

YOSEMITE HIGH SCHOOL
50200 ROAD 427 - OAKHURST, CA 93644
(559)683-4667

COURSE TITLE: ALGEBRA A
DEPARTMENT: MATHEMATICS

REQUIREMENT SATISFIED:

High School:	X	Model Curriculum Standards:	X
State College:		Frameworks:	X
UC Approved:			

GRADE LEVEL: 9-11 LENGTH OF COURSE: 1 SEMESTER CREDITS: 5

PREREQUISITE: Proficient in math at 7th grade level for Algebra A

TEXTBOOKS: Math Steps, Level 7, California Edition; Houghton Mifflin, Publisher

INSTRUCTIONAL MATERIALS: Accelerated Math Software

COURSE DESCRIPTION:

The two-year course (Algebra ABCD) will cover all California State Algebra 1 standards. The completion of this 2-year course is UC approved as the equivalent for Algebra 1.

COURSE OUTLINE/ALIGNMENT TO CALIFORNIA STATE STANDARDS AND EXPECTED SCHOOLWIDE LEARNING RESULTS:

NS = Number Sense
 AF = Algebra & Functions
 MR = Mathematical Reasoning
 MG = Measurement and Geometry
 SDP = Statistics, Data Analysis, Probability

<u>Chapter/ Text</u>	<u>Accelerated Math Objective (7th grade unless Otherwise indicated</u>	<u>Assignment Course Content/ Objective</u>	<u>Standards Addressed</u>	<u>ESLRs</u>
2.1	17	Compare, order decimals	1.1NS	1,2,3,4,6
2.2	19,29	Round and estimate decimals	1.2NS	1,2,3,4,6
2.3	48,52 (6 th grade)	Add, subtract decimals	1.2NS	1,2,3,4,6
2.4	34	Multiply decimals, powers of ten	1.2NS	1,2,3,4,6
2.5	38	Divide decimals, powers of ten	1.2NS	1,2,3,4,6
2.6	4,5,6	Prime Factorization (GCF, LCM)	2.2NS	1,2,3,4,6

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2.7	88 (6 th grade)	Equivalent fractions	1.2NS	1,2,3,4,6
2.8	18	Equivalent fractions, decimals	1.3NS	1,2,3,4,6
2.9	46	Compare, order fractions	1.1NS 1.3NS	1,2,3,4,6
2.10	52,53	Add fractions, mixed numbers	1.2NS 2.2NS	1,2,3,4,6
2.11	55,56,57	Subtract fractions, mixed numbers	1.2NS 2.2NS	1,2,3,4,6
2.12	215 (6 th grade)	Use a diagram	1.3NS	1,2,3,4,6
2.13	61,62,63,64	Multiply fractions, mixed numbers	1.2NS	1,2,3,4,6
2.14	66,67	Divide fractions, mixed numbers	1.2NS	1,2,3,4,6
2.15	216 (6 th grade)	Draw a diagram	1.1MR 2.5MR 2.6MR	1,2,3,4,6
3.1	70,74	Metric units of length	1.1MR 3.1MR	1,2,3,4,6
3.2	75,76	Metric units of capacity, weight	1.1MG	1,2,3,4,6
3.5	71	Customary units of length	1.1MG	1,2,3,4,6
3.6	72,73	Customary units of capacity, weight	1.1MG	1,2,3,4,6
3.7	75,76	Customary units of area, volume	1.1MG 2.4MG	1,2,3,4,6

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3.8	139 (6 th grade)	Temperature, line graphs	1.1MG 1.5AF 1.1SDP	1,2,3,4,6
3.9		Time conversions (12/24 hr. clock)	1.1MG	1,2,3,4,6
3.10	215 (6 th grade), 216 (6 th grade)	Making a table	1.1MR 2.5MR	1,2,3,4,6
4.1	154.155	Rates, ratios	1.1MG 1.3MG	1,2,3,4,6
4.2	158	Unit rates	4.1AF 4.2AF 2.6MR	1,2,3,4,6
4.3	159,160,161	Proportions	4.1AF	1,2,3,4,6
4.4	204 (6 th grade), 205 (6 th grade), 162	Direct proportion	4.1AF	1,2,3,4,6
4.5		Inverse proportion	4.1AF	1,2,3,4,6
4.7	89,162	Scale drawings	1.1MG 1.3MG 4.2AF 2.1MR 3.1MR	1,2,3,4,6
4.8	146,147,148	Percents, decimals, fractions	1.2NS 1.3AF	1,2,3,4,6
4.9	149,150,152,153	Fractional, decimal percents	1.3NS 1.3AF	1,2,3,4,6
4.10	151	Percents greater than 100%	1.4NS 1.3AF	1,2,3,4,6
5.1	165	Percent equation/solve for number	1.2NS 1.3MG 1.1AF 4.1AF	1,2,3,4,6

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5.2	167	Percent equation/solve for base	1.2NS 1.3MG 1.1AF 4.2AF	1,2,3,4,6
5.3	169	Percent equation/solve for percent	1.2NS 1.3MG 1.1AF 4.2AF	1,2,3,4,6
5.5	163,164	Percent	1.5NS 1.2MG 4.2AF	1,2,3,4,6
5.6	171	Discount	1.3NS 1.6NS 1.7NS 1.4MG 4.2AF	1,2,3,4,6
5.7		List price, net price	1.3NS 1.6NS 1.7NS 1.4MG 4.2AF	1,2,3,4,6
5.8		Commission	1.3NS 1.7NS 1.4MG 4.2AF	1,2,3,4,6
5.9	172	Simple and compound	1.3NS 1.8NS 1.5MG 4.2AF	1,2,3,4,6
5.10		Use a table		1,2,3,4,6
1.1	170-176 (6 th grade) 142-145	Whole numbers, data	1.8NS 1.9MG 1,1AF 4.2AF	1,2,3,4,6

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6.1	128,129	Line plots, histograms	1.1SDP 2.5MR	1,2,3,4,6
6.2	130	Stem-and-leaf plots	1.1SDP 2.5MR	1,2,3,4,6
6.3	131	Box-and-whisker plots	1.1SDP 1.3SDP 2.5MR	1,2,3,4,6
6.4	124 (6 th grade)	Scatter plots	1.1SDP 1.2SDP 1.3SDP	1,2,3,4,6
6.5	172 (6 th grade)	Misleading graphs	1.1SDP 1.1MR	1,2,3,4,6
6.6	133	Making predictions	1.5AF 1.2SDP 1.2MR	1,2,3,4,6
6.7	134	Problem solving: making a list	2.5MR 3.3MR	1,2,3,4,6
6.8	135,136	Permutations, combinations	1.1MR 1.2MR	1,2,3,4,6
6.9	137	Probability: independent events	2.5MR 3.2MR	1,2,3,4,6
6.10	139,140	Probability: dependent events	2.5MR 3.2MR	1,2,3,4,6
6.11	124-127, 138, 140	Problem solving: using graphs, tables	1.5AF 1.1SDP 2.5MR	1,2,3,4,6
7.1		Points, lines, angles	3.1MG 1.3MR	1,2,3,4,6
7.2		Planes	3.1MG 3.6MG	1,2,3,4,6

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7.3	79,80	Measuring angles	1.2NS 3.1MG 1.3MR	1,2,3,4,6
7.4	81	Angle relationships	1.2NS 3.1MG 3.4MG 2.5MR	1,2,3,4,6
7.5	101,102	Angle relationships of parallel lines	3.1MG 3.4MG 1.2MR	1,2,3,4,6
7.6	84	Triangles	1.3NS 3.1MG 3.4MG	1,2,3,4,6
7.7		Problem solving strategy: find a pattern	1.2NS 1.1MR 2.2MR 2.4MR 3.3MR	1,2,3,4,6
7.10	82,83,88	Polygons, congruent figures	1.2NS 3.1MG 3.4MG	1,2,3,4,6
7.11	103	Circles, central angles	3.1MG	1,2,3,4,6
7.12	126	Making, interpreting circle graphs	3.1MG	1,2,3,4,6
7.13	91-94	Polyhedrons	3.6MG 1.1MR 2.3MR 2.4MR 3.2MR	1,2,3,4,6

DISTRICT/STATE CONTENT STANDARDS ADDRESSED:

Grade 6- Number Sense

- 1.0 Students compare and order positive and negative fractions, decimals, and mixed numbers. Students solve problems involving fractions, ratios, proportions, percentages:
- 1.1 Compare and order positive and negative fractions, decimals, and mixed numbers and place them on a number line.
 - 1.2 Interpret and use ratios in different contexts (e.g., batting averages, miles per hour) to show the relative sizes of two quantities, using appropriate notations (a/b , a to b , $a:b$).
 - 1.3 Use proportions to solve problems (e.g., determine the value of N if $4/7=N/21$, find the length of a side of a polygon similar to a known polygon). Use cross-multiplication as a method of solving such problems, understanding it as the multiplication of both sides of an equation by a multiplicative inverse.
 - 1.4 Calculate given percentages of quantities and solve problems involving discounts at sales, interest earned, and tips.
- 2.0 Students calculate and solve problems involving addition, subtraction, multiplication, and division of positive fractions and explain why a particular operation was used for a given situation.
- 2.1 Solve problems involving addition, subtraction, multiplication, and division of positive fractions and explain why a particular operation was used for a given situation.
 - 2.2 Explain the meaning of multiplication and division of positive fractions and perform the calculations (e.g., $5/8 \div 15/16 = 5/8 \times 16/15 = 2/3$).
 - 2.3 Solve addition, subtraction, multiplication, and division problems, including those arising in concrete situations, that use positive and negative integers and combinations of these operations.
 - 2.3 Determine the least common multiple and the greatest common divisor of whole numbers; use them to solve problems with fractions (e.g., to find a common denominator to add two fractions or to find the reduced form for a fraction).
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Grade 6- Algebra and Functions

- 1.0 Students write verbal expressions and sentences as algebraic expressions and equations; they evaluate algebraic expressions, solve simple linear equations, and graph and interpret their results:

- 1.1 Write and solve one-step linear equations in one variable.
 - 1.2 Write and evaluate an algebraic expression for a given situation, using up to three variables.
 - 1.3 Apply algebraic order of operations and the commutative, associative, and distributive properties to evaluate expressions; and justify each step in the process.
 - 1.4 Solve problems manually by using the correct order of operations or by using a scientific calculator.
- 2.0 Students analyze and use tables, graphs, and rules to solve problems involving rates and proportions:
- 2.1 Convert one unit of measurement to another (e.g., from feet to miles, from centimeters to inches).
 - 2.2 Demonstrate an understanding that rate is a measure of one quantity per unit value of another quantity.
 - 2.3 Solve problems involving rates, average speed, distance, and time.
- 3.0 Students investigate geometric patterns and describe them algebraically:
- 3.1 Use variables in expressions describing geometric quantities (e.g., $P=2w+ 2l$, $A = 1/2bh$, $C = \pi d$ - the formulas for the perimeter of a rectangle, the area of a triangle, and the circumference of a circle, respectively).
 - 3.2 Express in symbolic form simple relationships arising from geometry.

Grade 6- Measurement and Geometry

- 1.0 Students deepen their understanding of the measurement of plane and solid shapes and use this understanding to solve problems:
- 1.1 Understand the concept of a constant such as π ; know the formulas for the circumference and area of a circle.
 - 1.2 Know common estimate of π (3.14; $22/7$) and use these values to estimate and calculate the circumference and the area of circles; compare with actual measurements.
 - 1.3 Know and use the formulas for the volume of triangular prisms and cylinders (area of base x height); compare these formulas and explain the similarity between them and the formula for the volume of a rectangular solid.
- 2.0 Students identify and describe the properties of two-dimensional figures:
- 2.1 Identify angles as vertical, adjacent, complementary, or supplementary and provide descriptions of these terms.

- 2.2 Use the properties of complementary and supplementary angles and the sum of the angles of a triangle to solve problems involving an unknown angle.
- 2.3 Draw quadrilaterals and triangles from given information about them (e.g., a quadrilateral having equal sides but no right angles, a right isosceles triangle).

Grade 6- Statistics, Data Analysis, Probability

- 1.0 Students compute and analyze statistical measurements for data sets:
 - 1.1 Compute the range, mean, median, and mode of data sets.
 - 1.2 Understand how additional data added to data sets may affect these computations of measures of central tendency.
 - 1.3 Understand how the inclusion or exclusion of outliers affects measurement of central tendency.
 - 1.4 Know why a specific measure of central tendency (mean, median, mode) provides the most useful information in a given context.
- 2.0 Students use data samples of a population and describe the characteristics and limitations of the samples:
 - 2.1 Compare different samples of a population with the data from the entire population and identify a situation in which it makes sense to use a sample.
 - 2.2 Identify different ways of selecting a sample (e.g., convenience sampling, responses to a survey, random sampling) and which method makes a sample more representative for a population.
 - 2.3 Analyze data displays and explain why the way in which the question was asked might have influenced the results obtained and why the way in which the results were displayed might have influenced the conclusions reached.
 - 2.4 Identify data that represent sampling errors and explain why the sample (and the display) might be biased.
 - 2.5 Identify claims based on statistical data and, in simple cases, evaluate the validity of the claims.
- 3.0 Students determine theoretical and experimental probabilities and use these to make predictions about events:
 - 3.1 Represent all possible outcomes for compound events in an organized way (e.g., tables, grids, tree diagrams) and express the theoretical probability of each outcome.
 - 3.2 Use data to estimate the probability of future events (e.g., batting averages or number of accidents per mile driven).

- 3.3 Represent probabilities as ratios, proportions, decimals between 0 and 1, and percentages between 0 and 100 and verify that the probabilities computed are reasonable; know that if P is the probability of an event, $1-P$ is the probability of an event not occurring.
- 3.4 Understand that the probability of either of two disjoint events occurring in the sum of the two individual probabilities and that the probability of one event following another, in independent trials, is the product of the two probabilities.
- 3.5 Understand the difference between independent and dependent events.

Grade 6- Mathematical Reasoning

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.
- 1.2 Formulate and justify mathematical conjectures based on a general description of the mathematical question or problem posed.
- 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.
- 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.
- 2.4 Use a variety of methods, such as words, numbers, symbols, charts, graphs, tables, diagrams, and models, to explain mathematical reasoning.
- 2.5 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.
- 2.6 Indicate the relative advantages of exact and approximate solutions to problems and give answers to a specified degree of accuracy.
- 2.7 Make precise calculations and check the validity of the results from the context of the problem.

3.0 Students 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.
- 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 in new problem situations.*

OUTCOMES:

Students will demonstrate basic competency in course standards by achieving a minimum 60% proficiency on coursework or by passing the final exam.

INSTRUCTIONAL STRATEGIES:

*Direct instruction
Group work
Individual instruction
Peer tutoring*

ASSESSMENT:

*Teacher prepared tests and quizzes
Department-wide benchmark assessments including unit, mid-term, and final exams
Review of student work samples including class work and homework.
Student demonstrations
Other informal assessments*