Course Lessons with Standards

Numbers and Expressions

Relationships Between Quantities

FA-1	Precision and Significant Digits	FA.NQ.3
FA-2	Dimensional Analysis	FA.NQ.1 (Also FA.NQ.3)

Exponents and Real Numbers

FA-3	Radicals and Rational Exponents	FA.NRNS.1, FA.NRNS.2
FA-4	Real Numbers	FA.NRNS.3

Expressions

FA-5	Evaluating Expressions	FA.ASE.1
FA-6	Simplifying Expressions	FA.ASE.1
FA-7	Writing Expressions	FA.NQ.2 (Also FA.ASE.1, FA.NQ.1)

Equations and Functions

Equations and Inequalities in One Variable

FA-8	Equations in One Variable	FA.AREI.3 (Also FA.ACE.1, FA.AREI.1, FA.NQ.1)
FA-9	Inequalities in One Variable	FA.AREI.3 (Also FA.ACE.1)
FA-10	Solving for a Variable	FA.ACE.4 (Also FA.AREI.1, FA.AREI.3)

Equations in Two Variables and Functions

FA-11	Equations in Two Variables	FA.AREI.10 (Also FA.AREI.11)
FA-12	Representing Functions	FA.FIF.1 (Also FA.FIF.1a, FA.FIF.1b, FA.FIF.1c, FA.FIF.2, FA.FIF.5, FA.AREI.11)
FA-13	Sequences	IA.FIF.3 (Also IA.FBF.1, IA.FBF.1a, IA.FBF.2)

Linear Relationships

Linear Functions

FA-14	Linear Functions	FA.FIF.7 (Also FA.FIF.2, FA.FIF.5, FA.ACE.2, FA.NQ.1)
FA-15	Using Intercepts	FA.FIF.7 (Also FA.FIF.4, FA.ACE.2)

FA-16	Using Slope Prepare for	IA.FIF.6 (Also FA.FIF.4, FA.FIF.7, FA.FLQE.1)
FA-17	Slope-Intercept Form	FA.FIF.4 (Also FA.ACE.2, FA.FIF.5, FA.FIF.7, FA.FIF.8, FA.FLQE.1)
FA-18	Comparing Linear Functions	FA.FIF.9 (Also FA.FIF.2, FA.FIF.4, FA.FIF.5, FA.FLQE.5, FA.NQ.1, FA.ACE.2)
FA-19	Transforming Linear Functions	FA.FBF.3 (Also FA.FIF.4, FA.FIF.5, FA.FLQE.5, FA.ACE.2)
FA-20	Writing Linear Functions	FA.ACE.2 (Also FA.NQ.2, IA.FLQE.2, IA.FIF.6, IA.FBF.1)

Building Linear Functions

FA-21	Arithmetic Sequences	IA.FBF.2 (Also IA.FLQE.2, IA.FBF.1, IA.FBF.1a, IA.FIF.3)
FA-22	Operations with Linear Functions	IA.FBF.1b (Also IA.FBF.1, IA.FLQE.2)
FA-23	Linear Functions and Their Inverses	FA.FIF.7 (Also FA.FIF.2)
FA-24	Linear Inequalities in Two Variables	FA.AREI.12

Modeling with Linear Functions

FA-25	Correlation	FA.SPID.6 (Also FA.SPID.8, FA.NQ.1)
FA-26	Fitting Lines to Data	FA.SPID.6 (Also FA.SPID.7, FA.FLQE.5, FA.NQ.1, FA.NQ.2)
FA-27	Linear Regression	FA.SPID.6 (Also FA.SPID.7, FA.SPID.8)

Systems of Equations and Inequalities

FA-28	Solving Linear Systems by Graphing	FA.AREI.6 (Also FA.AREI.11)
FA-29	Solving Linear Systems by Substitution	FA.AREI.6a (Also FA.AREI.6, FA.NQ.1)
FA-30	Solving Linear Systems by Adding or Subtracting	FA.AREI.6b (Also FA.AREI.6)
FA-31	Solving Linear Systems by Multiplying	FA.AREI.5 (Also FA.AREI.6, FA.AREI.6b)
FA-32	Solving Systems of Linear Inequalities	Extend FA.AREI.12

Statistics and Data

Descriptive Statistics

FA-33	Two-Way Frequency Tables	FA.SPID.5
FA-34	Relative Frequency	FA.SPID.5

Data Displays

FA-35	Measures of Center and Spread	FA.SPMJ.1
FA-36	Data Distributions and Outliers	FA.SPMJ.1
FA-37	Histograms	FA.SPMJ.1
FA-38	Box Plots	FA.SPMJ.1
FA-39	Normal Distributions	FA.SPMJ.1

Statistical Inference and Probability

Random Samples and Populations

FA-40	Populations and Samples	FA.SPMJ.1
FA-41	Making Inferences from a Random Sample	FA.SPMJ.1
FA-42	Generating Random Samples	FA.SPMJ.1

Probability and Decision Making

FA-43	Probability	FA.SPMJ.2
FA-44	Experimental Probability and Simple Events	FA.SPMJ.2
FA-45	Using Probability to Make Fair Decisions	FA.SPMD.5, FA.SPMD.6
FA-46	Weighted Averages and Expected	FA.SPMD.4

South Carolina College- and Career-Ready Content Standards for Foundations in Algebra (FA) and Intermediate Algebra (IA)

Key Concepts	Standards	Assessed on Algebra 1 EOC Exam?	HMH Lessons
Arithmetic with Polynomials and Rational Expressions	**IA.AAPR.1** Add, subtract, and multiply polynomials and understand that polynomials are closed under these operations.	Yes	IA-8, IA-9, IA-10, IA-11, IA-46
Creating Equations	**FA.ACE.1, IA.ACE.1** Create and solve equations and inequalities in one variable that model real-world problems involving linear, quadratic, simple rational, and exponential relationships. Interpret the solutions and determine whether they are reasonable.	Yes	FA-8, FA-9; IA-5, IA-10, IA-16, IA-17, IA-18, IA-19, IA-20, IA-21, IA-26, IA-32, IA-40
	FA.ACE.2, IA.ACE.2 Create equations in two or more variables to represent relationships between quantities. Graph the equations on coordinate axes using appropriate labels, units, and scales.	Yes	FA-14, FA-15, FA-17, FA-18, FA-19, FA-20; IA-1, IA-2, IA-3, IA-4, IA-5, IA-6, IA-22, IA-23, IA-24, IA-26, IA-29, IA-30, IA-33, IA-35
	FA.ACE.4, IA.ACE.4 Solve literal equations and formulas for a specified variable including equations and formulas that arise in a variety of disciplines.	Yes	FA-10
Reasoning with Equations and Inequalities	**FA.AREI.1** Understand and justify that the steps taken when solving simple equations in one variable create new equations that have the same solution as the original.	Yes	FA-8, FA-10; IA-37, IA-40
	IA.AREI.2 Solve simple rational and radical equations in one variable and understand how extraneous solutions may arise.	No	IA-37, IA-40
	FA.AREI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	Yes	FA-8, FA-9, FA-10

Key Concepts	Standards	Assessed on Algebra 1 EOC Exam?	HMH Lessons
Reasoning with Equations and Inequalities	**IA.AREI.4** Solve mathematical and real-world problems involving quadratic equations in one variable. *(Note: IA.AREI.4a and 4b are not Graduation Standards.)* a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - h)^2 = k$ that has the same solutions. Derive the quadratic formula from this form. b. Solve quadratic equations by inspection, taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a + bi$ for real numbers a and b.	Yes	*IA.REI.4:* IA-16, IA-17, IA-18, IA-19, IA-20, IA-21, IA-27, IA-41, IA-43 *IA.REI.4a:* IA-19, IA-20, IA-21 *IA.REI.4b:* IA-16, IA-17, IA-18, IA-19, IA-20, IA-21, IA-27, IA-41, IA-43
	FA.AREI.5 Justify that the solution to a system of linear equations is not changed when one of the equations is replaced by a linear combination of the other equation.	Yes	FA-31
	FA.AREI.6 Solve systems of linear equations algebraically and graphically focusing on pairs of linear equations in two variables. *(Note: FA.AREI.6a and 6b are not Graduation Standards.)* a. Solve systems of linear equations using the substitution method. b. Solve systems of linear equations using linear combination.	Yes	*FA.AREI.6:* FA-28, FA-29, FA-30, FA-31 *FA-AREI.6a:* FA-29 *FA.AREI.6b:* FA-30, FA-31
	FA.AREI.10 Explain that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane.	Yes	FA-11
	FA.AREI.11, IA.AREI.11 Solve an equation of the form $f(x) = g(x)$ graphically by identifying the x-coordinate(s) of the point(s) of intersection of the graphs of $y = f(x)$ and $y = g(x)$.	Yes	FA-11, FA-12, FA-28; IA-5, IA-26, IA-27, IA-30
	FA.AREI.12 Graph the solutions to a linear inequality in two variables.	Yes	FA-24, FA-32

Key Concepts	Standards	Assessed on Algebra 1 EOC Exam?	HMH Lessons
Structure and Expressions	**FA.ASE.1, IA.ASE.1** Interpret the meanings of coefficients, factors, terms, and expressions based on their real-world contexts. Interpret complicated expressions as being composed of simpler expressions.	Yes	FA-5, FA-6, FA-7; IA-2, IA-8, IA-10, IA-16, IA-17, IA-38, IA-39
	IA.ASE.2 Analyze the structure of binomials, trinomials, and other polynomials in order to rewrite equivalent expressions.	Yes	IA-9, IA-10, IA-11, IA-12, IA-13, IA-14, IA-15, IA-17, IA-18, IA-19, IA-20, IA-38, IA-39
	IA.ASE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. *(Note: IA.ASE.3b is not a Graduation Standard.)* a. Find the zeros of a quadratic function by rewriting it in equivalent factored form and explain the connection between the zeros of the function, its linear factors, the *x*-intercepts of its graph, and the solutions to the corresponding quadratic equation. b. Determine the maximum or minimum value of a quadratic function by completing the square.	Yes, but only IA.ASE.3a	*IA.ASE.3:* IA-12, IA-13, IA-14, IA-15, IA-17, IA-18, IA-19, IA-20, IA-25, IA-26 *IA.ASE.3a:* IA-17, IA-25, IA-26 *IA.ASE.3b:* IA-19, IA-20, IA-25
Building Functions	**IA.FBF.1** Write a function that describes a relationship between two quantities. *(Note: IA.FBF.1a is not a Graduation Standard.)* a. Write a function that models a relationship between two quantities using both explicit expressions and a recursive process and by combining standard forms using addition, subtraction, multiplication and division to build new functions. b. Combine functions using the operations addition, subtraction, multiplication, and division to build new functions that describe the relationship between two quantities in mathematical and real-world situations.	No	*IA.FBF.1:* FA-13, FA-20, FA-21, FA-22; IA-1, IA-2, IA-3, IA-4, IA-9, IA-10, IA-11, IA-24, IA-29, IA-38, IA-39 *IA.FBF.1a:* FA-13, FA-21; IA-3 *IA.FBF.1b:* FA-22; IA-9, IA-10, IA-11, IA-38, IA-39

Key Concepts	Standards	Assessed on Algebra 1 EOC Exam?	HMH Lessons
Building Functions	**IA.FBF.2** Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.	No	FA-13, FA-21; IA-3
	FA.FBF.3, IA.FBF.3 Describe the effect of the transformations $k\,f(x)$, $f(x) + k$, $f(x + k)$, and combinations of such transformations on the graph of $y = f(x)$ for any real number k. Find the value of k given the graphs and write the equation of a transformed parent function given its graph.	Yes	FA-19; IA-4, IA-22, IA-23, IA-24, IA-30, IA-31, IA-34, IA-36
Interpreting Functions	**FA.FIF.1** Extend previous knowledge of a function to apply to general behavior and features of a function. a. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. b. Represent a function using function notation and explain that $f(x)$ denotes the output of function f that corresponds to the input x. c. Understand that the graph of a function labeled as f is the set of all ordered pairs (x, y) that satisfy the equation $y = f(x)$.	Yes	*FA.FIF.1, FA.FIF.1a, FA.FIF.1b, FA.FIF.1c:* FA-12
	FA.FIF.2 Evaluate functions and interpret the meaning of expressions involving function notation from a mathematical perspective and in terms of the context when the function describes a real-world situation.	No	FA-12, FA-14, FA-18, FA-23; IA-1, IA-2, IA-23, IA-24, IA-28, IA-29, IA-30, IA-33, IA-34, IA-35, IA-36
	IA.FIF.3 Define functions recursively and recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.	No	FA-13, FA-21; IA-3

Key Concepts	Standards	Assessed on Algebra 1 EOC Exam?	HMH Lessons
Interpreting Functions	**FA.FIF.4, IA.FIF.4** Interpret key features of a function that models the relationship between two quantities when given in graphical or tabular form. Sketch the graph of a function from a verbal description showing key features. Key features include intercepts; intervals where the function is increasing, decreasing, constant, positive, or negative; relative maximums and minimums; symmetries; end behavior and periodicity.	Yes	FA-15, FA-16, FA-17, FA-18, FA-19; IA-2, IA-22, IA-23, IA-24, IA-25, IA-27, IA-29, IA-30
	FA.FIF.5, IA.FIF.5 Relate the domain and range of a function to its graph and, where applicable, to the quantitative relationship it describes.	Yes	FA-14, FA-17, FA-18, FA-19; IA-1, IA-2, IA-22, IA-29, IA-33, IA-34, IA-35, IA-36
	IA.FIF.6 Given a function in graphical, symbolic, or tabular form, determine the average rate of change of the function over a specified interval. Interpret the meaning of the average rate of change in a given context.	Yes	FA-16, FA-20; IA-7, IA-28
	FA.FIF.7, IA.FIF.7 Graph functions from their symbolic representations. Indicate key features including intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior and periodicity. Graph simple cases by hand and use technology for complicated cases.	Yes	FA-14, FA-15, FA-16, FA-18, FA-23; IA-1, IA-2, IA-4, IA-22, IA-23, IA-24, IA-29, IA-30, IA-31, IA-33, IA-34, IA-35, IA-36
	FA.FIF.8a, IA.FIF.8b Translate between different but equivalent forms of a function equation to reveal and explain different properties of the function. *(Note: IA.FIF.8a and 8b are not Graduation Standards.)* a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context. b. Interpret expressions for exponential functions by using the properties of exponents.	Yes, but only FA.FIF.8a	*FA.FIF.8a:* IA-17, IA-18, IA-19, IA-20, IA-25 *IA.FIF.8b:* IA-1, IA-2

Key Concepts	Standards	Assessed on Algebra 1 EOC Exam?	HMH Lessons
Interpreting Functions	**FA.FIF.9, IA.FIF.9** Compare properties of two functions given in different representations such as algebraic, graphical, tabular, or verbal.	Yes	FA-18
Linear, Quadratic, and Exponential	**FA.FLQE.1** Distinguish between situations that can be modeled with linear functions or exponential functions by recognizing situations in which one quantity changes at a constant rate per unit interval as opposed to those in which a quantity changes by a constant percent rate per unit interval. *(Note: FA.FLQE.1a is not a Graduation Standard.)* a. Prove that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.	Yes	*FA.FLQE.1:* FA-16, FA-17; IA-2, IA-3, IA-7, IA-28 *FA.FLQE.1a:* IA-7
	IA.FLQE.2 Create symbolic representations of linear and exponential functions, including arithmetic and geometric sequences, given graphs, verbal descriptions, and tables.	Yes	FA-20, FA-21, FA-22; IA-1, IA-2, IA-3, IA-4, IA-5
	FA.FLQE.3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or more generally as a polynomial function.	Yes	IA-7, IA-28
	FA.FLQE.5, IA.FLQE.5 Interpret the parameters in a linear or exponential function in terms of the context.	Yes	FA-18, FA-19, FA-26; IA-6
Quantities	**FA.NQ.1** Use units of measurement to guide the solution of multi-step tasks. Choose and interpret appropriate labels, units, and scales when constructing graphs and other data displays.	Yes	FA-2, FA-7, FA-14, FA-18, FA-25, FA-26, FA-29
	FA.NQ.2 Label and define appropriate quantities in descriptive modeling contexts.	Yes	FA-7, FA-20, FA-26; IA-5, IA-19

Key Concepts	Standards	Assessed on Algebra 1 EOC Exam?	HMH Lessons
Quantities	**FA.NQ.3** Choose a level of accuracy appropriate to limitations on measurement when reporting quantities in context.	Yes	FA-1, FA-2
Real Number System	**FA.NRNS.1** Rewrite expressions involving simple radicals and rational exponents in different forms.	Yes	FA-3
	FA.NRNS.2 Use the definition of the meaning of rational exponents to translate between rational exponent and radical forms.	Yes	FA-3
	FA.NRNS.3 Explain why the sum or product of rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	Yes	FA-4
Complex Number System	**IA.NCNS.1** Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.	No	IA-41, IA-42
	IA.NCNS.7 Solve quadratic equations in one variable that have complex solutions.	No	IA-41, IA-43
Interpreting Data	**FA.SPID.5** Analyze bivariate categorical data using two-way tables and identify possible associations between the two categories using marginal, joint, and conditional frequencies.	No	FA-33, FA-34
	FA.SPID.6 Using technology, create scatterplots and analyze those plots to compare the fit of linear, quadratic, or exponential models to a given data set. Select the appropriate model, fit a function to the data set, and use the function to solve problems in the context of the data.	Yes	FA-25, FA-26, FA-27; IA-6, IA-7, IA-28
	FA.SPID.7 Create a linear function to graphically model data from a real-world problem and interpret the meaning of the slope and intercept(s) in the context of the given problem.	Yes	FA-26, FA-27

Key Concepts	Standards	Assessed on Algebra 1 EOC Exam?	HMH Lessons
Interpreting Data	**FA.SPID.8** Using technology, compute and interpret the correlation coefficient of a linear fit.	Yes	FA-25, FA-27
Making Inferences and Justifying Conclusions	**FA.SPMJ.1** Understand statistics and sampling distributions as a process for making inferences about population parameters based on a random sample from that population.	No	FA-35, FA-36, FA-37, FA-38, FA-39, FA-40, FA-41, FA-42; IA-44, IA-45, IA-48, IA-49
	FA.SPMJ.2 Distinguish between experimental and theoretical probabilities. Collect data on a chance event and use the relative frequency to estimate the theoretical probability of that event. Determine whether a given probability model is consistent with experimental results.	No	FA-43, FA-44; IA-47, IA-49
Using Probability to Make Decisions	**FA.SPMD.4** Use probability to evaluate outcomes of decisions by finding expected values and determine if decisions are fair.	No	FA-46
	FA.SPMD.5 Use probability to evaluate outcomes of decisions. Use probabilities to make fair decisions.	No	FA-45
	FA.SPMD.6 Analyze decisions and strategies using probability concepts.	No	FA-45