

**Colorado State Core Curriculum**  
Standards amended 2005  
Algebra

Strand	Reference	Description	Boardworks High School Algebra presentations
<b>Standard 1: Students develop number sense and use numbers and number relationships in problem-solving situations and communicate the reasoning used in solving these problems.</b>	1	demonstrating meanings for real numbers, absolute value, and scientific notation using physical materials and technology in problem-solving situations;	Classifying numbers Scientific notation Calculations involving scientific notation Absolute value functions
	2	developing, testing, and explaining conjectures about properties of number systems and sets of numbers; and	Classifying numbers Calculating with integers Set notation
	3	using number sense to estimate and justify the reasonableness of solutions to problems involving real numbers.	Calculating with integers
<b>For students continuing their mathematics education beyond these standards, what they know and are able to do may include:</b>	1	investigating limiting processes by examining infinite sequences and series; and	Sequences and rules Arithmetic sequences Geometric sequences Other types of sequences Sequences and series The sum of an arithmetic series The sum of a geometric series
	2	explaining relationships among real numbers, complex numbers, and vectors using models.	-

<b>Standard 2: Students use algebraic methods to explore, model, and describe patterns and functions involving numbers, shapes, data, and graphs in problem-solving situations and communicate the reasoning used in solving these problems.</b>	1	modeling real-world phenomena (for example, distance-versus-time relationships, compound interest, amortization tables, mortality rates) using functions, equations, inequalities, and matrices;	Using equations to solve problems Substituting into formulas Formula problems Rearranging a formula Manipulating formulas Generating formulas Problems leading to quadratic equations Percentages of quantities Finding a percentage change Increasing and decreasing by a percentage Percentage problems Compound percentages Direct proportion Inverse proportion Real life graphs Exponential growth and decay
	2	representing functional relationships using written explanations, tables, equations, and graphs, and describing the connections among these representations;	Linear graphs Non-linear functions Graphs of important non-linear functions Graphs of quadratic functions Plotting and sketching graphs
	3	solving problems involving functional relationships using graphing calculators and/or computers as well as appropriate paper-and-pencil techniques;	Using graphs to solve equations Problems leading to quadratic equations Graphs of quadratic functions Exponentials and logarithms Exponential growth and decay
	4	analyzing and explaining the behaviors, transformations, and general properties of types of equations and functions (for example, linear, quadratic, exponential); and	Linear graphs Non-linear functions Graphs of important non-linear functions Graphs of quadratic functions Plotting and sketching graphs

	5	interpreting algebraic equations and inequalities geometrically and describing geometric relationships algebraically.	Inequalities Solving linear inequalities Inequalities and regions Inequalities in two variables Quadratic inequalities Non-linear functions Graphs of important non-linear functions Graphs of quadratic functions
<b>For students continuing their mathematics education beyond these standards, what they know and are able to do may include:</b>	1	using rational, polynomial, trigonometric, and inverse functions to model real-world phenomena;	Real life graphs Non-linear functions Graphs of important non-linear functions Functions and relations Domain, range and composite functions Inverse functions Graphs of quadratic functions Plotting and sketching graphs Simplifying rational functions Operations involving algebraic fractions Improper fractions The three trigonometric ratios Finding trigonometric ratios
	2	representing and solving problems using linear programming and difference equations;	Sequences and rules Arithmetic sequences Geometric sequences Other types of sequences Sequences and series The sum of an arithmetic series The sum of a geometric series
	3	solving systems of linear equations using matrices and vectors;	-
	4	describing the concept of continuity of a function;	Plotting and sketching graphs
	5	performing operations on and between functions; and	Domain, range and composite functions Transforming functions part 1 Transforming functions part 2

	6	making the connections between trigonometric functions and polar coordinates, complex numbers, and series.	-
--	---	--	---