South Carolina State Core Curriculum

Standards adopted 2007

Elementary Algebra

Standard	Reference	Description	Boardworks High School Algebra presentations
Standard EA-1: The student will understand and utilize the mathematical processes of problem solving, reasoning and proof, communication, connections, and representation.	EA-1.1	Communicate a knowledge of algebraic relationships by using mathematical terminology appropriately.	–
	EA-1.2	Connect algebra with other branches of mathematics.	–
	EA-1.3	Apply algebraic methods to solve problems in real-world contexts.	Using equations to solve problems
	EA-1.4	Judge the reasonableness of mathematical solutions.	–
	EA-1.5	Demonstrate an understanding of algebraic relationships by using a variety of representations (including verbal, graphic, numerical, and symbolic).	Equations, formulas and identities Solving linear equations Equations with parentheses and fractions Using equations to solve problems Inequalities Using graphs to solve equations
	EA-1.6	Understand how algebraic relationships can be represented in concrete models, pictorial models, and diagrams.	Equations, formulas and identities Solving linear equations Equations with parentheses and fractions Using equations to solve problems Inequalities Using graphs to solve equations
	EA-1.7	Understand how to represent algebraic relationships by using tools such as handheld computing devices, spreadsheets, and computer algebra systems (CASs).	–
	EA-2.1	Exemplify elements of the real number system (including integers, rational numbers, and irrational numbers).	Classifying numbers
	EA-2.2	Apply the laws of exponents and roots to solve problems.	Exponents and roots Exponent laws Negative exponents and reciprocals Rational exponents Radicals

Standard EA-2: The student will demonstrate through the mathematical processes an understanding of the real number system and operations involving exponents, matrices, and algebraic expressions.	EA-2.3	Carry out a procedure to perform operations (including multiplication and division) with numbers written in scientific notation.	Scientific notation Calculations involving scientific notation
	EA-2.4	Use dimensional analysis to convert units of measure within a system.	–
	EA-2.5	Carry out a procedure using the properties of real numbers (including commutative, associative, and distributive) to simplify expressions.	Multiplying parentheses The distributive property Factoring
	EA-2.6	Carry out a procedure to evaluate an expression by substituting a value for the variable.	Solving linear equations
	EA-2.7	Carry out a procedure (including addition, subtraction, multiplication, and division by a monomial) to simplify polynomial expressions.	Operations with polynomials Dividing polynomials The factor theorem
	EA-2.8	Carry out a procedure to factor binomials, trinomials, and polynomials by using various techniques (including the greatest common factor, the difference between two squares, and quadratic trinomials).	Factoring Factoring quadratic expressions Quadratic equations and factoring Completing the square The quadratic formula Problems leading to quadratic equations Solving quadratic equations
	EA-2.9	Carry out a procedure to perform operations with matrices (including addition, subtraction, and scalar multiplication).	–
	EA-2.10	Represent applied problems by using matrices.	–
Standard EA-3: The student will	EA-3.1	Classify a relationship as being either a function or not a function when given data as a table, set of ordered pairs, or graph.	Functions and relations
	EA-3.2	Use function notation to represent functional relationships.	Function notation Functions and relations
	EA-3.3	Carry out a procedure to evaluate a function for a given element in the domain.	Domain, range and composite functions
	EA-3.4	Analyze the graph of a continuous function to determine the domain and range of the function.	Domain, range and composite functions

Standard EA-3: The student will demonstrate through the mathematical processes an understanding of relationships and functions.	EA-3.5	Carry out a procedure to graph parent functions (including $y = x$, $y = x^2$, $y = \sqrt{x}$, $y = \lvert x \rvert$, $y = 1/x$)	Graphs of important non-linear functions Graphs of quadratic functions Plotting and sketching graphs Absolute value functions
	EA-3.6	Classify a variation as either direct or inverse.	Direct proportion Inverse proportion
	EA-3.7	Carry out a procedure to solve literal equations for a specified variable.	Substituting into formulas Formula problems Rearranging a formula Manipulating formulas Generating formulas
	EA-3.8	Apply proportional reasoning to solve problems.	Ratio Dividing in a given ratio
Standard EA-4: The student will demonstrate through the mathematical processes an understanding of the procedures for writing and solving linear equations and inequalities.	EA-4.1	Carry out a procedure to write an equation of a line with a given slope and a *y*-intercept.	Slopes and intercepts Coordinate geometry The equation of a straight line
	EA-4.2	Carry out a procedure to write an equation of a line with a given slope passing through a given point.	Coordinate geometry The equation of a straight line
	EA-4.3	Carry out a procedure to write an equation of a line passing through two given points.	Coordinate geometry The equation of a straight line
	EA-4.4	Use a procedure to write an equation of a trend line from a given scatterplot.	Non-linear relationships Scatter plots Lines of best fit
	EA-4.5	Analyze a scatterplot to make predictions.	Non-linear relationships Scatter plots Lines of best fit
	EA-4.6	Represent linear equations in multiple forms (including point-slope, slope-intercept, and standard).	Linear graphs Slopes and intercepts Coordinate geometry The equation of a straight line
	EA-4.7	Carry out procedures to solve linear equations for one variable algebraically.	Solving linear equations Equations with parentheses and fractions Using equations to solve problems
	EA-4.8	Carry out procedures to solve linear inequalities for one variable algebraically and then to graph the solution.	Inequalities Solving linear inequalities Inequalities and regions

	EA-4.9	Carry out a procedure to solve systems of two linear equations graphically.	Systems of equations and graphs
	EA-4.10	Carry out a procedure to solve systems of two linear equations algebraically.	The elimination method for systems of equations The substitution method for systems of equations Problems leading to systems of equations
Standard EA-5: The student will demonstrate through the mathematical processes an understanding of the graphs and characteristics of linear equations and inequalities.	EA-5.1	Carry out a procedure to graph a line when given the equation of the line.	Linear graphs Slopes and intercepts The equation of a straight line
	EA-5.2	Analyze the effects of changes in the slope, m, and the y-intercept, b, on the graph of $y = mx + b$.	Slopes and intercepts
	EA-5.3	Carry out a procedure to graph the line with a given slope and a y-intercept.	Slopes and intercepts The equation of a straight line
	EA-5.4	Carry out a procedure to graph the line with a given slope passing through a given point.	Slopes and intercepts The equation of a straight line
	EA-5.5	Carry out a procedure to determine the x-intercept and y-intercept of lines from data given tabularly, graphically, symbolically, and verbally.	Slopes and intercepts The equation of a straight line
	EA-5.6	Carry out a procedure to determine the slope of a line from data given tabularly, graphically, symbolically, and verbally.	Slopes and intercepts The equation of a straight line
	EA-5.7	Apply the concept of slope as a rate of change to solve problems.	Slopes and intercepts
	EA-5.8	Analyze the equations of two lines to determine whether the lines are perpendicular or parallel.	Parallel and perpendicular lines
	EA-5.9	Analyze given information to write a linear function that models a given problem situation.	Solving linear equations Using equations to solve problems Linear graphs
	EA-5.10	Analyze given information to determine the domain and range of a linear function in a problem situation.	Solving linear equations Using equations to solve problems Linear graphs

	EA-5.11	Analyze given information to write a system of linear equations that models a given problem situation.	The elimination method for systems of equations The substitution method for systems of equations Problems leading to systems of equations
	EA-5.12	Analyze given information to write a linear inequality in one variable that models a given problem situation.	Inequalities Solving linear inequalities Inequalities and regions Inequalities in two variables
Standard EA-6: The student will demonstrate through the mathematical processes an understanding of quadratic relationships and functions.	EA-6.1	Analyze the effects of changing the leading coefficient a on the graph of $y = ax^2$	Graphs of important non-linear functions
	EA-6.2	Analyze the effects of changing the constant c on the graph of $y = x^2 + c$	Graphs of important non-linear functions
	EA-6.3	Analyze the graph of a quadratic function to determine its equation.	Graphs of quadratic functions
	EA-6.4	Carry out a procedure to solve quadratic equations by factoring.	Factoring Factoring quadratic expressions Quadratic equations and factoring Solving quadratic equations
	EA-6.5	Carry out a graphic procedure to approximate the solutions of quadratic equations.	Graphs of quadratic functions
	EA-6.6	Analyze given information to determine the domain of a quadratic function in a problem situation.	Solving quadratic equations Graphs of quadratic functions