

Maine State Core Curriculum
Standards adopted 2007
Algebra

Strand	Reference	Description	Boardworks High School Algebra presentations
Symbols and Expressions	1	Students understand and use polynomials and expressions with rational exponents.	
	1a	Simplify expressions including those with rational exponents.	Exponents Rational exponents Multiplying parentheses The distributive property Algebraic fractions Radicals Manipulating radicals Operations with polynomials
	1b	Add, subtract, and multiply polynomials.	Operations with polynomials
	1c	Factor the common term out of polynomial expressions.	Factoring Factoring quadratic expressions Quadratic equations and factoring Solving quadratic equations
	1d	Divide polynomials by $(ax+b)$.	Dividing polynomials The factor theorem
	2	Students solve families of equations and inequalities.	
	2a	Solve systems of linear equations and inequalities in two unknowns and interpret their graphs.	Inequalities in two variables 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

Equations and Inequalities

2b	Solve quadratic equations graphically, by factoring in cases where factoring is efficient, and by applying the quadratic formula.	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
2c	Solve simple rational equations.	Simplifying rational functions Operations with algebraic fractions Improper fractions
2d	Solve absolute value equations and inequalities and interpret the results.	Absolute value functions
2e	Apply the understanding that the solution(s) to equations of the form $f(x) = g(x)$ are the x -value(s) of the point(s) of intersection of the graphs of $f(x)$ and $g(x)$ and common outputs in table of values.	Function notation Non-linear functions Graphs of quadratic functions
2f	Explain why the coordinates of the point of intersection of the lines represented by a system of equations is its solution and apply this understanding to solving problems.	Systems of equations and graphs Using graphs to solve equations Problems leading to systems of equations
3	Students understand and apply ideas of logarithms.	
3a	Use and interpret logarithmic scales.	The laws of logarithms Solving equations involving logarithms Exponentials and logarithms Exponential growth and decay
3b	Solve equations in the form of $x = b^y$ using the equivalent form $y = \log_b x$.	The laws of logarithms Solving equations involving logarithms
4	Students understand and interpret the characteristics of functions using graphs, tables, and algebraic techniques.	

Functions and Relations	4a	<p>a. Recognize the graphs and sketch graphs of the basic functions.</p> <p>$f(x)=x^n$, where $n = 1$ to 3; $+ c$; $f(x) = x$; $f(x) = a^x$; and</p> <p>$f(x) = ax^2 + bx$ $f(x) = \sqrt{x}$; $f(x) = a/x$; $f(x) = kx + b$</p>	<p>Linear graphs Slopes and intercepts Parallel and perpendicular lines Solving quadratic equations Graphs of quadratic functions Non-linear functions Graphs of important non-linear functions Absolute value functions Plotting and sketching graphs Exponentials and logarithms Exponential growth and decay</p>
	4b	Apply functions from these families to problem situations.	<p>Problems leading to quadratic equations Exponential growth and decay</p>
	4c	Use concepts such as domain, range, zeros, intercepts, and maximum and minimum values.	<p>Function notation Functions and relations Domain, range and composite functions Inverse functions Graphs of quadratic functions Plotting and sketching graphs</p>
	4d	Use the concepts of average rate of change (table of values) and increasing and decreasing over intervals, and use these characteristics to compare functions.	<p>Linear graphs Slopes and intercepts Parallel and perpendicular lines</p>
	5	Students express relationships recursively and use iterative methods to solve problems.	
	5a	Express the $(n+1)^{\text{st}}$ term in terms of the n^{th} term and describe relationships in terms of a starting point and rule followed to transform one term to the next.	<p>Sequences and rules Other types of sequences</p>
	5b	Use technology to perform repeated calculations to develop solutions to real life problems involving linear, exponential, and other patterns of change.	–