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Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
<b>NC.M3.N-CN.9</b>	Use the Fundamental Theorem of Algebra to determine the number and potential types of solutions for polynomial functions.	Integrated Math III Textbook	1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	6: The Zero's the Hero: Decomposing Cubic Functions pp. M1-173A–M1-188
<b>NC.M3.A-SSE.1</b>	Interpret expressions that represent a quantity in terms of its context.	Integrated Math III MATHia Software	1: Analyzing Structure	1: Searching for Patterns	1: Exploring and Analyzing Patterns
				3: Forms of Quadratic Functions	2: Comparing Familiar Function Representations
<b>NC.M2.A-SSE.1a</b>	Identify and interpret parts of a quadratic, square root, inverse variation, or right triangle trigonometric expression, including terms, factors, coefficients, radicands, and exponents.	Integrated Math III Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	1: Examining the Shape and Structure of Quadratic Functions
<b>NC.M3.A-SSE.1a</b>	Identify and interpret parts of a piecewise, absolute value, polynomial, exponential and rational expressions including terms, factors, coefficients, and exponents.	Integrated Math III Textbook	2: Developing Structural Similarities	1: Relating Factors and Zeros	2: Divide and Conquer: Polynomial Division pp. M2-23A–M2-42
			3: Inverting Functions	4: Applications of Growth Modeling	1: Series Are Sums: Geometric Series pp. M3-249A–M3-266
		Integrated Math II Textbook	3: Exploring Functions	1: Functions Derived from Linear Relationships	3: I Graph in Pieces: Linear Piecewise Functions pp. M3-39A–M3-52
		Integrated Math III MATHia Software	3: Inverting Functions	6: Finite Geometric Solutions	4: Step by Step: Step Functions pp. M3-53–M3-64
<b>NC.M3.A-SSE.1b</b>	Interpret expressions composed of multiple parts by viewing one or more of their parts as a single entity to give meaning in terms of a context.	Integrated Math III Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	2: The Cat's Out of the Bag!: Generating Algebraic Expressions pp. M1-17A–M1-30
				2: Composing and Decomposing Figures and Functions	3: Samesies: Comparing Multiple Representations of Functions pp. M1-31A–M1-50
		Integrated Math III MATHia Software	1: Analyzing Structure	2: Graphs of Functions	3: Blame It on the Rain: Modeling with Functions pp. M1-135A–M1-144
					2: Transforming Functions

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<b>NC.M3.A-SSE.2</b>	Use the structure of an expression to identify ways to write equivalent expressions.	Integrated Math III Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	4: True to Form: Forms of Quadratic Functions pp. M1-51A–M1-78	
			2: Developing Structural Similarities	3: Rational Functions	1: Relating Factors and Zeros	1: Satisfactory Factoring: Factoring Polynomials to Identify Zeros pp. M2-7A–M2-22
					2: Divide and Conquer: Polynomial Division pp. M2-23A–M2-42	
			4: Investigating Periodic Functions	2: Trigonometric Equations	4: Must Be a Rational Explanations: Operations with Rational Expressions pp. M2-183A–M2-200	
		5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201A–M2-222				
		Integrated Math III MATHia Software	1: Analyzing Structure	3: Forms of Quadratic Functions	1: Examining the Shape and Structure of Quadratic Functions	
2: Developing Structural Similarities	2: Solving Polynomials	1: Factoring Higher Order Polynomials				
<b>NC.M3.A-SSE.3</b>	Write an equivalent form of an exponential expression by using the properties of exponents to transform expressions to reveal rates based on different intervals of the domain.	Integrated Math III Textbook	3: Inverting Functions	2: Exponential and Logarithmic Functions	4: I Like to Move It: Transformations of Exponential and Logarithmic Functions pp. M3-137A–M3-158	
<b>NC.M3.A-APR.2</b>	Understand and apply the Remainder Theorem.	Integrated Math III Textbook	2: Developing Structural Similarities	1: Relating Factors and Zeros	2: Divide and Conquer: Polynomial Division pp. M2-23A–M2-42	
		Integrated Math III MATHia Software	2: Developing Structural Similarities	2: Solving Polynomials	2: Solving Polynomial Functions	

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
<b>NC.M3.A-APR.3</b>	Understand the relationship among factors of a polynomial expression, the solutions of a polynomial equation and the zeros of a polynomial function.	Integrated Math III Textbook	1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	3: Blame It on the Rain: Modeling with Functions pp. M1-135A-M1-144
				6: The Zero's the Hero: Decomposing Cubic Functions pp. M1-173A-M1-188	
			3: Characteristics of Polynomial Functions	3: Poly-Wog: Key Characteristics of Polynomial Functions pp. M1-233A-M1-256	
			4: Function Construction: Building Cubic and Quartic Functions pp. M1-257A-M1-276		
		2: Developing Structural Similarities	1: Relating Factors and Zeros pp. M2-7A-M2-22		
		Integrated Math III	1: Analyzing Structure	6: Characteristics of Polynomial Functions	5: Identifying Zeros of Polynomials
<b>NC.M3.A-APR.6</b>	Rewrite simple rational expressions in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/(bx)$ , where $a(x)$ , $b(x)$ , $q(x)$ , and $r(x)$ are polynomials with the degree of $r(x)$ less than the degree of $b(x)$ .	Integrated Math III Textbook	2: Developing Structural Similarities	3: Rational Functions	3: There's a Hole in My Function!: Graphical Discontinuities pp. M2-167A-M2-182
					4: Must Be a Rational Explanations: Operations with Rational Expressions pp. M2-183A-M2-200
		Integrated Math III MATHia Software	2: Developing Structural Similarities	1: Polynomial Operations	4: Synthetic Division
				4: Rational Expressions and Equations	1: Simplifying Rational Expressions
				5: Rational Models	2: Multiplying and Dividing Rational Expressions
					3: Adding and Subtracting Rational Expressions
Integrated Math III Textbook	2: Developing Structural Similarities	3: Rational Functions	1: Modeling Rational Functions		
			4: Must Be a Rational Explanations: Operations with Rational Expressions pp. M2-183A-M2-200		
<b>NC.M3.A-APR.7</b>	Understand the similarities between arithmetic with rational expressions and arithmetic with rational numbers.	Integrated Math III Textbook	2: Developing Structural Similarities	3: Rational Functions	4: Must Be a Rational Explanations: Operations with Rational Expressions pp. M2-183A-M2-200
<b>NC.M3.A-APR.7a</b>	Add and subtract two rational expressions, $a(x)$ and $b(x)$ , where the denominators of both $a(x)$ and $b(x)$ are linear expressions.	Integrated Math III Textbook	2: Developing Structural Similarities	3: Rational Functions	4: Must Be a Rational Explanations: Operations with Rational Expressions pp. M2-183A-M2-200
<b>NC.M3.A-APR.7b</b>	Multiply and divide two rational expressions.	Integrated Math III Textbook	2: Developing Structural Similarities	3: Rational Functions	4: Must Be a Rational Explanations: Operations with Rational Expressions pp. M2-183A-M2-200

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
<b>NC.M1.A-CED.1</b>	Create equations and inequalities in one variable that represent linear, exponential, and quadratic relationships and use them to solve problems.	Integrated Math III Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	2: The Cat's Out of the Bag!: Generating Algebraic Expressions pp. M1-17A–M1-30
					3: Samesies: Comparing Multiple Representations of Functions pp. M1-31A–M1-50
					4: True to Form: Forms of Quadratic Functions pp. M1-51A–M1-78
<b>NC.M3.A-CED.1</b>	Create equations and inequalities in one variable that represent absolute value, polynomial, exponential, and rational relationships and use them to solve problems algebraically and graphically.	Integrated Math III Textbook	2: Developing Structural Similarities	1: Relating Factors and Zeros	4: Unequal Equals: Solving Polynomial Inequalities pp. M2-51A–M2-64
				3: Rational Functions	5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201A–M2-222
					6: 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223A–M2-238
		Integrated Math III MATHia Software	2: Developing Structural Similarities	2: Solving Polynomials	3: Solving Polynomial Inequalities
				5: Rational Models	2: Using Rational Models
					3: Solving Work, Mixture, and Distance Problems
		Integrated Math II MATHia Software	3: Exploring Functions	1: Absolute Value Equations	4: Modeling and Solving with Rational Functions
					1: Graphing Simple Absolute Value Equations Using Number Lines
					2: Solving Absolute Value Equations
<b>NC.M3.A-CED.2</b>	Create and graph equations in two variables to represent absolute value, polynomial, exponential and rational relationships between quantities.	Integrated Math II Textbook	3: Exploring Functions	1: Functions Derived from Linear Relationships	3: Reasoning About Absolute Value Inequalities
					2: Play Ball!: Absolute Value Equations and Inequalities pp. M3-25A–M3-38
<b>NC.M3.A-CED.3</b>	Create systems of equations and/or inequalities to model situations in context.	Integrated Math III Textbook	1: Analyzing Structure	3: Characteristics of Polynomial Functions	5: Level Up: Analyzing Polynomial Functions pp. M1-277A–M1-288
			2: Developing Structural Similarities	1: Relating Factors and Zeros	4: Unequal Equals: Solving Polynomial Inequalities pp. M2-51A–M2-64
				2: Polynomial Models	3: Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103A–M2-117

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
<b>NC.M1.A-CED.4</b>	Solve for a quantity of interest in formulas used in science and mathematics using the same reasoning as in solving equations.	Integrated Math III Textbook	3: Inverting Functions	1: Radical Functions	5: Into the Unknown: Solving Radical Equations pp. M3-71A–M3-80
<b>NC.M3.A-REI.1</b>	Justify a solution method for equations and explain each step of the solving process using mathematical reasoning.	Integrated Math III Textbook	2: Developing Structural Similarities	3: Rational Functions	5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201A–M2-222
			4: Investigating Periodic Functions	2: Trigonometric Equations	6: 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223A–M2-238
<b>NC.M3.A-REI.2</b>	Solve and interpret one variable rational equations arising from a context, and explain how extraneous solutions may be produced.	Integrated Math III Textbook	2: Developing Structural Similarities	3: Rational Functions	5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201A–M2-222
		Integrated Math III MATHia Software	2: Developing Structural Similarities	3: Rational Functions 4: Rational Expressions and Equations	6: 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223A–M2-238 2: Modeling Ratios as Rational Functions 4: Solving Rational Equations that Result in Linear Equations
<b>NC.M3.A-REI.11</b>	Extend an understanding that the x-coordinates of the points where the graphs of two equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$ and approximate solutions using a graphing technology or successive approximations with a table of values.	Integrated Math III Textbook	1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	3: Blame It on the Rain: Modeling with Functions pp. M1-135A–M1-144
				3: Characteristics of Polynomial Functions	5: Level Up: Analyzing Polynomial Functions pp. M1-277A–M1-288
			2: Developing Structural Similarities	3: Rational Functions	5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201A–M2-222
			3: Inverting Functions	2: Exponential and Logarithmic Functions	1: Half-Life: Comparing Linear and Exponential Functions pp. M3-93A–M3-106
		3: Exponential and Logarithmic Equations		2: Pert and Nert: Properties of Exponential Graphs pp. M3-107A–M3-124	
Integrated Math II Textbook	3: Exploring Functions	1: Functions Derived from Linear Relationships	3: More Than One Way to Crack an Egg: Solving Exponential Equations pp. M3-197A–M3-206	2: Play Ball!: Absolute Value Equations and Inequalities pp. M3-25A–M3-38	

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<b>NC.M3.F-IF.1</b>	Extend the concept of a function by recognizing that trigonometric ratios are functions of angle measure.	Integrated Math III Textbook	4: Investigating Periodic Functions	2: Trigonometric Equations	1: Chasing Theta: Solving Trigonometric Equations pp. M4-111–M4-124
<b>NC.M3.F-IF.2</b>	Use function notation to evaluate piecewise defined functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	Integrated Math II Textbook	3: Exploring Functions	1: Functions Derived from Linear Relationships	3: I Graph in Pieces: Linear Piecewise Functions pp. M3-39A–M3-52
		Integrated Math II	3: Exploring Functions	2: Graphs of Piecewise Functions	4: Step by Step: Step Functions pp. M3-53–M3-64
<b>NC.M1.F-IF.3</b>	Recognize that recursively and explicitly defined sequences are functions whose domain is a subset of the integers, the terms of an arithmetic sequence are a subset of the range of a linear function, and the terms of a geometric sequence are a subset of the range of an exponential function.	Integrated Math III Textbook	3: Inverting Functions	4: Applications of Growth Modeling	1: Introduction to Piecewise Functions
					2: Graphing Linear Piecewise Functions
<b>NC.M3.F-IF.4</b>	Interpret key features of graphs, tables, and verbal descriptions in context to describe functions that arise in applications relating two quantities to include periodicity and discontinuities.	Integrated Math III Textbook	4: Investigating Periodic Functions	2: Trigonometric Equations	3: This Is the Title of This Lesson: Fractals pp. M3-277–M3-293
					2: Wascally Wabbits: Modeling with Periodic Functions pp. M4-125A–M4-136
					4: The Wheel Deal: Modeling Motion with a Trigonometric Function pp. M4-137–M4-146
		Integrated Math II Textbook	3: Exploring Functions	1: Functions Derived from Linear Relationships	4: Step by Step: Step Functions pp. M3-53–M3-64
		Integrated Math III MATHia Software	1: Analyzing Structure	2: Graphs of Functions	1: Identifying Key Characteristics of Graphs of Functions
				6: Characteristics of Polynomial Functions	2: Classifying Polynomial Functions
			3: Interpreting Key Features of Graphs in Terms of Quantities		
			4: Identifying Key Characteristics of Polynomial Functions		

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
<b>NC.M1-F-IF.7</b>	Analyze linear, exponential, and quadratic functions by generating different representations, by hand in simple cases and using technology for more complicated cases, to show key features, including: domain and range; rate of change; intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; and end behavior.	Integrated Math III Textbook	1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	4: Folds, Turns, and Zeros: Transforming Function Shapes pp. M1-145A-M1-158
					5: Planting the Seeds: Exploring Cubic Functions pp. M1-159A-M1-172
					6: The Zero's the Hero: Decomposing Cubic Functions pp. M1-173A-M1-188
<b>NC.M3.F-IF.7</b>	Analyze piecewise, absolute value, polynomials, exponential, rational, and trigonometric functions (sine and cosine) using different representations to show key features of the graph, by hand in simple cases and using technology for more complicated cases, including: domain and range; intercepts; intervals where the function is increasing, decreasing, positive, or negative; rate of change; relative maximums and minimums; symmetries; end behavior; period; and discontinuities.	Integrated Math III Textbook	1: Analyzing Structure	3: Characteristics of Polynomial Functions	1: So Odd, I Can't Even: Power Functions pp. M1-203A-M1-216
					4: Function Construction: Building Cubic and Quartic Functions pp. M1-257A-M1-276



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NC.M3.F-IF.7	Analyze piecewise, absolute value, polynomials, exponential, rational, and trigonometric functions (sine and cosine) using different representations to show key features of the graph, by hand in simple cases and using technology for more complicated cases, including: domain and range; intercepts; intervals where the function is increasing, decreasing, positive, or negative; rate of change; relative maximums and minimums; symmetries; end behavior; period; and discontinuities.	Integrated Math III Textbook	2: Developing Structural Similarities	3: Rational Functions	1: There's a Fine Line Between a Numerator and a Denominator: Introduction to Rational Functions pp. M2-129A–M2-144 3: There's a Hole in My Function!: Graphical Discontinuities pp. M2-167A–M2-182
			3: Inverting Functions	2: Exponential and Logarithmic Functions	2: Pert and Nert: Properties of Exponential Graphs pp. M3-107A–M3-124 3: Return of the Inverse: Logarithmic Functions pp. M3-125A–M3-136
				4: Applications of Growth Modeling	2: Paint by Numbers: Art and Transformations pp. M3-267A–M3-276
			4: Investigating Periodic Functions	1: Trigonometric Relationships	2: A Sense of Deja Vu: Periodic Functions pp. M4-21A–M4-36
		3: What Goes Around: The Sine and Cosine Functions pp. M4-49A–M4-64			
		6: Farmer's Tan: The Tangent Function pp. M4-79A–M4-96			
		Integrated Math II Textbook	3: Exploring Functions	1: Functions Derived from Linear Relationships	1: Putting the V in Absolute Value: Building Volume and Surface Area Formulas for Pyramids, Cones, and Spheres pp. M3-7A–M3-24 2: Play Ball!: Absolute Value Equations and Inequalities pp. M3-25A–M3-38 3: I Graph in Pieces: Linear Piecewise Functions pp. M3-39A–M3-52 4: Step by Step: Step Functions pp. M3-53–M3-64
		Integrated Math III MATHia Software	2: Developing Structural Similarities	3: Rational Functions	1: Introduction to Rational Functions

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NC.M3.F-IF.7	Analyze piecewise, absolute value, polynomials, exponential, rational, and trigonometric functions (sine and cosine) using different representations to show key features of the graph, by hand in simple cases and using technology for more complicated cases, including: domain and range; intercepts; intervals where the function is increasing, decreasing, positive, or negative; rate of change; relative maximums and minimums; symmetries; end behavior; period; and discontinuities.	Integrated Math III MATHia Software	3: Inverting Functions	4: Exponential and Logarithmic Functions	1: Properties of Exponential Graphs
		Integrated Math II MATHia Software	Module 3 Exploring Functions	2: Graphs of Piecewise Functions	2: Introduction to Logarithmic Functions
					1: Introduction to Piecewise Functions
					2: Graphing Linear Piecewise Functions
					3: Interpreting Piecewise Functions
					4: Using Linear Piecewise Functions
			5: Analyzing Step Functions		
			1: Introduction to Piecewise Functions		
			2: Graphing Linear Piecewise Functions		
			3: Interpreting Piecewise Functions		
			4: Using Linear Piecewise Functions		
			5: Analyzing Step Functions		
			3: Interpreting Piecewise Functions		
		4: Using Linear Piecewise Functions			
5: Analyzing Step Functions					
NC.M3.F-IF.9	Compare key features of two functions using different representations by comparing properties of two different functions, each with a different representation (symbolically, graphically, numerically in tables, or by verbal descriptions).	Integrated Math III Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	3: Samesies: Comparing Multiple Representations of Functions pp. M1-31A–M1-50
				4: True to Form: Forms of Quadratic Functions pp. M1-51A–M1-78	
			3: Characteristics of Polynomial Functions	6: To a Greater or Lesser Degree: Comparing Polynomial Functions pp. M1-289A–M1-304	
			3: Inverting Functions	1: Radical Functions	3: Making Waves: Transformations of Radical Functions pp. M3-41A–M3-50
		Integrated Math II Textbook	3: Exploring Functions	2: Exponential and Logarithmic Functions	2: Pert and Nert: Properties of Exponential Graphs pp. M3-107A–M3-124
				3: Introduction to Quadratic Functions	4: You Lose Some, You Lose Some: Comparing Functions Using Key Characteristics and Average Rate of Change pp. M3-217A–M3-232
		Integrated Math III MATHia Software	1: Analyzing Structure	6: Characteristics of Polynomial Functions	8: Comparing Polynomial Functions in Different Forms

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<b>NC.M1.F-BF.1a</b>	Build linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two ordered pairs (include reading these from a table).	Integrated Math III Textbook	1: Analyzing Structure	3: Characteristics of Polynomial Functions	3: Poly-Wog: Key Characteristics of Polynomial Functions pp. M1-233A-M1-256
<b>NC.M3.F-BF.1a</b>	Build polynomial and exponential functions with real solution(s) given a graph, a description of a relationship, or ordered pairs (include reading these from a table).	Integrated Math III Textbook	1: Analyzing Structure	3: Characteristics of Polynomial Functions	4: Function Construction: Building Cubic and Quartic Functions pp. M1-257A-M1-276
<b>NC.M3.F-BF.1b</b>	Build a new function, in terms of a context, by combining standard function types using arithmetic operations.	Integrated Math III Textbook	1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	3: Blame It on the Rain: Modeling with Functions pp. M1-135A-M1-144
				3: Characteristics of Polynomial Functions	4: Function Construction: Building Cubic and Quartic Functions pp. M1-257A-M1-276
		2: Developing Structural Similarities	2: Polynomial Models	3: Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103A-M2-117	
		4: Investigating Periodic Functions	2: Trigonometric Equations	4: Springs Eternal: The Damping Function pp. M4-147A-M4-158	
		Integrated Math III MATHia Software	1: Analyzing Structure	6: Characteristics of Polynomial Functions	1: Analyzing Polynomial Functions
<b>NC.M3.F-BF.3</b>	Extend an understanding of the effects on the graphical and tabular representations of a function when replacing $f(x)$ with $k \cdot f(x)$ , $f(x) + k$ , $f(x + k)$ to include $f(k \cdot x)$ for specific values of $k$ (both positive and negative).	Integrated Math III Textbook	1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	4: Folds, Turns, and Zeros: Transforming Function Shapes pp. M1-145A-M1-158
				3: Characteristics of Polynomial Functions	1: So Odd, I Can't Even: Power Functions pp. M1-203A-M1-216
			2: Developing Structural Similarities	3: Rational Functions	2: Math Class Needs a Makeover: Transformations of Polynomial Functions pp. M1-217A-M1-232
			3: Inverting Functions	1: Radical Functions	2: Approaching Infinity: Transformations of Rational Functions pp. M2-145A-M2-166
					3: Making Waves: Transformations of Radical Functions pp. M3-41A-M3-50

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
<b>NC.M3.F-BF.3</b>	Extend an understanding of the effects on the graphical and tabular representations of a function when replacing $f(x)$ with $k \cdot f(x)$ , $f(x) + k$ , $f(x + k)$ to include $f(k \cdot x)$ for specific values of $k$ (both positive and negative).	Integrated Math III Textbook	3: Inverting Functions	2: Exponential and Logarithmic Functions	4: I Like to Move It: Transformations of Exponential and Logarithmic Functions pp. M3-137A–M3-158
			4: Investigating Periodic Functions	1: Trigonometric Relationships	5: The Sines They Are A-Changin': Transformations of Sine and Cosine Functions pp. M4-65A–M4-78
		Integrated Math II Textbook	3: Exploring Functions	1: Functions Derived from Linear Relationships	1: Putting the V in Absolute Value: Building Volume and Surface Area Formulas for Pyramids, Cones, and Spheres pp. M3-7A–M3-24
		Integrated Math III MATHia Software	1: Analyzing Structure	2: Graphs of Functions	2: Transforming Functions
3: Forms of Quadratic Functions	4: Quadratic Transformations				
<b>NC.M3.F-BF.4</b>	Find an inverse function.	Integrated Math III MATHia Software	3: Inverting Functions	1: Inverses of Functions	3: Sketching Graphs of Inverses
<b>NC.M3.F-BF.4a</b>	Understand the inverse relationship between exponential and logarithmic, quadratic and square root, and linear to linear functions and use this relationship to solve problems using tables, graphs, and equations.	Integrated Math III Textbook	3: Inverting Functions	2: Exponential and Logarithmic Functions	3: Return of the Inverse: Logarithmic Functions pp. M3-125A–M3-136
				3: Exponential and Logarithmic Equations	1: All the Pieces of the Puzzle: Logarithmic Expressions pp. M3-171A–M3-184
					2: Mad Props: Properties of Logarithms pp. M3-185A–M3-196
					3: More Than One Way to Crack an Egg: Solving Exponential Equations pp. M3-197A–M3-206
					4: Logging On: Solving Logarithmic Equations pp. M3-207A–M3-222
5: What's the Use?: Applications of Exponential and Logarithmic Equations pp. M3-223A–M3-236					
Integrated Math II Textbook	3: Exploring Functions	1: Functions Derived from Linear Relationships	5: A Riddle Wrapped in a Mystery: Inverses of Linear Functions pp. M3-65–M3-78		
Integrated Math III MATHia Software	3: Inverting Functions	1: Inverses of Functions	4: Calculating Inverses of Linear Functions		

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
<b>NC.M3.F-BF.4b</b>	Determine if an inverse function exists by analyzing tables, graphs, and equations.	Integrated Math II Textbook	3: Exploring Functions	1: Functions Derived from Linear Relationships	5: A Riddle Wrapped in a Mystery: Inverses of Linear Functions pp. M3-65–M3-78
<b>NC.M3.F-BF.4c</b>	Understand the inverse relationship between exponential and logarithmic, quadratic and square root, and linear to linear functions and use this relationship to solve problems using tables, graphs, and equations.	Integrated Math III Textbook	3: Inverting Functions	1: Radical Functions	2: Such a Rad Lesson: Radical Functions pp. M3-19A–M3-40
				2: Exponential and Logarithmic Functions	3: Return of the Inverse: Logarithmic Functions pp. M3-125A–M3-136
				3: Exponential and Logarithmic Equations	1: All the Pieces of the Puzzle: Logarithmic Expressions pp. M3-171A–M3-184
					2: Mad Props: Properties of Logarithms pp. M3-185A–M3-196
					3: More Than One Way to Crack an Egg: Solving Exponential Equations pp. M3-197A–M3-206
					4: Logging On: Solving Logarithmic Equations pp. M3-207A–M3-222
5: What's the Use?: Applications of Exponential and Logarithmic Equations pp. M3-223A–M3-236					
<b>NC.M3.F-LE.3</b>	Compare the end behavior of linear, exponential, and quadratic functions using graphs and tables to show that a quantity increasing exponentially eventually exceeds a quantity increasing linearly or quadratically.	Integrated Math II Textbook	3: Exploring Functions	3: Introduction to Quadratic Functions	4: You Lose Some, You Lose Some: Comparing Functions Using Key Characteristics and Average Rate of Change pp. M3-217A–M3-232
<b>NC.M3.F-LE.4</b>	Use logarithms to express the solution to $ab^{ct} = d$ where $a$ , $b$ , $c$ , and $d$ are numbers and evaluate the logarithm using technology.	Integrated Math III Textbook	3: Inverting Functions	3: Exponential and Logarithmic Equations	3: More Than One Way to Crack an Egg: Solving Exponential Equations pp. M3-197A–M3-206
					4: Logging On: Solving Logarithmic Equations pp. M3-207A–M3-222
		Integrated Math III MATHia	3: Inverting Functions	5: Solving Equations with Base 2, 10, or e	5: What's the Use?: Applications of Exponential and Logarithmic Equations pp. M3-223A–M3-236
					1: Solving Base 2 and Base 10 Equations
2: Solving Base e Equations					
3: Solving Any Base Equations					

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
<b>NC.M3.F-TF.1</b>	Understand radian measure of an angle as: <ul style="list-style-type: none"> <li>The ratio of the length of an arc on a circle subtended by the angle to its radius.</li> <li>A dimensionless measure of length defined by the quotient of arc length and radius that is a real number.</li> <li>The domain for trigonometric functions.</li> </ul>	Integrated Math III Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	3: The Knights of the Round Table: Radian Measure pp. M4-37–M4-48
				2: Trigonometric Equations	1: Chasing Theta: Solving Trigonometric Equations pp. M4-111–M4-124
		Integrated Math III MATHia Software	4: Investigating Periodic Functions	1: Graphs of Trigonometric Functions	1: Understanding the Unit Circle
<b>NC.M3.F-TF.2</b>	Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle.	Integrated Math III Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	4: What Goes Around: The Sine and Cosine Functions pp. M4-49–M4-64
				2: Trigonometric Equations	1: Chasing Theta: Solving Trigonometric Equations pp. M4-105–M4-118
		Integrated Math III MATHia Software	4: Investigating Periodic Functions	1: Graphs of Trigonometric Functions	1: Understanding the Unit Circle
<b>NC.M3.F-TF.2a</b>	Interpret the sine function as the relationship between the radian measure of an angle formed by the horizontal axis and a terminal ray on the unit circle and its y coordinate.	Integrated Math III Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	4: What Goes Around: The Sine and Cosine Functions pp. M4-49–M4-64
				2: Trigonometric Equations	1: Chasing Theta: Solving Trigonometric Equations pp. M4-105–M4-118
<b>NC.M3.F-TF.2b</b>	Interpret the cosine function as the relationship between the radian measure of an angle formed by the horizontal axis and a terminal ray on the unit circle and its x coordinate.	Integrated Math III Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	4: What Goes Around: The Sine and Cosine Functions pp. M4-49–M4-64
				2: Trigonometric Equations	1: Chasing Theta: Solving Trigonometric Equations pp. M4-105–M4-118

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
<b>NC.M3.F-TF.5</b>	Use technology to investigate the parameters, $a$ , $b$ , and $h$ of a sine function, $f(x) = a \sin(b \cdot x) + h$ , to represent periodic phenomena and interpret key features in terms of a context.	Integrated Math III Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	4: The Sines They Are A-Changin': Transformations of Sine and Cosine Functions pp. M4-65A–M4-78
				2: Trigonometric Equations	3: Wascally Wabbits: Modeling with Periodic Functions pp. M4-125A–M4-136
		Integrated Math III MATHia Software	4: Investigating Periodic Functions		1: Graphs of Trigonometric Functions
				2: Representing Periodic Behavior	5: Springs Eternal: The Damping Function pp. M4-147A–M4-158
<b>NC.M3.G-CO.10</b>	Verify experimentally properties of the centers of triangles (centroid, incenter, and circumcenter).	Integrated Math II Textbook	1: Reasoning With Shapes	1: Composing and Decomposing Shapes	4: What's the Point?: Points of Concurrency pp. M1-55A–M1-72
<b>NC.M3.G-CO.11</b>	Prove theorems about parallelograms. <ul style="list-style-type: none"> <li>• Opposite sides of a parallelogram are congruent.</li> <li>• Opposite angles of a parallelogram are congruent.</li> <li>• Diagonals of a parallelogram bisect each other.</li> <li>• If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.</li> </ul>	Integrated Math II Textbook	1: Reasoning With Shapes	3: Using Congruence Theorems	2: Props To You: Properties of Quadrilaterals pp. M1-221A–M2-248
<b>NC.M3.G-CO.14</b>	Apply properties, definitions, and theorems of two-dimensional figures to prove geometric theorems and solve problems.	Integrated Math II Textbook	1: Reasoning With Shapes	3: Using Congruence Theorems	2: Props To You: Properties of Quadrilaterals pp. M1-221A–M2-248

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
<b>NC.M3.G-C.2</b>	Understand and apply theorems about circles. <ul style="list-style-type: none"> <li>Understand and apply theorems about relationships with angles and circles, including central, inscribed and circumscribed angles.</li> <li>Understand and apply theorems about relationships with line segments and circles including, radii, diameter, secants, tangents and chords.</li> </ul>	Integrated Math II Textbook	1: Reasoning With Shapes	2: Justifying Line and Angle Relationships	5: Corners in a Round Room: Angle Relationships Inside and Outside Circles pp. M1-165A–M1-194
<b>NC.M3.G-C.5</b>	Using similarity, demonstrate that the length of an arc, $s$ , for a given central angle is proportional to the radius, $r$ , of the circle. Define radian measure of the central angle as the ratio of the length of the arc to the radius of the circle, $s/r$ . Find arc lengths and areas of sectors of circles.	Integrated Math II Textbook	2: Investigating Proportionality	3: Circles and Volume	1: All Circles Great and Small: Similarity Relationships in Circles pp. M2-211A–M2-228
					2: A Slice of Pi: Sectors and Segments of a Circle pp. M2-229A–M2-248
<b>NC.M3.G-GPE.1</b>	Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the square to find the center and radius of a circle given by an equation.	Integrated Math II Textbook	4: Seeing Structure	3: Circles on a Coordinate Plane	1: $X^2$ Plus $Y^2$ Equals Radius <sup>2</sup> : Deriving the Equation for a Circle pp. M4-187A–M4-200
		Integrated Math II MATHia	4: Seeing Structure	8: Equation of a Circle	2: A Blip on the Radar: Determining Points on a Circle pp. M4-201A–M4-216
<b>NC.M3.G-GMD.3</b>	Use the volume formulas for prisms, cylinders, pyramids, cones, and spheres to solve problems.	Integrated Math III Textbook	1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	5: Planting the Seeds: Exploring Cubic Functions pp. M1-153A–M1-166
		Integrated Math II Textbook	2: Investigating Proportionality	3: Circles and Volume	4: Get to the Point: Building Volume and Surface Area Formulas for Pyramids, Cones, and Spheres pp. M2-267A–M2-290
		Integrated Math II MATHia Software	2: Investigating Proportionality	5: Volume	1: Creating Three-Dimensional Shapes from Two-Dimensional Figures



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<b>NC.M3.G-GMD.4</b>	Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify three-dimensional objects generated by rotations of two-dimensional objects.	Integrated Math III Textbook	1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	1: You Spin Me Round: Rotating Two-Dimensional Figures through Space pp. M1-105A-M1-120 2: Any Way You Slice It: Cross-Sections pp. M1-121A-M1-134
		Integrated Math III MATHia Software	1: Analyzing Structure	4: Three-Dimensional Shapes	1: Visualizing Cross Sections of Three-Dimensional Shapes
		Integrated Math II MATHia	2: Investigating Proportionality	5: Volume	2: Calculating Volume of Cylinders 4: Calculating Volume of Cones 5: Calculating Volume of Spheres
<b>NC.M3.G-MG.1</b>	<p>Apply geometric concepts in modeling situations</p> <ul style="list-style-type: none"> <li>• Use geometric and algebraic concepts to solve problems in modeling situations:</li> <li>• Use geometric shapes, their measures, and their properties, to model real-life objects.</li> <li>• Use geometric formulas and algebraic functions to model relationships.</li> <li>• Apply concepts of density based on area and volume.</li> <li>• Apply geometric concepts to solve design and optimization problems.</li> </ul>	Integrated Math III Textbook	1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	2: Any Way You Slice It: Cross-Sections pp. M1-121A-M1-134
		Integrated Math II Textbook	2: Investigating Proportionality	3: Circles and Volume	4: Get to the Point: Building Volume and Surface Area Formulas for Pyramids, Cones, and Spheres pp. M2-267A-M2-290
<b>NC.M3.S-IC1</b>	Understand the process of making inferences about a population based on a random sample from that population.	Integrated Math III Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	1: Data, Data Everywhere: Sample Surveys, Observational Studies, and Experiments pp. M5-65A-M5-76

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
<b>NC.M3.S-IC.1</b>	Understand the process of making inferences about a population based on a random sample from that population.	Integrated Math III Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	2: Ample Sample Examples: Sampling Methods and Randomization pp. M5-77A–M5-94
					3: A Vote of Confidence: Using Confidence Intervals to Estimate Unknown Population Means pp. M5-95A–M5-110
					4: How Much Different?: Using Statistical Significance to Make Inferences About Populations pp. M5-111A–M5-126
					5: DIY: Designing a Study and Analyzing the Results pp. M5-127A–M5-134
<b>NC.M3.S-IC.3</b>	Recognize the purposes of and differences between sample surveys, experiments, and observational studies and understand how randomization should be used in each.	Integrated Math III Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	1: Data, Data Everywhere: Sample Surveys, Observational Studies, and Experiments pp. M5-65A–M5-76
					2: Ample Sample Examples: Sampling Methods and Randomization pp. M5-77A–M5-94
					5: DIY: Designing a Study and Analyzing the Results pp. M5-127A–M5-134
<b>NC.M3.S-IC.4</b>	Use simulation to understand how samples can be used to estimate a population mean or proportion and how to determine a margin of error for the estimate.	Integrated Math III Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	3: A Vote of Confidence: Using Confidence Intervals to Estimate Unknown Population Means pp. M5-95A–M5-110
					4: How Much Different?: Using Statistical Significance to Make Inferences About Populations pp. M5-111A–M5-126
					5: DIY: Designing a Study and Analyzing the Results pp. M5-127A–M5-134
<b>NC.M3.S-IC.5</b>	Use simulation to determine whether observed differences between samples from two distinct populations indicate that the two populations are actually different in terms of a parameter of interest.	Integrated Math III Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	4: How Much Different?: Using Statistical Significance to Make Inferences About Populations pp. M5-111A–M5-126
					5: DIY: Designing a Study and Analyzing the Results pp. M5-127A–M5-134

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<b>NC.M3.S-IC.6</b>	Evaluate articles and websites that report data by identifying the source of the data, the design of the study, and the way the data are graphically displayed.	Integrated Math III Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	3: A Vote of Confidence: Using Confidence Intervals to Estimate Unknown Population Means pp. M5-95A–M5-110
					4: How Much Different?: Using Statistical Significance to Make Inferences About Populations pp. M5-111A–M5-126
					5: DIY: Designing a Study and Analyzing the Results pp. M5-127A–M5-134