

**Maryland State Core Curriculum**  
**Standards adopted 2007**  
**Algebra II**

Strand	Reference	Description	Boardworks High School Algebra presentations
<b>Algebra II Goal 1:            Integration into            Broader Knowledge            The student will            develop, analyze,            communicate, and            apply models to real-            world situations, using            the language of            mathematics and</b>	1.1	The student will model and interpret real-world situations, using the language of mathematics and appropriate technology.	
	1.1.1	The student will determine and interpret a linear function when given a graph, table of values, essential characteristics of the function, or a verbal description of a real-world situation.	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 Parallel and perpendicular lines Absolute value functions
	1.1.2	The student will determine and interpret a quadratic function when given a graph, table of values, essential characteristics of the function, or a verbal description of a real-world situation.	Factoring Factoring quadratic expressions Quadratic equations and factoring Graphs of important non-linear functions Using graphs to solve equations Solving quadratic equations Graphs of quadratic functions
	1.1.3	The student will determine and interpret an exponential function when given a graph, table of values, essential characteristics of the function, or a verbal description of a real-world situation.	Exponentials and logarithms Exponential growth and decay
	1.1.4	The student will be able to use logarithms to solve problems that can be modeled using an exponential function.	The laws of logarithms Solving equations involving logarithms Exponentials and logarithms Exponential growth and decay

**appropriate technology.**

1.2	Given an appropriate real-world situation, the student will choose an appropriate linear, quadratic, polynomial, absolute value, piecewise-defined, simple rational or exponential model and apply that model to solve the problem.	Real life graphs Graphs of important non-linear functions Plotting and sketching graphs Non-linear relationships Scatter plots Lines of best fit Measuring correlation
1.3	The student will communicate the mathematical results in a meaningful manner.	Comparing data The mode The mean The median Which measure of central tendency? The range and interquartile range Standard deviation The normal distribution
1.3.1	The student will describe the reasoning and processes used in order to reach the solution to a problem.	–
1.3.2	The student will ascribe a meaning to the solution in the context of the problem and consider the reasonableness of the solution.	–
2.1	The student will be familiar with basic terminology and notation of functions.	
2.1.1	The student will identify and use alternative representations of linear, piecewise-defined, quadratic, polynomial, simple rational and exponential functions.	Linear graphs Non-linear functions Graphs of important non-linear functions Graphs of quadratic functions Plotting and sketching graphs Absolute value functions Exponentials and logarithms Simplifying rational functions

2.1.2	The student will identify the domain, range, the rule or other essential characteristics of a function.	<p>Functions and relations</p> <p>Domain, range and composite functions</p> <p>Inverse functions</p> <p>Graphs of quadratic functions</p> <p>Plotting and sketching graphs</p> <p>Even, odd and periodic functions</p> <p>Simplifying rational functions</p> <p>Operations with algebraic fractions</p> <p>Improper fractions</p> <p>Absolute value functions</p>
2.2	The student will perform a variety of operations and geometrical transformations on functions.	
2.2.1	The student will add, subtract, multiply, and divide functions.	<p>Operations with polynomials</p> <p>Dividing polynomials</p> <p>The factor theorem</p>
2.2.2	The student will find the composition of two functions and determine algebraically and/or graphically if two functions are inverses. Functions given in equation form can include linear, quadratic, exponential, logarithmic, or rational functions such as $f(x) = (ax+b)/(cx+d)$ .	<p>Domain, range and composite functions</p> <p>Inverse functions</p>
2.2.3	The student will perform translations, reflections, and dilations on functions.	<p>Transforming functions part 1</p> <p>Transforming functions part 2</p>
2.3	The student will identify linear and nonlinear functions expressed numerically, algebraically, and graphically.	<p>Non-linear functions</p> <p>Graphs of important non-linear functions</p> <p>Plotting and sketching graphs</p> <p>Binomial coefficients</p> <p>The binomial distribution part 1</p> <p>The binomial distribution part 2</p>
2.4	The student will describe or graph notable features of a function using standard mathematical terminology and appropriate technology.	<p>Graphs of important non-linear functions</p> <p>Graphs of quadratic functions</p> <p>Plotting and sketching graphs</p>

**Algebra II Goal 2:  
Mathematical  
Concepts, Language,  
and Skills**  
The student will  
demonstrate the ability  
to analyze a wide  
variety of patterns and  
functional  
relationships using the  
language of  
mathematics and  
appropriate  
technology.

2.5	The student will use numerical, algebraic, and graphical representations to solve equations and inequalities.	Factoring Factoring quadratic expressions Quadratic equations and factoring Solving quadratic equations Inequalities Solving linear inequalities Inequalities and regions Inequalities in two variables Quadratic inequalities Solving quadratic inequalities Using graphs to solve equations Solving equations by trial and error Absolute value functions The laws of logarithms Solving equations involving logarithms Exponentials and logarithms Exponential growth and decay
2.6	The student will solve systems of linear equations and inequalities.	Systems of equations and graphs The elimination method for systems of equations The substitution method for systems of equations Problems leading to systems of equations Inequalities Solving linear inequalities Inequalities and regions Inequalities in two variables
2.7	The student will use the appropriate skills to assist in the analysis of functions.	
2.7.1	The student will add, subtract, multiply, and divide polynomial expressions.	Operations with polynomials Dividing polynomials The factor theorem Simplifying rational functions Operations with algebraic fractions Improper fractions
2.7.2	The student will perform operations on complex numbers.	–

2.7.3	The student will determine the nature of the roots of a quadratic equation and solve quadratic equations of the form $y = ax^2 + bx + c$ by factoring and the quadratic formula. The solutions may be real or complex numbers.	Factoring Factoring quadratic expressions Quadratic equations and factoring Completing the square The quadratic formula Solving quadratic equation Graphs of quadratic functions
2.7.4	The student will simplify and evaluate expressions with rational exponents.	Exponent laws Rational exponents
2.7.5	The student will perform operations on radical and exponential forms of numerical and algebraic expressions.	Exponents Zero, negative and fractional exponents Exponents and roots Manipulating radicals
2.7.6	The student will simplify and evaluate expressions and solve equations using properties of logarithms.	The laws of logarithms Solving equations involving logarithms
2.8	The student will use literal equations and formulas to extract information.	Equations, formulas and identities Substituting into formulas Formula problems Rearranging a formula Manipulating formulas Generating formulas