

Georgia State Core Curriculum
Standards adopted 2009
Mathematics 2

Strand	Heading	Reference	Description	Boardworks High School Algebra presentations
	Students will investigate piecewise, exponential, and quadratic functions, using numerical, analytical, and graphical approaches, focusing on the use of these functions in problem-solving situations. Students will solve equations and inequalities and explore inverses of functions.	MM2A1	Students will investigate step and piecewise functions, including greatest integer and absolute value functions.	
			a. Write absolute value functions as piecewise functions.	Absolute value functions
			b. Investigate and explain characteristics of a variety of piecewise functions including domain, range, vertex, axis of symmetry, zeros, intercepts, extrema, points of discontinuity, intervals over which the function is constant, intervals of increase and decrease, and rates of change.	Absolute value functions
		c. Solve absolute value equations and inequalities analytically, graphically, and by using appropriate technology.	Absolute value functions	
		MM2A2	Students will explore exponential functions.	
		a. Extend properties of exponents to include all integer exponents.	Exponent laws Negative exponents and reciprocals	
		b. Investigate and explain characteristics of exponential functions, including domain and range, asymptotes, zeros, intercepts, intervals of increase and decrease, rates of change, and end behavior.	Exponentials and logarithms Exponential growth and decay	
		c. Graph functions as transformations of $f(x) = a^x$.	Exponentials and logarithms	
		d. Solve simple exponential equations and inequalities analytically, graphically, and by using appropriate technology.	Exponentials and logarithms Exponential growth and decay	
		e. Understand and use basic exponential functions as models of real phenomena.	Exponential growth and decay	

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	f. Understand and recognize geometric sequences as exponential functions with domains that are whole numbers.	Geometric sequences
	g. Interpret the constant ratio in a geometric sequence as the base of the associated exponential function.	Geometric sequences
MM2A3	Students will analyze quadratic functions in the forms $f(x) = ax^2 + bx + c$ and $f(x) = a(x - h)^2 + k$.	
	a. Convert between standard and vertex form.	Graphs of quadratic functions
	b. Graph quadratic functions as transformations of the function $f(x) = x^2$.	Transforming functions part 1 Transforming functions part 2
	c. Investigate and explain characteristics of quadratic functions, including domain, range, vertex, axis of symmetry, zeros, intercepts, extrema, intervals of increase and decrease, and rates of change.	Solving quadratic equations Graphs of quadratic functions
	d. Explore arithmetic series and various ways of computing their sums.	The sum of an arithmetic series
	e. Explore sequences of partial sums of arithmetic series as examples of quadratic functions.	The sum of an arithmetic series
MM2A4	Students will solve quadratic equations and inequalities in one variable.	
	a. Solve equations graphically using appropriate technology.	Using graphs to solve equations
	b. Find real and complex solutions of equations by factoring, taking square roots, and applying the quadratic formula.	Quadratic equations and factoring Solving quadratic equations
	c. Analyze the nature of roots using technology and using the discriminant.	Solving quadratic equations
	d. Solve quadratic inequalities both graphically and algebraically, and describe the solutions using linear inequalities.	Solving quadratic inequalities

		MM2A5	<p>Students will explore inverses of functions</p> <p>a. Discuss the characteristics of functions and their inverses, including one-to-oneness, domain, and range.</p> <p>b. Determine inverses of linear, quadratic, and power functions and functions of the form $f(x) = a/x$, including the use of restricted domains.</p> <p>c. Explore the graphs of functions and their inverses.</p> <p>d. Use composition to verify that functions are inverses of each other.</p>	<p>Functions and relations Domain, range and composite functions Inverse functions</p> <p>Inverse functions</p> <p>Inverse functions</p> <p>Domain, range and composite functions Inverse functions</p>
<p>Data Analysis and Probability</p>	<p>Students will demonstrate understanding of data analysis by posing questions to be answered by collecting data. Students will organize, represent, investigate, interpret, and make inferences from data. They will use regression to analyze data and to make inferences.</p>	MM2D1	<p>Using sample data, students will make informal inferences about population means and standard deviations.</p> <p>a. Pose a question and collect sample data from at least two different populations.</p> <p>b. Understand and calculate the means and standard deviations of sets of data.</p> <p>c. Use means and standard deviations to compare data sets.</p> <p>d. Compare the means and standard deviations of random samples with the corresponding population parameters, including those population parameters for normal distributions. Observe that the different sample means vary from one sample to the next. Observe that the distribution of the sample means has less variability than the population distribution.</p>	<p>Collecting data Methods of sampling part 1 Methods of sampling part 2</p> <p>The mean Standard deviation</p> <p>The mean Standard deviation</p> <p>The mean Standard deviation The normal distribution</p>

	MM2D2	Students will determine an algebraic model to quantify the association between two quantitative variables.	
		a. Gather and plot data that can be modeled with linear and quadratic functions.	Non-linear relationships Scatter plots Lines of best fit
		b. Examine the issues of curve fitting by finding good linear fits to data using simple methods such as the median-median line and “eyeballing.”	Non-linear relationships Lines of best fit
		c. Understand and apply the processes of linear and quadratic regression for curve fitting using appropriate technology.	Linear regression
		d. Investigate issues that arise when using data to explore the relationship between two variables, including confusion between correlation and causation.	Scatter plots