



MIDDLE SCHOOL COURSE OUTLINE

<b>Department</b>	Mathematics	<b>Course Code</b>	3110
<b>Course Title</b>	Mathematics 7 SDAIE		
<b>Abbreviation</b>	Math 7 SDA	<b>Grade Level</b>	7
<b>Course Length</b>	1 year	<b>Co-requisites</b>	ELL Level 3 or 5
<b>Teacher Certification</b>	BCLAD, BCC, CLAD, LDS, SB1969 or SB 395		

**COURSE DESCRIPTION:**

Math 7 SDAIE is a 7<sup>th</sup> grade course designed for English Language Learners who are at the Intermediate and Early Advanced levels of oral, reading and writing in English. English Language Learners in this SDAIE course cover the same content and utilize the same basic textbook as their Fluent English Speaker counterparts. The course varies in the pacing, instructional methodology and supplemental materials used which are designed to provide depth vs. breadth of the content standards, more comprehensible input, and literacy development through the content area.

The foundation for this course is the State Math Standards and the California Mathematics Standards. The course reviews and extends the study of whole numbers, integers, decimals, fractions and percents. Concepts of algebra, discrete mathematics, functions and patterns, geometry, logic, numbers, probability and statistics are included. Attention is given to concrete materials, proportional relationships, multiple representations, patterns and generalizations, error analysis, estimation, real-world applications and problem solving strategies.

**GOALS:**

Students will learn all of the California State Standards for Grade Seven. By the end of grade seven, students are adept at manipulating numbers and equations and understand the general principles at work. Students understand and use factoring of numerators and denominators and properties of exponents. They know the Pythagorean Theorem and solve problems in which they compute the length of an unknown side. Students know how to compute the surface area and volume of basic three-dimensional objects and understand how area and volume change with a change in scale. Students make conversions between different units of measurement. They know and use different representations of fractional numbers (fractions, decimals, and percents) and are proficient at changing from one to another. They increase their facility with ratio and proportion, compute percents of increase and decrease, and compute simple and compound interest. They graph linear functions and understand the idea of slope and its relation to ratio.

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:**

### **Number Sense**

- 1.0 Students know the properties of, and compute with, rational numbers expressed in a variety of forms. (CAHSEE, CST)
- 2.0 Students use exponents, powers, and roots and use exponents in working with fractions. (CAHSEE, CST)

### **Algebra and Functions**

- 1.0 Students express quantitative relationships by using algebraic terminology, expressions, equations, inequalities, and graphs. (CAHSEE, CST)
- 2.0 Students interpret and evaluate expressions involving integer powers and simple roots. (CAHSEE, CST)
- 3.0 Students graph and interpret linear and some nonlinear functions. (CAHSEE, CST)
- 4.0\* Students solve simple linear equations and inequalities over the rational numbers. (CAHSEE, CST)

### **Measurement and Geometry**

- 1.0 Students choose appropriate units of measure and use ratios to convert within and between measurement systems to solve problems. (CAHSEE, CST)
- 2.0 Students compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less common objects. They know how perimeter, area, and volume are affected by changes of scale. (CAHSEE, CST)
- 3.0 Students know the Pythagorean theorem and deepen their understanding of plane and solid geometric shapes by constructing figures that meet given conditions and by identifying attributes of figures. (CAHSEE, CST)

### **Statistics, Data Analysis, and Probability**

- 1.0 Students collect, organize, and represent data sets that have one or more variables and identify relationships among variables within a data set by hand and through the use of an electronic spreadsheet software program. (CAHSEE, CST)

### **Mathematical Reasoning**

- 1.0 Students make decisions about how to approach problems. (CAHSEE)
- 2.0 Students use strategies, skills, and concepts in finding solutions. (CAHSEE)
- 3.0 Students determine a solution is complete and move beyond a particular problem by generalizing to other situations. (CAHSEE)

\* 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

CAHSEE Standard assessed on the California High School Exit Exam

## Academic Literacy in SDAIE Content-Area Classes for ELLs at Levels 3 and 5

The ELD Standards of reading, writing, listening and speaking describe the linguistic pathway that ELLs take to achieve academic literacy in English. SDAIE content area classes play an important role in developing and strengthening students' progress towards this goal. Students should be encouraged to expand their English skills, even though grammatical and vocabulary approximations will occur during this process.

When content-area information and materials have been made comprehensible through instruction in the SDAIE class, ELLs at each level will progress through the following phases of developing academic literacy in English. The students' degrees of literacy in their primary language will significantly affect the pace that students move through these levels.

### ELD Level 3

Upon entering ELD Level 3, students are increasing their control of academic English proficiency about topics that have been explicitly taught to them and some topics that may be new to them. There will be wide gaps in vocabulary. ELLs progressing through this level will:

- Participate in group/class projects, discussions and presentations with simple sentences and complex sentences (with increasing accuracy and fluency when given modeling and constructive feedback)
- Use content area reading strategies (especially pre-reading, KWL, academic participation cards, anticipation guides, Reciprocal Teaching and Question/Answer Relationships) to analyze concepts from taught texts and other course reading materials. By the end of level 3, ELLs are able to comprehend most texts written at 4<sup>th</sup> grade level. Students continue to need extensive modeling and direct instruction, especially when encountering figurative language and sentences with numerous clauses.
- Respond to Curriculum Embedded Assessment prompts (read to them and clarified for them as needed) orally and with simple and complex sentence structures
- Use writing in a variety of ways such as, but not limited to, class note-taking, learning logs, interactive notebooks, response logs, and completing student handouts, homework, and class projects. Students continue to need extensive modeling and direct instruction, especially when writing at differing formality levels for a variety of audiences.
- Understand the need for using test-taking strategies (using taught vocabulary) on the required district/state assessments, such as, End of Course Exams (with alternate presentation and response), and STAR.

### ELD Level 5

Upon entering ELD Level 5, students demonstrate a significant gap between their oral English fluency (high) and their English literacy proficiency (low), even though they have had many years of instruction in English. ELLs progressing through this level will:

- Participate in group/class projects, discussions and presentations with sentences that demonstrate conversational English proficiency
- Need to be taught how to use content area reading strategies (especially pre-reading, KWL, academic participation cards, anticipation guides, Reciprocal Teaching and Question/Answer Relationships) to analyze concepts from taught texts and other course reading materials. Students need extensive modeling, direct instruction, and oral discussions before, during and after reading.
- Respond to Curriculum Embedded Assessment prompts (clarified orally to them as needed). Students need extensive modeling, direct instruction, and oral discussions to move them beyond writing sentences that reflect only conversational English.
- Use writing in a variety of ways such as, but not limited to, class note-taking, learning logs, interactive notebooks, response logs, and completing student handouts, homework, and class projects. Students continue to need extensive modeling and direct instruction, especially when writing at differing formality levels for a variety of audiences.
- Understand the need for using test-taking strategies on the required district/state assessments, such as, End of Course Exams and STAR.

## PERFORMANCE STANDARDS

The California State Board of Education has identified the following performance levels for the Grade 7 California Content Standards Test. The objective of Long Beach Unified School District is to have all students achieve at or above the Proficient Performance Standard (Level).

Grade 7	Far Below Basic	Below Basic	Basic	Proficient	Advanced Proficient
%	0% - 28%	29% - 42%	43% - 62%	63% - 82%	83% - 100%
# Correct	Less than 18	19 – 27	28 – 40	41 – 53	54 - 65

The Long Beach Unified School District has common assessments and assignments that are required for grade seven. 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.

### Mathematics Performance Standard Criteria

Assignments	Far Below Basic (FBB)	Below Basic (BB)	Basic (B)	Proficient (P)	Advanced Proficient (AP)
Key Assignments: LBUSD practice exams for Quarter 1, Quarter 2, Quarter 3, and EOC	The student completes at least 25%; not all work is shown.	The student completes at least 50%; not all work is shown.	The student completes 65% - 79% showing all work.	The student completes 80% - 89% showing all work.	The student completes at least 90% showing all work.
Assessments	FBB	BB	B	P	AP
Standards Based Assessments	0% - 28%	29% - 42%	43% - 62%	63% - 82%	83% - 100%
LBUSD Quarter 1, Quarter 2, and Quarter 3 Exams					
End-Of-Course Exam					

Assessment	Not Proficient 1	Partial Proficient 2	Proficient 3	Advanced Proficient 4
Integer Tests	Less than 80%	80% - 92% 56 of 70 Correct Completed in ≤ 15 mins.	93% - 96% 65 of 70 Correct Completed in ≤ 10 mins.	97% - 100% 68 of 70 Correct Completed in ≤ 5 mins.

## OUTLINE OF CONTENT AND RECOMMENDED TIME ALLOTMENT:

For more detailed information on the context and the benchmarks to assess, refer to the Mathematics Content Standards document. Content time allocations are only suggestions and may be adjusted to suit school site curriculum plans and student needs.

### **Number Sense**

California Content Standards		Adopted Textbook Correlation	Assessments <u>Grade 7 Assessment Portfolio Student Workbook</u>	Key Vocabulary and Recommended Aids	Time
1.0 Students know the properties of, and compute with, rational numbers expressed in a variety of forms:	1.1 Read, write, and compare rational numbers in scientific notation (positive and negative powers of 10) with approximate numbers using scientific notation. (CAHSEE, CST)	Holt Course 2 Ch. 1-3, 2-2, 4-5, 6-1	p. 97	<b>KEY VOCABULARY:</b> Absolute Value Base Commission Common denominator Compound interest Decimal Discount Estimate Exponent Factor Fraction Increase Integer Irrational number Markup Percent Power Rational number Repeating decimal Scientific notation Square root Terminating decimal	7 weeks
	1.2* Add, subtract, multiply, and divide rational numbers (integers, fractions, and terminating decimals) and take positive rational numbers to whole-number powers. (CAHSEE, CST)	Holt Course 2 Ch. 1-4, 1-5, 1-6, 2-3, 2-4, 2-5, 2-6, 4-1			
	1.3 Convert fractions to decimals and percents and use these representations in estimations, computations, and applications. (CAHSEE, CST)	Holt Course 2 Ch. 2-1, 6-1, 6-2, 6-3, 6-4, 6-6			
	1.4* Differentiate between rational and irrational numbers. (CST)	Holt Course 2 Ch. 4-8			
	1.5* Know that every rational number is either a terminating or repeating decimal and be able to convert terminating decimals into reduced fractions. (CST)	Holt Course 2 Ch. 2-1			
	1.6 Calculate the percentage of increases and decreases of a quantity. (CAHSEE, CST)	Holt Course 2 Ch. 6-5			
	1.7* Solve problems that involve discounts, markups, commissions, and profit and compute simple and compound interest. (CAHSEE, CST)	Holt Course 2 Ch. 6-5, 6-6, 6-7			
2.0 Students use exponents, powers, and roots and use exponents in working with fractions:	2.1 Understand negative whole-number exponents. Multiply and divide expressions involving exponents with a common base. (CAHSEE, CST)	Holt Course 2 Ch. 4-2, 4-3	p. 97	<b>VISUALS &amp; DEMOS:</b> Algeblocks Algebra tiles Base-ten blocks Color tiles Factor trees Fraction circles Fraction squares Graph paper Ladder method Number lines Overhead calculator Walk-on number line	2.5 weeks
	2.2* Add and subtract fractions by using factoring to find common denominators. (CAHSEE, CST)	Holt Course 2 Ch. 2-6			
	2.3* Multiply, divide, and simplify rational numbers by using exponent rules. (CAHSEE, CST)	Holt Course 2 Ch. 4-1, 4-3			
	2.4 Use the inverse relationship between raising to a power and extracting the root of a perfect square integer; for an integer that is not square, determine without a calculator the two integers between which its square root lies and explain why. (CAHSEE, CST)	Holt Course 2 Ch. 4-5, 4-6			
	2.5* Understand the meaning of the absolute value of a number; interpret the absolute value as the distance of the number from zero on a number line; and determine the absolute value of real numbers. (CAHSEE, CST)	Holt Course 2 Ch. 1-3			

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 CAHSEE Standard assessed on the California High School Exit Exam

## Algebra and Functions

California Content Standards		Adopted Textbook Correlation	Assessments <u>Grade 7 Assessment Portfolio Student Workbook</u>	Key Vocabulary and Recommended Aids	Time
1.0 Students express quantitative relationships by using algebraic terminology, expressions, equations, inequalities, and graphs:	1.1 Use variables and appropriate operations to write an expression, an equation, an inequality, or a system of equations or inequalities that represents a verbal description (e.g., three less than a number, half as large as area A). (CAHSEE, CST)	Holt Course 2 Ch. 1-2, 1-9, 3-4, 3-5, 3-6, 3-7	p. 61	<b>KEY VOCABULARY:</b> Algebraic expression Associative property Coefficient Commutative property Constant Cubic Direct variation Distribute <b>Distributive property</b> Equation Evaluate Exponent Expression Function Graph Identity Inequality Inverse operation Justify Monomial Numerical expression Order of operations Power Property of equality Radical Rate Ratio Rise Root Run Quadratic Simplify Slope Square root System of equations System of inequalities Term Variable Volume <b>VISUALS &amp; DEMOS:</b> Algeblocks Algebra tiles Graph paper Number lines Overhead calculator Pattern blocks Polygon models Rulers Walk-on coordinate grid	8.5 weeks
	1.2 Use the correct order of operations to evaluate algebraic expressions such as $3(2x + 5)^2$ . (CAHSEE, CST)	Holt Course 2 Ch. 1-1, 4-1			
	1.3* Simplify numerical expressions by applying properties of rational numbers (e.g., identity, inverse, distributive, associative, commutative) and justify the process used. (CST)	Holt Course 2 Ch. 1-7, 1-8, 2-5, 3-1, 3-2			
	1.4 Use algebraic terminology (e.g., variable, equation, term, coefficient, inequality, expression, constant) correctly. (CST)	Holt Course 2 Ch. 1-1, 1-7, 3-2, 3-5			
	1.5 Represent quantitative relationships graphically and interpret the meaning of a specific part of a graph in the situation represented by the graph. (CAHSEE, CST)	Holt Course 2 Ch. 7-7, 7-8			
2.0 Students interpret and evaluate expressions involving integer powers and simple roots:	2.1 Interpret positive whole-number powers as repeated multiplication and negative whole-number powers as repeated division or multiplication by the multiplicative inverse. Simplify and evaluate expressions that include exponents. (CAHSEE, CST)	Holt Course 2 Ch. 4-1, 4-2	p. 61		3 weeks
	2.2 Multiply and divide monomials; extend the process of taking powers and extracting roots to monomials when the latter results in a monomial with an integer exponent. (CAHSEE, CST)	Holt Course 2 Ch. 4-4, 4-6			
3.0 Students graph and interpret linear and some nonlinear functions:	3.1 Graph functions of the form $y = nx^2$ and $y = nx^3$ and use in solving problems. (CAHSEE, CST)	Holt Course 2 Ch. 7-4, 7-5	p. 61		1.5 weeks
	3.2 Plot the values from the volumes of three-dimensional shapes for various values of the edge lengths (e.g., cubes with varying edge lengths or a triangle prism with a fixed height and an equilateral triangle base of varying lengths). (CST)	Holt Course 2 Ch. 10-2			
	3.3* Graph linear functions, noting that the vertical change (change in y-value) per unit of horizontal change (change in x-value) is always the same and know that the ratio ("rise over run") is called the slope of a graph. (CAHSEE, CST)	Holt Course 2 Ch. 7-3, 7-6			
	3.4* Plot the values of quantities whose ratios are always the same (e.g., cost to the number of an item, feet to inches, circumference to diameter of a circle). Fit a line to the plot and understand that the slope of the line equals the quantities. (CAHSEE, CST)	Holt Course 2 Ch. 7-7			
4.0* Students solve simple linear equations and inequalities over the rational numbers:	4.1* Solve two-step linear equations and inequalities in one variable over the rational numbers, interpret the solution or solutions in the context from which they arose, and verify the reasonableness of the results. (CAHSEE, CST)	Holt Course 2 Ch. 1-9, 2-8, 3-8	p. 61		3 weeks
	4.2* Solve multistep problems involving rate, average speed, distance, and time or a direct variation. (CAHSEE, CST)	Holt Course 2 Ch. 3-3, 5-3, 5-4, 7-9			

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## Measurement and Geometry

California Content Standards		Adopted Textbook Correlation	Assessments Grade 7 Assessment Portfolio Student Workbook	Key Vocabulary and Recommended Aids	Time
1.0 Students choose appropriate units of measure and use ratios to convert within and between measurement systems to solve problems:	1.1 Compare weights, capacities, geometric measures, times, and temperatures within and between measurement systems (e.g., miles per hour and feet per second, cubic inches to cubic centimeters). (CAHSEE, CST)	Holt Course 2 Ch. 5-4	p. 85	<b>KEY</b> <b>VOCABULARY:</b> Altitude Angle bisector Area Capacity Celsius Central angle Chord Congruent Coordinate graph Cubic units Cylinder Diagonal Diameter <b>Dimensional analysis</b> Estimate Fahrenheit Image Interior angle Midpoint Net Parallelogram Perimeter Perpendicular bisector Pythagorean Theorem Prism Protractor Quadrilateral Radius Rate Rectangle Reflection Rhombus Scale Skew lines Square Surface area Translation Trapezoid Weight Volume <b>VISUALS &amp; DEMOS:</b> 3-D models Color tiles Compasses Cubic-inch blocks Dot paper Geoboards Graph paper Paper circles Paper triangles Pattern blocks Polygon models Protractors Rulers String	2 weeks
	1.2 Construct and read drawings and models made to scale. (CAHSEE, CST)	Holt Course 2 Ch. 5-7			
	1.3* Use measures expressed as rates (e.g., speed, density) and measures expressed as products (e.g., person-days) to solve problems; check the units of the solutions; and use dimensional analysis to check the reasonableness of the answer. (CAHSEE, CST)	Holt Course 2 Ch. 1-8, 5-2, 5-4			
2.0 Students compute the perimeter, area, and volume of common geometric objects and use the results to find measures of less common objects. They know how perimeter, area, and volume are affected by changes of scale	2.1 Use formulas routinely for finding the perimeter and area of basic two-dimensional figures and the surface area and volume of basic three-dimensional figures, including rectangles, parallelograms, trapezoids, squares, triangles, circles, prisms, and cylinders. (CAHSEE, CST)	Holt Course 2 Ch. 9-1, 9-2, 9-4, 10-2, 10-4	p. 85		3 weeks
	2.2 Estimate and compute the area of more complex or irregular two- and three-dimensional figures by breaking the figures down into more basic geometric objects. (CAHSEE, CST)	Holt Course 2 Ch. 9-1, 9-5, 9-6, 10-4			
	2.3 Compute the length of the perimeter, the surface area of the faces, and the volume of a three-dimensional object built from rectangular solids. Understand that when the lengths of all dimensions are multiplied by a scale factor, the surface area is multiplied by the square of the scale factor and the volume is multiplied by the cube of the scale factor. (CAHSEE, CST)	Holt Course 2 Ch. 10-2, 10-4, 10-7			
	2.4 Relate the changes in measurement with a change of scale to the units used (e.g., square inches, cubic feet) and to conversions between units (1 square foot = 144 square inches or $[1 \text{ ft}^2] = [144 \text{ in}^2]$ , 1 cubic inch is approximately 16.38 cubic centimeters or $[1 \text{ in}^3] = [16.38 \text{ cm}^3]$ ). (CAHSEE, CST)	Holt Course 2 Ch. 9-1, 10-2			
3.0 Students know the Pythagorean theorem and deepen their understanding of plane and solid geometric shapes by constructing figures that meet given conditions and by identifying attributes of figures:	3.1 Identify and construct basic elements of geometric figures (e.g., altitudes, midpoints, diagonals, angle bisectors, and perpendicular bisectors; central angles, radii, diameters, and chords of circles) by using a compass and straightedge. (CST)	Holt Course 2 Ch. 8-1, 8-4, 8-5, 9-3	p. 73		3 weeks
	3.2 Understand and use coordinate graphs to plot simple figures, determine lengths and areas related to them, and determine their image under translations and reflections. (CAHSEE, CST)	Holt Course 2 Ch. 8-5, 8-7, 9-1, 9-2, 9-4			
	3.3* Know and understand the Pythagorean theorem and its converse and use it to find the length of the missing side of a right triangle and the lengths of other line segments and, in some situations, empirically verify the Pythagorean theorem by direct measurement. (CAHSEE, CST)	Holt Course 2 Ch. 4-9, 8-4			
	3.4* Demonstrate an understanding of conditions that indicate two geometrical figures are congruent and what congruence means about the relationships between the sides and angles of the two figures. (CAHSEE, CST)	Holt Course 2 Ch. 8-6			
	3.5 Construct two-dimensional patterns for three-dimensional models, such as cylinders, prisms, and cones.	Holt Course 2 Ch. 10-4, 10-5			
	3.6* Identify elements of three-dimensional geometric objects (e.g., diagonals of rectangular solids) and describe how two or more objects are related in space (e.g., skew lines, the possible ways three planes might intersect). (CST)	Holt Course 2 Ch. 8-2			

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## Statistics, Data Analysis, and Probability

California Content Standards		Adopted Textbook Correlation	Assessments <u>Grade 7</u> <u>Assessment</u> <u>Portfolio</u> <u>Student</u> <u>Workbook</u>	Key Vocabulary and Recommended Aids	Time
1.0 Students collect, organize, and represent data sets that have one or more variables and identify relationships among variables within a data set by hand and through the use of an electronic spreadsheet software program:	1.1 Know various forms of display for data sets, including a stem-and-leaf plot or box-and-whisker plot; use the forms to display a single set of data or to compare two sets of data. (CAHSEE, CST)	Holt Course 2 Ch. 11-1, 11-3		<b>KEY VOCABULARY:</b> Box and whisker plot Data Lower quartile Maximum Median Minimum Negative correlation No correlation Outlier Positive correlation Scatterplot Stem and leaf plot Upper quartile <b>VISUALS &amp; DEMOS:</b> Graph paper Newspaper data Overhead calculator	1.5 weeks
	1.2 Represent two numerical variables on a scatterplot and informally describe how the data points are distributed and any apparent relationship that exists between the two variables (e.g., between time spent on homework and grade level). (CAHSEE, CST)	Holt Course 2 Ch. 11-4			
	1.3* Understand the meaning of, and be able to compute the minimum, the lower quartile, the median, the upper quartile, and the maximum of a data set. (CAHSEE, CST)	Holt Course 2 Ch. 11-2, 11-3			

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## Mathematical Reasoning

California Content Standards		Adopted Textbook Correlation	Assessments <u>Grade 7</u> <u>Assessment</u> <u>Portfolio</u> <u>Student</u> <u>Workbook</u>	Key Vocabulary and Recommended Aids	Time
1.0 Students make decisions about how to approach problems:	1.1 Analyze problems by identifying relationships, distinguishing relevant from irrelevant information, identifying missing information, sequencing and prioritizing information, and observing patterns. (CAHSEE)	Holt Course 2 Mathematical Reasoning occurs throughout text	Mathematical Reasoning is embedded throughout	<b>KEY VOCABULARY:</b> Degree of accuracy Estimation Graph Irrelevant Mathematical conjecture Missing information Prioritizing Reasonable Relevant Sequencing	Mathematical Reasoning is embedded throughout
	1.2 Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed. (CAHSEE)				
	1.3 Determine when and how to break a problem into simpler parts.				
2.0 Students use strategies, skills, and concepts in finding solutions:	2.1 Use estimation to verify the reasonableness of calculated results. (CAHSEE)	Holt Course 2 Mathematical Reasoning occurs throughout text	Mathematical Reasoning is embedded throughout		
	2.2 Apply strategies and results from simpler problems to more complex problems.				
	2.3 Estimate unknown quantities graphically and solve for them by using logical reasoning and arithmetic and algebraic techniques. (CAHSEE)				
	2.4 Make and test conjectures by using both inductive and deductive reasoning. (CAHSEE)				
	2.5 Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.				
	2.6 Express the solution clearly and logically by using the appropriate mathematical notation and terms and clear language; support solutions with evidence in both verbal and symbolic work.				
	2.7 Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.				
	2.8 Make precise calculations and check the validity of the results from the context of the problem.				
3.0 Students determine a solution is complete and move beyond a particular problem by generalizing to other situations:	3.1 Evaluate the reasonableness of the solution in the context of the original situation. (CAHSEE)	Holt Course 2 Mathematical Reasoning occurs throughout text	Mathematical Reasoning is embedded throughout		
	3.2 Note the method of deriving the solution and demonstrate a conceptual understanding of the derivation by solving similar problems.				
	3.3 Develop generalizations of the results obtained and the strategies used and apply them to new problem situations. (CAHSEE)				

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## **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 Manager \*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.

<b>Essential Elements of Effective Instruction Model for Lesson Design Using Task Analysis</b>	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	• 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:

<p><b><u>Reading Strategies in Mathematics</u></b></p> <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>	<p><b><u>SDAIE Strategies for English Learners</u></b></p> <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>	<p><i>Differentiation for Advanced Learners</i></p> <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>
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**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:** Holt Mathematics Course 2: Pre-Algebra; Bennett, et. al; 2008; Holt, Rinehart and Winston

**Supplemental Materials**

- Assessment Portfolio Student Workbooks
- Algebra Power Video for Integers
- Holt Course 2 Focus on California Standards: Intervention Workbook
- Holt Course 2 Homework and Practice Workbook
- Holt Course 2 Know-It Notebook
- Holt Course 2 Review for Mastery Workbook
- Holt Course 2 Spanish Focus on California Standards: Intervention Workbook
- Holt Course 2 Spanish Homework and Practice Workbook
- Holt Course 2 Spanish Know-It Notebook
- Holt Course 2 Spanish Review for Mastery Workbook

**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:**

Assessments include informal (daily math warm-ups, journals, notes, quizzes), authentic (open-ended questions performance tasks) and formal assessments (chapter tests, District Math Facts Tests, standardized tests (STAR) ). A variety of assessment scoring formats should include multiple choice, short answer, rubrics and scoring guides.

Source	Diagnosis	Monitor	Evaluate
District Developed Assessments	Practice End of Course Exam	Integer Tests Practice Exams for Quarter 1, Quarter 2, and Quarter 3 Standards Based Assessments	Quarter 1, Quarter 2, and Quarter 3 Exams End-of-Course Exam
Holt Mathematics Course 2: Pre-Algebra (Grade 7)	Are You Ready? - Chapter Readiness Quiz (text) Pre-Course Review Diagnostic Tests	Spiral Standards Review (text) Study Guide: Review (text) Focus on California Standards: Benchmark Tests (CD-ROM/online) Mastering the Standards Cumulative Reviews (text)	Chapter Tests (Assessment Resources) • Formal Assessment • Alternative Assessment Test Generator (CD-ROM) Lesson Quizzes (teacher's edition) Ready To Go On? – Weekly Assessments (text) Chapter Test (text)

## Scoring Guide for Written Response/Projects

Score	Description
4	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>
3	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>
2	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>
1	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>

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

### **Suggested Percent of Grade**

Assessment:	75%
<ul style="list-style-type: none"> <li>Chapter Tests</li> <li>Quizzes</li> <li>Standards Based Assessments</li> <li>End-of-Course Exam 5% (Last Quarter)</li> </ul>	
Homework:	10%
Cornell Notes:	5%
Other (Classwork/Projects):	10%

### **Standard Grading Scale**

<b>A</b>	90% - 100%
<b>B</b>	80% - 89%
<b>C</b>	70% - 79%
<b>D</b>	60% - 69%
<b>F</b>	Below 60%

Submitted by: Becky Afghani

School/Office: Math Office

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