

Illinois State Core Curriculum
Standards adopted 1997
Algebra and Analytical Methods

Strand	Reference	Description	Boardworks High School Algebra presentations
A. Describe numerical relationships using variables and patterns.	8.A.4a	Use algebraic methods to convert repeating decimals to fractions.	Classifying numbers Fractions, decimals and percentages.
	8.A.4b	Represent mathematical patterns and describe their properties using variables and mathematical symbols.	Classifying numbers 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 Binomial coefficients
	8.A.5	Solve mathematical problems involving recursive patterns and use models that employ such relationships.	Sequences and rules Arithmetic sequences Geometric sequences Other types of sequences

	8.B.4a	Represent algebraic concepts with physical materials, words, diagrams, tables, graphs, equations and inequalities and use appropriate technology.	Multiplying parentheses The distributive property Factoring Factoring quadratic expressions Algebraic fractions Equations, formulas and identities Equations with parentheses and fractions Using equations to solve problems Substituting into formulas Formula problems Rearranging a formula Manipulating formulas Generating formulas Inequalities Solving linear inequalities Inequalities and regions Inequalities in two variables Quadratic inequalities Inequalities and regions Inequalities in two variables Quadratic equations and factoring Completing the square The quadratic formula Equations involving algebraic fractions Problems leading to quadratic equations Non-linear functions Graphs of important non-linear functions Using graphs to solve equations
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<p>B. Interpret and describe numerical relationships using tables, graphs and symbols.</p>	<p>8.B.4b</p>	<p>Use the basic functions of absolute value, square root, linear, quadratic and step to describe numerical relationships.</p>	<p>Linear graphs Slopes and intercepts Parallel and perpendicular lines 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 Exponents and roots Radicals Manipulating radicals Non-linear functions Graphs of important non-linear functions Plotting and sketching graphs Absolute value functions</p>
	<p>8.B.5</p>	<p>Use functions including exponential, polynomial, rational, parametric, logarithmic, and trigonometric to describe numerical relationships.</p>	<p>The laws of logarithms Solving equations involving logarithms Exponentials and logarithms Exponential growth and decay Solving quadratic equations Graphs of quadratic functions Operations with polynomials Dividing polynomials The factor theorem Simplifying rational functions Operations with algebraic fractions Improper fractions The three trigonometric ratios Finding trigonometric ratios Finding side lengths Finding angles</p>

C. Solve problems using systems of numbers and their properties.	8.C.4a	Analyze and report the effects of changing coefficients, exponents and other parameters on functions and their graphs.	<ul style="list-style-type: none"> Linear graphs Slopes and intercepts Parallel and perpendicular lines Non-linear functions Graphs of important non-linear functions Functions and relations Domain, range and composite functions Inverse functions Absolute value functions Transforming functions part 1 Transforming functions part 2 Graphs of quadratic functions Plotting and sketching graphs
	8.C.4b	Apply algebraic properties and procedures with matrices, vectors, functions and sequences using data found in business, industry and consumer situations.	<ul style="list-style-type: none"> 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 Exponentials and logarithms Exponential growth and decay
	8.C.5	Use polynomial, exponential, logarithmic and trigonometric functions to model situations.	<ul style="list-style-type: none"> The laws of logarithms Solving equations involving logarithms Exponentials and logarithms Exponential growth and decay Solving quadratic equations Graphs of quadratic functions Operations with polynomials Dividing polynomials The factor theorem The three trigonometric ratios Finding trigonometric ratios Finding side lengths Finding angles

D. Use algebraic concepts and procedures to represent and solve problems.	8.D.4	Formulate and solve linear and quadratic equations and linear inequalities algebraically and investigate nonlinear inequalities using graphs, tables, calculators and computers.	Solving linear equations Equations with parentheses and fractions Using equations to solve problems Inequalities Solving linear inequalities Inequalities and regions Inequalities in two variables Linear graphs Slopes and intercepts Quadratic inequalities Solving quadratic inequalities 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
	8.D.5	Formulate and solve nonlinear equations and systems including problems involving inverse variation and exponential and logarithmic growth and decay.	Factoring quadratic expressions Quadratic equations and factoring Completing the square The quadratic formula Problems leading to quadratic equations Non-linear functions Graphs of important non-linear functions Absolute value functions The laws of logarithms Solving equations involving logarithms Exponentials and logarithms Exponential growth and decay