



El Camino College
COURSE OUTLINE OF RECORD – Official

Course Acronym:	AHSD
Course Number:	512
Descriptive Title:	High School Algebra 1A
Division:	Adult High School Diploma
Department:	Adult High School Diploma
Course Disciplines:	Adult High School Diploma
Catalog Description:	This noncredit high school level course is a study of the language, concepts, and techniques of basic algebra, including signed numbers, expressions and equations, formulas, powers and roots, and inequalities. This course lays a foundation for upper-level math and science courses. Successful completion of this course contributes to progress toward a high school diploma or equivalent. From 1-10 high school credits can be earned in 15-hour modules. Note: This course is open entry/open exit.
Prerequisite:	AHSD 511 or placement based on the math assessment process
Co-requisite:	
Recommended Preparation:	
Enrollment Limitation:	
Hours Lecture (per week):	.83 to 8.33
Hours Laboratory (per week):	0
Outside Study Hours:	1.66 to 16.66
Total Course Hours:	15 to 150
Course Units:	0
Grading Method:	Pass/No Pass/SP
Credit Status:	Noncredit
Transfer CSU:	No
Effective Date:	
Transfer UC:	No
Effective Date:	
General Education:	ECC
Term:	
Other:	
CSU GE:	
Term:	
Other:	
IGETC:	

Term:	
Other:	
Cal-GETC:	
Term:	
Other:	
Student Learning Outcomes:	Upon completion of the course, students will be able to: 1. demonstrate simplification, manipulation, and evaluation of expressions with roots and powers, and the ability to use the rules of exponents. 2. solve and graph linear, absolute value, and exponential equations and inequalities in one variable, and linear equations and inequalities in two variables, and manipulate formulas. 3. solve algebraic word problems.
Course Objectives:	1. Compute square and cubic roots and powers of constants. 2. Calculate positive integer roots and powers of variables using rules of exponents. 3. Simplify multi-term expressions with roots and powers by correctly combining like terms. 4. Evaluate complex expressions in one variable. 5. Demonstrate properties of algebraic and numeric operations - commutative, associative, distributive, identity, transitive, zero product. 6. Use variables to represent unknown values or varying values. 7. Solve one- and two-step equations in one variable. 8. Solve multi-step equations in one variable. 9. Graph equations in two variables, correctly interpreting slope and intercept information. 10. Graph and solve absolute value equations in one or two variables. 11. Solve simple inequalities in one variable. 12. Solve compound inequalities with 'and' or 'or' in one variable. 13. Graph and solve exponential equations in one variable. 14. Define variables, identify question asked, write equations to encapsulate information given in word problem. 15. Develop distinct strategies for approaching different categories of word problems. 16. Solve income, value, percent, interest and depreciation problems; area and perimeter problems; time-rate-distance problems; and direct and inverse variation problems. 17. Add and subtract monomials, binomials and polynomials.

	18. Multiply monomials. 19. Multiply a binomial or polynomial by a monomial. 20. Multiply binomials and trinomials. 21. Transform formulas to make different variables the subject of the formula. 22. Categorize relations and function expressed as graphs or tables or equations.
Major Topics:	I. Signed numbers (lecture) A. The number line B. Arithmetic operations on signed numbers C. Reciprocals D. Factors E. Absolute value II. Powers and roots (lecture) A. Integer exponents and rules of exponents B. Exponential equations in one variable C. Scientific notation D. Square and cube roots E. Simple word problems using powers and roots III. Algebraic variables and expressions (lecture) A. Different uses of variables as unknown value and as changing value B. Grouping symbols, like terms, and simplification of expressions C. Translate words into algebraic symbols and expressions D. Write, recognize, and evaluate complex algebraic expressions IV. Equations and formulas (lecture) A. Translate sentences into equations which can be used to solve word problems such as income, value, and interest B. Use properties of algebraic operations - commutative, associative, distributive, identity, transitive, zero product C. Solve one- and two-step equations D. Solve multi-step equations

	E. Graph linear equations F. Use direct and inverse variation equations to solve word problems G. Contrast functions and relations H. Change subject of a formula V. Monomials and polynomials (lecture) A. Add and subtract monomials and polynomials B. Multiply monomials and binomials C. Multiply a polynomial by a monomial D. Multiply polynomials E. Solve word problems using monomials and binomials (e.g., time-rate-distance, area, and problems without solutions) VI. Inequalities and absolute value (lecture) A. Order of real numbers B. Solve inequalities in one variable C. Solve compound conjoined and disjointed inequalities D. Solve absolute value equations and inequalities
Total Lecture Hours:	15 to 150
Total Laboratory Hours:	0
Total Hours:	15 to 150
A.1. Primary Methods of Evaluation (Part 1 - CCN courses only):	
A.2. Primary Method of Evaluation (Part 2 - all courses; choose one):	2) Problem solving demonstrations (computational or non-computational)
Typical Assignment Using Primary Method of Evaluation:	Using separate sheets of graph paper, graph the exponential functions $y = 2^x$, $y = 3^x$, $y = 5^x$, $y = x^2$, $y = x^3$, and $y = x^5$. Make a list of all similarities that you find between/among any two or more of these graphs. What conjectures would you make from your observations?
Critical Thinking Assignment 1:	Working in groups of three, you will be given a piece of paper which is 5 inches by 8 inches and a roll of 50 pennies. Try arranging the pennies on the paper in different ways, and keep a record of the arrangements and the number of pennies you can place on the paper with each arrangement. Which arrangement allows the largest number of pennies to be placed on the

	page? Can you explain why that arrangement is maximized? Next, try this same problem with a 4 by 10 inch piece of paper. Do you get the same result? Why or why not? Write a brief explanation.
Critical Thinking Assignment 2:	Work with a partner to solve this problem. Write up your solution, showing the various calculations that you have used. You may neatly print your joint solution. Use graph paper for your graph. The Problem: A subdivision is being placed on a piece of land 1000 m by 1500 m. A boulevard of trees and an access road of uniform width form the border of the subdivision. The area of the inner rectangle of houses and parks (within the border) is to be at least 1.35 square meters to accommodate the planned homes and parks. What is the largest width for the border composed of trees and the access road that can be set aside inside the perimeter? Construct a graph of area of houses and parks versus width of border. Develop an equation which you can use to solve the problem. Report all of these techniques in the paper you turn in.
Other Evaluation Methods:	Homework Problems, Objective Exam, Quizzes, Written Homework
Instructional Methods:	Demonstration, Discussion, Group Activities, Lecture, Multimedia presentations
If other:	
Work Outside of Class:	Answer questions, Problem solving activity, Required reading, Skill practice, Study
If Other:	
Up-To-Date Representative Texts:	Martin-Gay, Elayne. <i>Beginning Algebra</i> , 8th Edition. Pearson, 2023
Alternative Texts:	
Required Supplementary Readings:	
Other Required Materials:	
Requisite:	Prerequisite
Category:	sequential
Requisite course(s): List both prerequisites and corequisites in this box.	AHSD 511
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	
Requisite Skill:	
Requisite Skill and Matching Skill(s): Bold the requisite skill(s). If applicable	

Requisite course:	
Requisite and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s).	Compute simple powers and roots of integers, fractions, and absolute values of real numbers. AHSD 511 - Compute simple powers and roots of integers, fractions, and absolute values of real numbers. Perform complex sets of arithmetic operations on expressions involving constants using order of operations. AHSD 511 - Perform complex sets of arithmetic operations on expressions involving constants using order of operations. Discriminate between variables and constants. AHSD 511 - Discriminate between variables and constants. Identify English words which indicate use of a specific arithmetic operation. AHSD 511 - Identify English words which indicate use of a specific arithmetic operation. Translate words into algebraic expressions and formulate and solve appropriate equations to answer word problems. AHSD 511 - Translate words into algebraic expressions and formulate and solve appropriate equations to answer word problems.
Requisite Skill:	
Requisite Skill and Matching skill(s): Bold the requisite skill. List the corresponding course objective under each skill(s). If applicable	
Enrollment Limitations and Category:	
Enrollment Limitations Impact:	
Course Created by:	Matthew Kline
Date:	03/07/2024
Original Board Approval Date:	01/13/2025
Last Reviewed and/or Revised by:	Matt Kline
Date:	03/11/2026
Last Board Approval Date:	05/20/2026
Effective Term:	FA 2026