

**New Jersey State Core Curriculum**  
**Standards adopted 2010**  
**Algebra I**

Strand	Description	Boardworks High School Algebra presentations
<b>O1. Number Sense and Operations O2. Algebraic Expressions</b>	O1.a Use properties of number systems within the set of real numbers to verify or refute conjectures or justify reasoning.	Classifying numbers Calculating with integers Set notation
	O1.b Use rates, ratios and proportions to solve problems, including measurement problems.	Ratio Dividing in a given ratio Direct proportion Inverse proportion
	O1.B1 Describe and distinguish among the various uses of variables, including:	
	• Symbols for varying quantities (such as $3x$ )	Equations, formulas and identities
	• Symbols for fixed unknown values (such as $3x - 2 = 7$ )	Equations, formulas and identities
	• Symbols for all numbers in properties (such as $x + 0 = x$ )	Equations, formulas and identities
	• Symbols for formulas (such as $A = l * w$ )	Substituting into formulas Formula problems Rearranging a formula Manipulating formulas Generating formulas
	• Symbols for parameters (such as $m$ and $b$ for slope in $y = mx + b$ )	Linear graphs Slopes and intercepts Parallel and perpendicular lines
	O1.B2 Use matrices to represent and solve problems.	
	• Adding and subtracting matrices.	–
	• Multiplying a matrix by a scalar.	–
	O1.c & O2.a Apply the laws of exponents to numerical and algebraic expressions with integral exponents to rewrite them in different but equivalent forms or to solve problems.	Exponents and roots Exponent laws Negative exponents and reciprocals Rational exponents

	O1.d & O2.d Use the properties of radicals to convert numerical or algebraic expressions containing square roots in different but equivalent forms or to solve problems.	Exponents and roots Radicals Manipulating formulas Manipulating radicals
	O2.b Add, subtract and multiply polynomial expressions.	Operations with polynomials
	O2.c Factor simple polynomial expressions.	Factoring Factoring quadratic expressions Quadratic equations and factoring
<b>L1. Linear Functions</b>	L1.a Recognize, describe and represent linear relationships using words, tables, numerical patterns, graphs and equations.	Solving linear equations Equations with parentheses and fractions Using equations to solve problems Inequalities Solving linear inequalities Inequalities and regions
	L1.b Describe, analyze and use key characteristics of linear functions and their graphs.	Solving linear equations Equations with parentheses and fractions Using equations to solve problems Linear graphs Slopes and intercepts Parallel and perpendicular lines Direct proportion Inverse proportion
	L1.c Graph the absolute value of a linear function and determine and analyze its key characteristics.	Absolute value functions
	L1.d Recognize, express and solve problems that can be modeled using linear functions. Interpret solutions in terms of the context of the problem.	Solving linear equations Equations with parentheses and fractions Using equations to solve problems Linear graphs Slopes and intercepts Parallel and perpendicular lines Direct proportion Inverse proportion

<b>L2. Linear Equations and Inequalities</b>	L2.a Solve single-variable linear equations and inequalities with rational coefficients.	Solving linear equations Equations with parentheses and fractions Using equations to solve problems Inequalities Solving linear inequalities Inequalities and regions
	L2.b Solve equations involving the absolute value of a linear expression.	Absolute value functions
	L2.c Graph and analyze the graph of the solution set of a two-variable linear inequality.	Inequalities in two variables
	L2.d Solve systems of linear equations in two variables using algebraic and graphic procedures.	Systems of equations and graphs The elimination method for systems of equations The substitution method for systems of equations Systems of linear and quadratic equations Problems leading to systems of equations
	L2.e Recognize, express and solve problems that can be modeled using single-variable linear equations; one- or two-variable inequalities; or two-variable systems of linear equations.	Solving linear equations Solving linear inequalities
<b>N1. Non-linear Functions</b>	N1.a Recognize, describe, represent and analyze a quadratic function using words, tables, graphs or equations.	Factoring Factoring quadratic expressions Quadratic equations and factoring Completing the square The quadratic formula Problems leading to quadratic equations Solving quadratic equations Graphs of quadratic functions
	N1.b Analyze a table, numerical pattern, graph, equation or context to determine whether a linear, quadratic or exponential relationship could be represented.	Linear graphs Non-linear functions Graphs of important non-linear functions Plotting and sketching graphs Exponentials and logarithms Exponential growth and decay

	N1.c Recognize and solve problems that can be modeled using a quadratic function. Interpret the solution in terms of the context of the original problem.	Completing the square The quadratic formula Problems leading to quadratic equations Solving quadratic equations Graphs of quadratic functions
<b>N2. Non-linear Equations</b>	N2.a Solve equations involving several variables for one variable in terms of the others.	Substituting into formulas Formula problems Rearranging a formula Manipulating formulas Generating formulas
	N2.b Solve single-variable quadratic equations.	Solving quadratic equations
	N2B1. Provide and describe multiple representations of solutions to simple exponential equations using concrete models, tables, graphs, symbolic expressions, and technology.	The laws of logarithms Solving equations involving logarithms Exponentials and logarithms Exponential growth and decay
<b>D1: Data and Statistical Analysis</b>	D1.a. Interpret and compare linear models for data that exhibit a linear trend in the context of a problem.	Scatter plots Lines of best fit
	D1.b Use measures of center and spread to compare and analyze data sets.	Comparing data The mode The mean The median Which measure of central tendency The range and interquartile range
	D1.c. Evaluate the reliability of reports based on data published in the media.	Methods of sampling part 1 Methods of sampling part 2 Scatter plots Misleading charts
	D2.a Use counting principles to determine the number of ways an event can occur. Interpret and justify solutions.	Permutations Combinations

<b>D2: Systematic Listing &amp; Counting &amp; Probability</b>	D2.b Apply probability concepts to determine the likelihood an event will occur in practical situations.	Introduction to probability Probabilities of single events Combined events part 1 Combined events part 2 Probabilities from tables and Venn diagrams Dependent events Probability from experiments Probability notation
	D2.C1 Determine and apply probabilities in complex situations.	Combined events part 1 Combined events part 2 Probabilities from tables and Venn diagrams Dependent events Probability from experiments Probability notation