

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

COURSE TITLE: ALGEBRA SUPPORT
DEPARTMENT: MATH

REQUIREMENT SATISFIED:

High School:	x (Elective)	Model Curriculum Standards:
State College:		Frameworks:
UC Approved:		

GRADE LEVEL: 9-12 LENGTH OF COURSE: Semester/Year CREDITS: 5-10

PREREQUISITE: Students who have passed the Algebra Prognosis Test with 71-75. Recommendation of Feeder School and/or Algebra teacher.

TEXTBOOKS: None

COURSE DESCRIPTION:

Students are provided teacher support to practice Algebra skills. Students will study number concepts, algebraic mechanics and applications, problem solving, logical reasoning and use of functions. The course will also emphasize study skills and work habits necessary for success in Algebra. The teacher will continually assess the class's weak areas in their study of algebra, and provide additional instruction and practice as needed. The course is not a study hall -- the students are to complete their regular homework prior to coming to Algebra Support each day.

Students who successfully complete this support class earn elective credit. This course does not count toward completion of the math graduation requirement. Students may enter and exit at semester.

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

<u>Chapter/ Text</u>	<u>Accelerated Math Objective</u>	<u>Assignment Course Content/Objective</u>	<u>Standards Addressed*</u>	<u>ESLRS</u>
1.1	12, 25, 30	Translate verbal expressions into mathematical expressions.	2	1,2,3,4,6
1.2	9, 10, 11, 26, 31	Use the order of operations to evaluate expressions.	2	1,2,3,4,6
1.3	47, 48	Solve open sentences by performing arithmetic operations.	2	1,2,3,4,6
1.5	28,29	Use the distributive property to simplify expressions.	1	1,2,3,4,6
1.6	19, 20	Recognize and use the commutative and associative properties when simplifying expressions.	1	1,2,3,4,6
2.1	1	State the coordinate of a point on a number line. Graph integers on a number line. Add integers by using a number line.	2	1,2,3,4,6
2.2	2, 3, 4, 13, 14	Find the absolute value of a number. Add integers without a number line. Subtract integers.	2	1,2,3,4,6

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

<u>Chapter/ Text</u>	<u>Accelerated Math Objective</u>	<u>Assignment Course Content/Objective</u>	<u>Standards Addressed*</u>	<u>ESLRS</u>
2.3	146	Compare numbers, write Inequalities on a number line.	2	1,2,3,4,6
2.6	5,6,16	Multiply rational numbers.	2,4,5	1,2,3,4,6
2.7	7,17	Divide rational numbers.	2,4,5	1,2,3,4,6
3.1	47	Solve equations using addition.	2,4,5	1,2,3,4,6
3.2	48	Solve equations using subtraction.	2,4,5	1,2,3,4,6
3.3	48	Solve equations using multiplication and division.	2,4,5	1,2,3,4,6
3.5	46, 49	Solve equations involving more than one operation.	2,4,5	1,2,3,4,6
3.6	50,51,128	Solve equations containing group symbols.	2,4,5	1,2,3,4,6
3.7	53	Solve equations containing fractions or decimals.	2,4,5	1,2,3,4,6
4.1	183	Solve proportions. (Grade 6)	1.6NS	1,2,3,4,6
9.1	56,57	Graph ordered pairs on a coordinate plane.	Prior Standard	
12.2		Find approximate values for square roots.	2	1,2,3,4,6
5.1	141	Solve inequalities by using addition and subtraction.	4,5	1,2,3,4,6
5.2	142	Solve inequalities by using multiplication and division.	4,5	1,2,3,4,6
5.3	142, 143, 146, 147	Solve inequalities involving more than one operation.	4,5	1,2,3,4,6
5.5	148	Solve compound inequalities and graph their solution sets.	4,5,6	1,2,3,4,6
5.6	73, 144, 149	Solve open sentences involving absolute value and graph the solutions.	3	1,2,3,4,6
9.2	106, 110	Identify the domain, range, and inverse of a relation.	17	1,2,3,4,6
9.3	53	Solve linear equations for a specific variable.	5,7,16	1,2,3,4,6

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

<u>Chapter/ Text</u>	<u>Accelerated Math Objective</u>	<u>Assignment Course Content/Objective</u>	<u>Standards Addressed*</u>	<u>ESLRS</u>
9.4	62, 71	Graph linear equations on a plane.	6	1,2,3,4,6
9.5	107, 111, 112	Determine whether a given relation is a function. Calculate functional values for a given function.	16,18	1,2,3,6
9.7	62	Write an equation to represent a relation, given a chart of values.	16	1,2,3,6
10.1	58, 59	Find a slope of a line, given the coordinates of two points on the line.	8	1,2,3,4,6
10.2	58,62,63	Write a linear equation in standard form given the coordinates of two points on the line.	7	1,2,3,4,6
10.3	60, 61	Write an equation of a line in slope-intercept form given the slope and y-intercept. Determine the x- and y-intercepts of a graph.	6	1,2,3,4,6
10.4	69, 70, 71	Graph linear equations using the x- and y-intercepts or the slope and y-intercept.	6	1,2,3,4,6
10.5	63, 64, 65, 66	Write a linear equation in slope-intercept form given the slope of a line and the coordinates of a point on the line or the coordinates of two points on the line.	7	1,2,3,4,6
10.6	67	Write an equation of a line that passes through a given point and is parallel or perpendicular to the graph of a given equation.	8	1,2,3,4,6
11.2	130, 131	Solve systems of equations by graphing and determine whether a system has one solution, no solutions, or infinitely many solutions by graphing.	6,9	1,2,3,4,6
11.3	132, 133	Solve systems of equations by the substitution method.	9	1,2,3,4,6

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11.4	134, 135, 136	Solve systems of equations by the elimination method using addition and subtraction.	9	1,2,3,4,6
11.5	134, 135, 136	Solve systems of equations by the elimination method using multiplication and addition.	9	1,2,3,4,6
11.6	150, 151	Solve systems of inequalities by graphing.	6,9	1,2,3,4,6
12.4	167	Identify irrational numbers.	1	1,2,3,4,6
12.5	167, 170, 172, 173, 174	Simplify square roots and radical expressions that contain variables.	2	1,2,3,4,6
12.6	168, 169, 171	Simplify radical expressions involving addition and subtraction.	2	1,2,3,4,6
12.7	175, 176	Solve radical equations.	2	1,2,3,4,6
13.1	125	Find the equation of the axis of symmetry and the coordinates of the vertex of the graph of a quadratic function. Graph quadratic functions.	21	1,2,3,4,6
13.2	125	Find the roots of a quadratic equation by graphing.	21	1,2,3,4,6
13.4	122, 123	Solve quadratic equations by completing the square.	14,19	1,2,3,4,6
13.5	124	Solve quadratic equations by using the quadratic formula.	19,20, 21	1,2,3,4,6
13.6	124	Evaluate the discriminant of a quadratic equation to determine the nature of the roots of the equation.	21,22	1,2,3,4,6
13.7	129	Solve problems that can be represented by quadratic equations.	23	1,2,3,4,6

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6.2	34, 35, 39, 40	Multiply monomials and simplify expressions involving powers of monomials.	2,10	1,2,3,4,6
6.3	32, 37, 38	Simplify expressions containing negative exponents and involving quotients of monomials.	2,10	1,2,3,4,6
6.5	75, 76, 77	Find the degree of a polynomial and arrange the terms so that the powers of a certain variable are in ascending or descending order.	10	1,2,3,4,6
6.6	79, 80, 81	Add and subtract polynomials.	10	1,2,3,4,6
6.7	83	Multiply a polynomial by a monomial. Simplify expressions involving polynomials.	10	1,2,3,4,6
6.8	84, 85, 86,	Multiply two polynomials using the FOIL method or distributive property.	10	1,2,3,4,6
6.9	87	Use the patterns for $(a+b)^2$, $(a-b)^2$, and $(a+b)(a-b)$.	10	1,2,3,4,6
7.2	95	Use the GCF and the distributive property to factor polynomials	11	1,2,3,4,6
7.5	97, 98, 99, 104	Factor quadratic trinomials.	11	1,2,3,4,6
7.6	102	Identify and factor polynomials that are the differences of squares.	11	1,2,3,4,6
7.8	96, 100, 103	Factor polynomials by applying the various methods of factoring.	11	1,2,3,4,6
7.9	120	Use the zero product property to solve equations.	14	1,2,3,4,6

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7.10	120	Solve equations by using various methods of factoring and applying the zero product property.	14	1,2,3,4,6
8.1	154	Simplify rational expressions.	12	1,2,3,4,6
8.2	157	Multiply rational expressions.	13	1,2,3,4,6
8.3	92, 158, 159	Divide rational expressions.	13	1,2,3,4,6
8.4	93	Divide polynomials by binomials.	13	1,2,3,4,6
8.5	160, 162	Add and subtract rational expressions with like denominators.	13	1,2,3,4,6
8.7	161, 163	Add or subtract rational expressions with unlike denominators.	13	1,2,3,4,6
8.8	164	Simplify mixed expressions and complex fractions.	13	1,2,3,4,6
8.9	52, 165	Solve rational equations.	13,15	1,2,3,4,6
8.10	53	Solve formulas for a specified variable and use formulas that involve rational expressions.	13	1,2,3,4,6
4.6	54, 140	Solve mixture problems.	5	1,2,3,4,6
4.7	55, 137	Solve problems involving uniform motion by using the formula $d=rt$.	5,15	1,2,3,4,6
4.8	182, 184	Solve problems involving direct variations.	15	1,2,3,4,6
4.9	185	Solve problems involving inverse variations.	15	1,2,3,4,6

DISTRICT/STATE CONTENT STANDARDS ADDRESSED:

1. Students identify and use the arithmetic properties of subsets of integers, rational, irrational and real numbers. This includes closure properties for the four basic arithmetic operations where applicable.
 - 1.1 Students use properties of numbers to demonstrate that assertions are true or false.

2. *Students understand and use such operations as taking the opposite, reciprocal, raising to a power, and taking a root. This includes the understanding and use of the rules of exponents.*
3. *Students solve equations and inequalities involving absolute values.*
4. *Students simplify expressions prior to solving linear equations and inequalities in one variable such as $3(2x-5)+4(x-2)=12$.*
5. *Students solve multi-step problems including word problems involving linear equations and linear inequalities in one variable with justification of each step.*
6. *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., sketch the region defined by $2x+6y<4$).*
7. *Students verify that a point lies on a line given an equation of the line. Students are able to derive linear equations using the point-slope formula.*
8. *Students understand the concepts of parallel and perpendicular lines and how their slopes are related. Students are able to find the equation of a line perpendicular to a given line that passes through a given point.*
9. *Students solve a system of two linear equations in two variables algebraically and are able to interpret the answer graphically. Students are able to use this to solve a system of two linear inequalities in two variables and to sketch the solution sets.*
10. *Students add, subtract, multiply and divide monomials and polynomials. Students solve multi-step problems, including word problems, using these techniques.*
11. *Students apply basic factoring techniques to second- and simple third-degree polynomials. These techniques include finding a common factor for all of the terms in a polynomial, recognizing the difference of two squares, and recognizing perfect squares of binomials.*
12. *Students simplify fractions with polynomials in the numerator and denominator by factoring both and reducing to lowest terms.*
13. *Students add, subtract, multiply, and divide rational expressions and functions. Students solve both computationally and conceptually challenging problems using these techniques.*
14. *Students solve a quadratic equation by factoring or completing a square.*
15. *Students apply algebraic techniques to rate problems, work problems, and percent mixture problems.*
16. *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.*
17. *Students determine the domain of independent variables and range of dependent variables defined by a graph, a set of ordered pairs, or symbolic expression.*
18. *Students determine whether a relation defined by a graph, a set of ordered pairs, or symbolic expression is a function and justify the conclusion.*

19. Students know the quadratic formula and are familiar with its proof by completing the square.
20. Students use the quadratic formula to find the roots of a second degree polynomial and to solve quadratic equations.
21. Students graph quadratic functions and know that their roots are the x -intercepts.
22. Students use the quadratic formula and/or factoring techniques to determine whether the graph of a quadratic function will intersect the x -axis in zero, one, or two points.
23. Students apply quadratic equations to physical problems such as the motion of an object under the force of gravity.
24. Students use and know simple aspects of a logical argument.
 - 24.1 Students explain the difference between inductive and deductive reasoning and identify and provide examples of each.
 - 24.2 Students identify the hypothesis and conclusion in logical deduction.
 - 24.3 Students use counterexamples to show that an assertion is false and recognize that a single counterexample is sufficient to refute an assertion.
25. 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.
 - 25.1 Students use properties of numbers to construct simple valid arguments (direct and indirect) for, or formulate counterexamples to, claimed assertions.
 - 25.2 Students judge the validity of an argument based on whether the properties of the real number system and order of operations have been applied correctly at each step.
 - 25.3 Given a specific algebraic statement involving linear, quadratic, or absolute value expressions, equations or inequalities, students determine if the statement is true sometimes, always, or never.

OUTCOMES:

Students will pass their regular algebra class with a C or better.

INSTRUCTIONAL STRATEGIES:

Individual and group instruction, individual and group practice, and student presented examples, as needed.

ASSESSMENT:

Students are awarded points for having their Algebra homework complete when class begins, and for participating in the activities in class. There will be textbook, algebra workbook and worksheet activities to practice skills. There may be quizzes and/or tests at the teacher's discretion.