Algebra CD	P 6-6, 6-7 M 10.5-10.8	Pages 58, 93		

### **Perform the Basic Operations on Algebraic Fractions**

California Content Standards	Adopted Textbook Correlation	Assessments <u>Algebra Assessment Portfolio Workbook</u>	Key Vocabulary And Recommended Aids	Time	
Add, subtract, multiply and divide algebraic expressions and simplify them in lowest form. Solve rational equations and find the probability of an event	Express fractions in lowest terms (12.0)  Algebra CD	P 10-1 M 11.3	<b>Key Vocabulary:</b> Common factors Denominator Excluded values GCF Numerator Rational expression Simplest form Common denominator Dividend Divisor Fraction bar LCM (least common multiple)	1 Week	
	Add, subtract, multiply and divide algebraic expressions and simplify complex fractions (13.0)  Algebra CD	P 10-2 to 10.5 M 11.4-11.6			Pages 5, 6, 38
	Solve rational equations (including proportions) (15.0)  Algebra ABCD	P 10-6, 10-7 M 11.7			Pages 4, 9, 40, 96

California Content Standards		Adopted Textbook Correlation	Assessments <u>Algebra</u> <u>Assessment</u> <u>Portfolio</u> <u>Workbook</u>	Key Vocabulary And Recommended Aids	Time
	Probability of an event  Algebra AB	P Supplement M Supplement		Least common denominator Product Quotient Unlike denominator Rational equations Extremes Means Proportions Event Expected result Failures Odds Outcomes Probability Random Successes  <b>Visuals &amp; Demos:</b> <b>Algebra Tiles</b> <b>Coins</b> <b>Dice</b> <b>Spinners</b>	

***Perform Basic Operations with Radicals and Solve Equations***

California Content Standards		Adopted Textbook Correlation	Assessments <u>Algebra</u> <u>Assessment</u> <u>Portfolio</u> <u>Workbook</u>	Key Vocabulary And Recommended Aids	Time
Work with algebraic expressions containing real numbers. Find square roots of real numbers; simplify, multiply, divide, add, and subtract radicals; solve equations containing radicals; apply the Pythagorean theorem and use the distance formula.	Find the square root of a real number (2.0)  Algebra ABCD	P 11-1 M 9.1	Page 8	<b>Key Vocabulary:</b> Square root Perfect square Radical sign Principal square root Negative square root Irrational number Radicand Simplest radical form Pythagorean theorem Hypotenuse <b>Visuals &amp; Demos</b> Leg Product property Quotient property Like radicals Radical expression Radical equation Extraneous roots Geometric mean  <b>Visuals &amp; Demos:</b> <b>Graph Paper</b>	
	Simplify, multiply, divide, add, and subtract radicals (1.0) (2.0)  Algebra ABCD	P 11-3 to 11-6 M 9.3	Pages 3, 6, 8, 41-44		
	Solve equations containing radicals  Algebra CD	P 11-9 M 9.2	Pages 6, 109 – 111		
	Apply the Pythagorean Theorem  Algebra CD	P 11-7, 11-8 M 12.6	Pages 4, 9		
	Use the distance formula to find the distance between two points  Algebra CD	P 11-7 M 12.7	Pages 4, 13, 116		

### Solve and Graph Quadratics

California Content Standards		Adopted Textbook Correlation	Assessments Algebra Assessment Portfolio Workbook	Key Vocabulary And Recommended Aids	Time
Solve quadratic equations by factoring and using the quadratic formula. Graph quadratic expressions by point plotting, recognize the graph as a parabola, and recognize the x-intercepts as roots; apply the quadratic formula to physical problems, and solve quadratic equations by completing the square.	Solve quadratic equations by factoring (14.0) Algebra CD	P 6-8 M 10.4	Page 3 - 5, 13, 112, 113	<b>Key Vocabulary:</b> Zero product property Factoring Standard form of a quadratic equation Integral roots Quadratic formula Discriminant Roots, solutions, x-intercepts, zeroes Parabola Vertex Maximum Minimum Axis of symmetry Axis of symmetry Minimum Maximum Quadratic equation Parabola	1 week
	Solve quadratic equations by using the quadratic formula (20.0) Algebra CD	P 13-4 M 9.6	Pages 13, 112, 113		
	Graph quadratic expressions by point plotting, recognize the graph as a parabola and recognize the x-intercepts as roots (20.0), (21.0), (22.0) Algebra CD	P 12-4 M 9.5	Pages 2, 112 -114		
	Apply quadratic solutions to maximum, minimum problems Algebra CD	P 12-4 M 9.3	OEM 904		
	Apply the quadratic formula to physical problems (19.0), (23.0) Algebra CD	P 13-4 M 9.4 to 9.6	Pages 112, 113		
	Solve quadratic equations by completing the square (14.0) Algebra CD	P 13-3 M 12.5	Page 59	<b>Visuals &amp; Demos:</b> Graph Aerobics Graph Paper	

### APPLICATION OF COURSE CONTENT:

#### Career Connection:

**Related Major Skills & Characteristics** - Problem Solving , Organizational Skills, Numerical Computation, Ability to Analyze & Interpret Data, Critical Thinking, Computer Literacy, Logical Thinking, Team Skills Efficient, Systemizing Skills, Advanced Quantitative Skills, Testing Skills

**Related Career Titles** – Students who major in mathematics will be prepared for any of the following careers.

\*Accountant \*Contract Administrator \*Information Scientist \*Actuary \*Cost Estimator/Analyst \*Inventory Control Specialist \*Aerospace Engineer \*Cryptographer/Cryptologist \*Investment Banker \*Air Traffic Controller \*Data Control Administrator \*ISO 2000 Specialist \*Applications Programmer \*Data Processing Manager \*Market Research Analyst \*Applied Science Technologist \*Database Manager \*Mathematician \*Artificial Intelligence Programmer \*Demographer \*Media Buyer \*Astronomer \*Econometrician \*Meteorologist \*Banking/Credit/ Investment Mgr \*Economist \*Mortgage Researcher \*Biometrician/ Biostatistician \*EDP Auditor \*Network Programmer \*Commodity Manager \*Employee Relations Specialist \*Numerical Analyst \*Compensation/Benefits Administrator \*Engineer \*Operations Research Analyst \*Computer Consultant \*Engineering Lab Technician \*Physicist \*Computer Engineer \*Environmental Technologist \*Pollution Meteorologist \*Computer Facilities Mgr \*Estate Planner \*Production Manager

\*Computer Installation \*External Auditor \*Production Support Specialist \*Computer Marketing/Sales Rep  
\*Financial Auditor \*Psychometrician \*Computer Programmer \*Financial Consultant \*Public Health  
Statistician \*Computer Scientist \*Financial Manager \*Purchasing/Contract Agent \*Computer-Aided Design  
Tech. \*Hydro Geologist \*Quality Assurance Analyst \*Consumer Loan/Credit Officer \*Hydrologist \*Rate  
Analyst \*Cartographer \*Software Engineer \*Teacher: Science/Math/Computers \*Research Analyst \*Software  
Support Specialist \*Technical Support Rep. \*Risk & Insurance Specialist \*Statistician \*Technical Writer  
\*Risk Analyst \*Systems Analyst \*Transportation Planner \*Robotics Programmer \*Systems Engineer  
\*Treasury Management Specialist \*Satellite Communications Specialist \*Systems Programmer \*Underwriter  
\*Software Development Specialist \*Urban Planner \*Value Engineer \*Weight Analyst

**Service Learning** – Students who are Advanced Proficient on the Content Standards Tests or those who are earning an A in the course, can participate in after school tutoring programs to assist other students in learning mathematics. All hours can be credited towards the Service Learning requirement.

**METHODS:** A variety of instructional strategies will be utilized to accommodate all learning styles including, but not limited to:

**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.

<p><b>Essential Elements of Effective Instruction Model for Lesson Design Using Task Analysis</b></p>	<p>Anticipatory Set Objective Standard Reference Purpose Input Modeling Check for Understanding Guided Practice Closure Independent Practice</p>
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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	• Pair/Share	• Restate in Journals / Notes	• Hand Signals
• Imagine	• Idea Wave	• Response Boards	• Model with Manipulatives
• Observe	• Choral Response	• Graphic Organizers	• Stand up/ Sit down
• Consider	• Give One, Get One	• Folded Paper	• Point to Examples
	• “Foggiest” point	• Ticket Out of Class	
	• Socratic Seminar		
	• Cooperative Discussion Groups (i.e. Talking Chips, Gambit Chips)		

## Literacy and Differentiation Strategies

Learning styles and learning challenges of your students may be addressed by implementing combinations of the following:

<u>Reading Strategies in Mathematics</u>	<u>SDAIE Strategies for English Learners</u>	<u>Differentiation for Advanced Learners</u>
<ul style="list-style-type: none"> <li>▪ Learning Logs</li> <li>▪ Pre-teaching</li> <li>▪ Vocabulary</li> <li>▪ Pre-reading</li> <li>▪ Text Structures</li> <li>▪ Trail Markers</li> <li>▪ Reciprocal Teaching</li> <li>▪ Functional Text</li> <li>▪ Anticipation Guide</li> </ul>	<ul style="list-style-type: none"> <li>▪ Tapping/Building Prior Knowledge (Graphic Organizers, Schema)</li> <li>▪ Grouping Strategies</li> <li>▪ Multiple Intelligences</li> <li>▪ Adapt the Text</li> <li>▪ Interactive Learning (Manipulatives, Visuals)</li> <li>▪ Acquisition Levels</li> <li>▪ Language Sensitivity</li> <li>▪ Lower the Affective Filter (including Processing Time)</li> <li>▪ Home/School Connection (including Cultural Aspects)</li> </ul>	<ul style="list-style-type: none"> <li>▪ Curriculum Compacting</li> <li>▪ Tiered Assignments</li> <li>▪ Flexible Grouping</li> <li>▪ Acceleration</li> <li>▪ Depth and Complexity</li> <li>▪ Independent Study</li> </ul>

**MATERIALS USED IN TEACHING THE COURSE:** In addition to the basic text (mandatory information – Title, Author, Copyright Date and Publisher), a variety of instructional tools will be used to meet the needs of all students

**Basic Text:** Algebra 1; Smith, 2001; Prentice Hall  
Algebra 1 Concepts and Skills; Larson, 2001; McDougal Littell

### Supplemental materials:

- California Mathematics Review, 2001, Pintozzi, American Book Company,

### Related Career Resources

- There are many web sites that will help with career selection such as Eguidance.com, BRIDGES.com, and icouldbe.org. The software package COIN JR also has career information. Video tapes such as the Futures with Jamie Escalante - School to Career shows how math is used in various careers (FASE productions 800-404-FASE). Other videos are Career Futures. Call the Career/Tech Ed Office (562-989-7872 x 291) for more information on careers.

**EVALUATION:** Student achievement in this course will be measured using multiple assessment tools including but not limited to chapter tests, cumulative tests (End-Of-Course Exam), quizzes, homework, classwork, notebooks, portfolios, projects, and open ended questions.

Textbook	Diagnosis	Monitor	Evaluate
District Developed Assessments	Practice Exam 1 and 2	Integer Tests Standards Based Assessments Open-Ended Math	End-Of-Course Exam
Prentice Hall	Pretest of Skills and Concepts needed for each Chapter	First Five Minute Test Try This Exercises Lesson Quiz Chapter Wrap Up	Chapter Assessment Cumulative Review
McDougal Littell	Chapter Readiness Quiz	Quizzes Standardized Test Practice Chapter Summary and Review Maintaining Skills	Chapter Test Chapter Standardized Test Cumulative Practice

## Scoring Guide for Written Response/Open-Ended Mathematics

Score	Description
<b>4</b>	The student response thoroughly accomplishes the task. <ul style="list-style-type: none"> <li>Shows thorough understanding and use of the central mathematical ideas(s)</li> <li>Includes appropriate and accurate mathematical computations</li> <li>Presents mathematical knowledge and ideas clearly and skillfully, using combinations of mathematical symbols and/or visual means as supporting evidence</li> </ul>
<b>3</b>	The student response substantially accomplishes the task. <ul style="list-style-type: none"> <li>Shows an essential grasp of the central mathematical idea(s)</li> <li>Includes appropriate and generally correct mathematical computations</li> <li>Presents mathematical knowledge and ideas clearly with supporting evidence</li> </ul>
<b>2</b>	The student response partially accomplishes the task. <ul style="list-style-type: none"> <li>Shows a limited grasp of the central mathematical ideas(s)</li> <li>May include incomplete and/or misdirected mathematical computations</li> <li>Presents mathematical knowledge and ideas in an unclear manner or without supporting evidence</li> </ul>
<b>1</b>	The student response makes little or no progress toward accomplishing the task. <ul style="list-style-type: none"> <li>Shows little or no grasp of the central mathematical idea(s)</li> <li>Includes mathematical computations that are incorrect or inappropriate</li> <li>Presents mathematical knowledge and ideas in a barely (if at all) comprehensible manner</li> </ul>

### Portfolio Components

Component	Description	Purpose
<b>Cornell Notes</b>	This is a student-created study guide of organized notes which can be used to study for the End-Of-Course Exam. Math vocabulary for new concepts and processes is correctly defined, illustrated, and written in students' own words.	Students must learn to develop communication skills which include creating and using notes for reference during the year. The notes should also be used to study for comprehensive exams.
<b>Integer Tests</b>	Integer tests will be given throughout the year and the highest score for each test will be recorded. Students must meet the percent correct and the amount of time allowed for each category.	Mastery of integers is critical to students' success in Algebra. Students must pass the High School Exit Exam where the use of calculators is not permitted.
<b>Grade Student Work</b>	Select examples of individual student work such as tests, quizzes and projects. Calculate the mean of the samples and convert to a four point or percent scoring system.	Student work examples demonstrate growth toward understanding of mathematics standards.
<b>Standards Based Assessment</b>	The Standards Based Assessments are located in the Assessment Portfolio Student Workbook. These tests should be completed before the End-Of-Course Exam.	Students take common summative tests to assess proficiency level on individual Math Standards. These tests are indicators of students' depth of understanding in each standard
<b>Written Response/ Open-Ended Math</b>	There are three written response per standard which students should complete. The best score on the written response for each standard is recorded in the portfolio. The written response questions should be completed individually by the student.	Students who are able to write about their thinking and understanding of math concepts have a deeper understanding of math that will enable them to do well on tests like the Golden State and Advanced Placement Exams.
<b>End-Of-Course Exam</b>	A comprehensive exam will be given at the end of the year. The test is not timed and calculators are not allowed.	Students must learn the rigors of taking comprehensive exams in preparation for the California High School Exit Exam and other college entrance exams.

## Algebra 1-2 Portfolio Performance Standards

The assessment portfolio is a communication tool for students to take ownership for their own learning. It allows parents and teacher to follow the development of students' progress towards reaching the standards. It provides students with multiple opportunities to show growth. It is important that all work for the portfolio is completed independently by the student. Students record their own information in the portfolio including the averaging of performance levels and graphing progress towards meeting standards. Students should create a bar graph indicating the level of achievement of each assessment or assignment.

Units	Not Proficient 1	Partial Proficient 2	Proficient 3	Advanced Proficient 4
<b>Cornell Notes</b>				
<b>Basic Operations</b>				
• Graded Student Work				
• Standards Based Assessment				
• OEM 918				
• OEM 919				
• OEM 920				
<b>Linear Equations</b>				
• Graded Student Work				
• Standards Based Assessment				
• OEM 902				
• OEM 903				
• OEM 912				
<b>Polynomials/Factoring</b>				
• Graded Student Work				
• Standards Based Assessment				
• OEM 909				
• OEM 914				
<b>Inequalities</b>				
• Grade Student Work				
• Standards Based Assessment				
<b>Quadratics/Radicals</b>				
• Graded Student Work				
• Standards Based Assessment				
• OEM 904				
• OEM 913				
<b>Integers</b>				
• Addition				
• Subtraction				
• Multiplication				
• Division				
<b>End-Of-Course Exam</b>				

**Grading Policy:** A common grading policy ensures consistency between schools and classrooms across the district.

**Suggested Percent of Grade**

Classwork/Homework (10%)	15% - 20%
Notes/Projects	5%
Chapter Tests	35% - 40%
Quizzes	25% - 30%
Cumulative Tests/End-Of-Course Exam	10% - 15%

**Standard Grading Scale**

- A =** 90% - 100%
- B =** 80% - 89%
- C =** 70% - 79%
- D =** 60% - 69%
- F =** Below 60%

Submitted by: Dixie Dawson

School/Office: Math Office

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