MATHia X: Algebra I
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Module 1
Linear Functions

Software Unit	Software Workspace	Overview	CCSSM	Problem Solving	Worked Examples	Classification Tools	Animations	Explore Tools
Relations and Functions	Workspace 1: Exploring Functions	Students use an interactive function machine to explore mystery functions. Students use the function machine and a table to identify functions. They also use the machine along with sorting activities to identify the domain and range of different functions.	8.F.A.1			●		●
	Workspace 2: Exploring Graphs of Functions	Students use an interactive function machine and a graph to identify and analyze function equations and graphs. Students identify intercepts of the graphs.	8.F.A.1					●
	Workspace 3: Classifying Relations and Functions	Students watch an animation and follow worked examples as they learn how to classify relations as functions or non-functions.	8.F.A.1		●		●	
	Workspace 4: Identifying Key Characteristics of Graphs of Functions	Students will identify key characteristics from the graph of a function, such as the intercepts, minimum and maximum x-values, minimum and maximum y-values, domain, and range.	8.F.B.5	●				
Linear Models and the Distributive Property	Workspace 1: Modeling with Integer Rates of Change	Students will determine linear expressions with integer coefficients that represent real-world contexts. They will use these expressions to solve problems.	8.F.B.4	●				
	Workspace 2: Modeling with Fractional Rates of Change	Students will determine linear expressions with fraction or decimal coefficients that represent real-world contexts. They will use these expressions to solve problems.	8.F.B.4	●				
	Workspace 3: Modeling using the Distributive Property over Division	Students will use the Distributive Property over Division to determine and represent expressions for real-world contexts. They will use these expressions to solve problems.	8.F.B.4	●				
Equations of a Line	Workspace 1: Modeling Given Slope and a Point	Students graph relations given in standard form by applying an indicated method; the slope-intercept method, two-points method, or two-intercepts method.	8.F.B.4	●				
	Workspace 2: Calculating Slope	Students are given a relation and a choice as to which method to use to graph it. Students are then given information about the line appropriate to the chosen method.	8.F.B.4	●				
	Workspace 3: Modeling Given Two Points	Students are given the ordered pairs for two points, either mathematically or in context and are asked to identify the equation of the line that connects the points.	8.F.B.4	●				
	Workspace 4: Modeling Given an Initial Point	Students define variables and write expressions and relations to describe linear contexts.	8.F.B.4	●				
Linear Function Operations and Composition	Workspace 1: Evaluating Linear Functions	Given a function in function notation, students determine input and output values.	F.IF.A.2	●				
	Workspace 2: Adding and Subtracting Linear Functions	Given two functions in function notation, students determine the sum or difference of the functions and verify the sum or difference by evaluating the new function at a given value.	F.BF.A.1.b	●				
	Workspace 3: Modeling with Linear Function Composition	Given a scenario that can be modeled by a composition of functions, students determine and use a function.	F.BF.A.1.c	●				
	Workspace 4: Composing Linear Functions	Given two functions in function notation, students determine and use the two related compositions of functions.	F.BF.A.1.c	●				

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Module 2
Linear and Exponential Relationships

Software Unit	Software Workspace	Overview	CCSSM	Problem Solving	Worked Examples	Classification Tools	Animations	Explore Tools
Sequences	Workspace 1: Describing Patterns in Sequences	Students determine the patterns in sequences and determine the next terms in sequences.	F.IF.A.3	●				
	Workspace 2: Writing Recursive Formulas	Students determine if sequences are arithmetic or geometric and determine recursive formulas for the sequences.	F.IF.A.3 F.BF.A.1.a	●				
	Workspace 3: Writing Explicit Formulas	Students determine if sequences are arithmetic or geometric and develop the explicit formulas for the sequences.	F.BF.A.1.a	●				
Linear and Exponential Transformations	Workspace 1: Shifting Vertically	Students vertically shift graphs of linear and exponential functions. Students use verbal descriptions, graphs, and algebraic representations.	F.BF.B.3	●				
	Workspace 2: Reflecting and Dilating using Graphs	Students reflect and dilate graphs of linear and exponential functions. Students use verbal descriptions, graphs, and algebraic representations.	F.BF.B.3	●				
	Workspace 3: Shifting Horizontally	Students horizontally shift graphs of linear and exponential functions. Students use verbal descriptions, graphs, and algebraic representations.	F.BF.B.3	●				
	Workspace 4: Transforming using Tables of Values	Given a table of values and a table of transformed values, students determine how the basic linear and exponential functions were transformed to create the new functions.	F.BF.B.3	●				
	Workspace 5: Using Multiple Transformations	Given a representation of a transformed function, students determine how the basic linear and exponential functions were transformed to create the new functions.	F.BF.B.3	●				
Properties of Exponents	Workspace 1: Using the Product Rule and the Quotient Rule	Students will simplify mathematical expressions using the Product and Quotient Rules.	8.EE.A.1	●				
	Workspace 2: Using the Power to a Power Rule	Students will simplify mathematical expressions using the Power to a Power Rule.	8.EE.A.1	●				
	Workspace 3: Using the Product to a Power Rule and the Quotient to a Power Rule	Students will simplify mathematical expressions using the Product to a Power and the Quotient to a Power Rules.	8.EE.A.1	●				
	Workspace 4: Using Properties of Exponents with Whole Number Powers	Students will use a variety of strategies, including the Power to a Power Rule, the Product to a Power Rule, and the Quotient to a Power Rule to simplify mathematical expressions with whole number exponents.	8.EE.A.1	●				
	Workspace 5: Simplifying Expressions with Negative and Zero Exponents	Students will simplify mathematical expressions involving negative exponents and exponents of 0.	8.EE.A.1	●				
	Workspace 6: Using Properties of Exponents with Integer Powers	Students will use a variety of strategies to simplify mathematical expressions with integer exponents.	8.EE.A.1	●				

Module 2 (cont'd)
Linear and Exponential Relationships

Module 3
Descriptive Statistics

Software Unit	Software Workspace	Overview	CCSSM	Problem Solving	Worked Examples	Classification Tools	Animations	Explore Tools
Numerical Summary Statistics	Workspace 1: Calculating Mean, Median, Mode, and Range	Students calculate the mean, median, mode, and range from data sets.	6.SP.B.5.c S.ID.A.2	●				
	Workspace 2: Determining Appropriate Measures	Students use their understanding of mean, median, and mode to determine which was used as the measure of central tendency.	6.SP.B.5.d S.ID.A.2	●				
	Workspace 3: Measuring the Effects of Changing Data Sets	Students calculate mean and median, with and without an additional data value, and compare the original and adjusted measures.	6.SP.B.5.c S.ID.A.3	●				
Mean Absolute Deviation	Workspace 1: Calculating Mean Absolute Deviation	Students develop an understanding of mean absolute deviation and practice calculating with small data sets.	6.SP.A.3 6.SP.B.5.c			●		
	Workspace 2: Using Mean Absolute Deviation	Students compare the mean absolute deviations and spread of similar data sets.	6.SP.A.3 6.SP.B.5.c	●				
Numerical Data Display Comparisons	Workspace 1: Comparing Characteristics of Data Displays	Students compare the characteristics of data displays, specifying which numerical characteristics can be determined from each display.	7.SP.B.3 S.ID.A.1 S.ID.A.3	●				
	Workspace 2: Comparing Populations using Data Displays	Students use data displays to compare populations by determining the visual overlap and describing the difference between the measures of centers in terms of measures of variability.	7.SP.B.3 S.ID.A.3	●				
Lines of Best Fit	Workspace 1: Estimating Lines of Best Fit	Students describe the patterns of association in scatter plots and select the most appropriate line of best fit for a scatter plot.	8.SP.A.1 8.SP.A.2 S.ID.B.6.c	●				
	Workspace 2: Using Lines of Best Fit	Students practice interpreting the meaning of lines of best fit and using the lines to make predictions.	8.SP.A.2 8.SP.A.3 S.ID.C.7	●				

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Module 4
Quadratics

Software Unit	Software Workspace	Overview	CCSSM	Problem Solving	Worked Examples	Classification Tools	Animations	Explore Tools
Quadratic Models in Factored Form	Workspace 1: Modeling Area as Product of Monomial and Binomial	Students complete a table of values and graph from a scenario represented b a quadratic model Students construct the quadratic function for the scenario as a product of a monomial and a binomial.	A.SSE.A.2 A.SSE.B.3.a	●				
	Workspace 2: Modeling Area as Product of Two Binomials	Students complete a table of values and graph from a scenario represented by a quadratic model. Students construct the quadratic function for the scenario as the product of two binomials.	A.SSE.A.2 A.SSE.B.3.a	●				
Linear and Quadratic Transformations	Workspace 1: Shifting Vertically	Students vertically shift graphs of linear and quadratic functions. Students use verbal descriptions, graphs, and algebraic representations.	F.BF.B.3	●				
	Workspace 2: Reflecting and Dilating using Graphs	Students reflect and dilate graphs of linear and quadratic functions. Students use verbal descriptions, graphs, and algebraic representations.	F.BF.B.3	●				
	Workspace 3: Shifting Horizontally	Students horizontally shift graphs of linear and quadratic functions. Students use verbal descriptions, graphs, and algebraic representations.	F.BF.B.3	●				
	Workspace 4: Transforming using Tables of Values	Given a table of values and a table of transformed values, students determine how the basic linear and quadratic functions were transformed to create the new functions.	F.BF.B.3	●				
	Workspace 5: Using Multiple Transformations	Given a representation of a transformed function, students determine how the basic linear and quadratic functions were transformed to create the new functions.	F.BF.B.3	●				
Polynomial Operations	Workspace 1: Adding Polynomials	Students add quadratic expressions.	A.APR.A.1	●				
	Workspace 2: Adding Polynomials with Higher Orders	Students add higher order polynomials.	A.APR.A.1	●				
	Workspace 3: Subtracting Polynomials	Students subtract polynomials.	A.APR.A.1	●				
	Workspace 4: Using a Factor Table to Multiply Polynomials	Students use factor tables to multiply polynomials. Students combine like terms.	A.APR.A.1	●				
	Workspace 5: Multiplying Polynomials	Students determine which factor table is appropriate for a given problem, set up the table, and then use the table to multiply polynomials.	A.APR.A.1	●				
Like Terms and Order of Operations	Workspace 1: Combining Like Terms	Students combine like terms in algebraic expressions.	7.EE.A.1 7.EE.A.2	●				
	Workspace 2: Combining Like Terms with Multiple Variables	Students combine like terms in expressions with multiple variables.	7.EE.A.1 7.EE.A.2	●				
	Workspace 3: Simplifying Variable Expressions (No Type In)	Students use the solver to combine like terms, including those with negative exponents.	7.EE.A.1 7.EE.A.2	●				
	Workspace 4: Simplifying Variable Expressions (Type In)	Students combine like terms, including those with negative exponents.	7.EE.A.1 7.EE.A.2	●				

Module 4 (cont'd)
Quadratics

Software Unit	Software Workspace	Overview	CCSSM	Problem Solving	Worked Examples	Classification Tools	Animations	Explore Tools
Quadratic Expression Factoring	Workspace 1: Using a Factor Table to Multiply Binomials	Students use factor tables to multiply linear expressions. Students combine like terms.	A.APR.A.1	●				
	Workspace 2: Multiplying Binomials	Students determine which factor table is appropriate for a given problem, set up the table, and then use the table to multiply linear expressions.	A.APR.A.1	●				
	Workspace 3: Factoring Trinomials with Coefficients of One	Students factor quadratic trinomials with a coefficient of one.	A.APR.D.6	●				
	Workspace 4: Factoring Trinomials with Coefficients Other than One	Students factor quadratic trinomials with a coefficient other than one.	A.APR.D.6	●				
	Workspace 5: Factoring using Difference of Squares	Students factor quadratic expressions using difference to two squares.	A.APR.D.6	●				
	Workspace 6: Factoring Quadratic Expressions	Students factor quadratic expressions using all known factoring methods.	A.APR.D.6	●				
Simplification and Operations with Radicals	Workspace 1: Simplifying Radicals	Students simplify numerical radical expressions.	8.NS.A.1 8.NS.A.2	●				
	Workspace 2: Adding and Subtracting Radicals	Students simplify and add and subtract numerical radical expressions.	8.EE.A.2	●				
	Workspace 3: Multiplying Radicals	Students multiply and simplify numerical radical expressions.	8.EE.A.2	●				
Quadratic Equation Solving	Workspace 1: Solving Quadratic Equations by Factoring	Students solve quadratic equations by factoring and applying the zero-product property.	A.REI.B.4	●				
	Workspace 2: Solving Quadratic Equations	Students solve quadratic equations by using factoring or the quadratic formula.	A.REI.B.4	●				
	Workspace 3: Using Regression Models	Students use equations of quadratic regression models, the solver, and graphs to answer questions.	S.ID.C.7	●				

Module 5
Inverse Functions

Software Unit	Software Workspace	Overview	CCSSM	Problem Solving	Worked Examples	Classification Tools	Animations	Explore Tools
Inverse Functions	Workspace 1: Recognizing Graphs of Inverses	Given the graphs of two relations, students decide if the relations are inverses.	F.BF.B.4	●				
	Workspace 2: Calculating Inverses of Linear Functions	Given a function, students determine the equation of the inverse function and use composition of function to verify that the functions are inverses.	F.BF.B.4	●				