

Table of Contents

N.RN.1 1	
N.RN.21	
N.Q.11	
N.CN.81	
N.CN.9	
A.SSE.11	
A.SSE.1a	2
A.SSE.1b	
A.SSE.2	2
A.SSE.2	;
A.SSE.3a	;
A.SSE.3c	;
A.SSE.4	;
A.APR.1	;
A.APR.2	;
A.APR.3	ŀ
A.APR.4	ŀ
A.APR.5	ŀ
A.APR.6	5
A.APR.75	5
A.CED.1	5
A.CED.16	5
A.CED.26	5
A.CED.36	5
A.CED.46	5
A.REI.1	,
A.REI.27	,

A.REI.4	7
A.REI.B.4a	7
A.REI.4b	7
A.REI.7	8
A.REI.10	8
A.REI.11	8
F.IF.3	8
F.IF.4	9
F.IF.4	10
F.IF.5	10
F.IF.5	11
F.IF.6	11
F.IF.7	11
F.IF.7a	11
F.IF.7b	11
F.IF.7b	12
F.IF.7c	12
F.IF.7d	12
F.IF.7e	12
F.IF.7e	13
F.IF.8	13
F.IF.8a	13
F.IF.8b	13
F.IF.9	13
F.IF.9	14
F.BF.1	14
F.BF.1a	14

F.BF.1b14
F.BF.1c14
F.BF.214
F.BF.315
F.BF.415
F.BF.4a15
F.BF.4b15
F.BF.4c15
F.BF.4d15
F.BF.516
F.LE.216
F.LE.416
F.LE.516
F.TF.116
F.TF.217
F.TF.317
F.TF.417
F.TF.517
F.TF.817
G.SRT.918
G.SRT.1018
G.SRT.1118
G.GMD.118
G.GMD.318
G.GMD.418
G.MG.118
G.MG.2

G.MG.3	19
S.ID.1	19
S.ID.2	19
S.ID.4	19
S.ID.6a	19
S.IC.1	20
S.IC.2	20
S.IC.3	20
S.IC.4	21
S.IC.5	21
S.IC.6	21
S.MD.6	21
S.MD.7	



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
	Explain how the definition of the meaning of rational exponents	Textbook	3: Inverting Functions	1: Radical Functions	4: Keepin' It Real: Rewriting Radical Expressions pp. M3-51A–M3-70
	follows from extending the properties of integer exponents to				1: Simplifying Radicals
N.RN.1	those values, allowing for a notation				2: Adding and Subtracting Radicals
	for radicals in terms of rational exponents. For example, we define	MATHia	3: Inverting Functions	2: Simplification and	3: Multiplying Radicals
	$5^{(1/3)}$ to be the cube root of 5 because we want $(5^{1/3})^3 = 5^{((1/3)3)}$ to hold, so $(5^{1/3})^3$ must equal 5.	Software			4: Dividing Radicals
	Rewrite expressions involving	Textbook	3: Inverting Functions	1: Radical Functions	4: Keepin' It Real: Rewriting Radical Expressions pp. M3-51A–M3-70
N.RN.2	radicals and rational exponents	MATHia		2. Padical Expressions with	1: Simplifying Radicals with Variables
	using the properties of exponents.	Software	3: Inverting Functions	Variables	2: Adding and Subtracting Radicals with Variables
N.Q.1	Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.	Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	2: A Sense of Deja Vu: Periodic Functions pp. M4-21A–M4-36
(+) Extend	(+) Extend polynomial identities to the complex numbers. For example,	Textbook	2: Developing Structural Similarities	1: Relating Factors and Zeros	1: Satisfactory Factoring: Factoring Polynomials to Identify Zeros pp. M2-7A–M2-22
	rewrite $x^2 + 4$ as $(x + 2i)(x - 2i)$.				2: Divide and Conquer: Polynomial Division pp. M2-23A–M2-42
N.CN.9	(+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	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
					1: Exploring and Analyzing Patterns
A.SSE.1	Interpret expressions that represent a quantity in terms of its context.*	MATHia Software	1: Analyzing Structure	1: Searching for Patterns	2: Comparing Familiar Function Representations
				3: Forms of Quadratic Functions	1: Examining the Shape and Structure of Quadratic Functions



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
			1: Analyzing Structure	1: Exploring and Analyzing Patterns	4: True to Form: Forms of Quadratic Functions pp. M1-51A–M1-78
Interpret parts of an expression,	Interpret parts of an expression,	Textbook	2: Developing Structural Similarities	1: Relating Factors and Zeros	2: Divide and Conquer: Polynomial Division pp. M2-23A–M2-42
A.SSE.Ta	coefficients.		3: Inverting Functions	4: Applications of Growth Modeling	1: Series Are Sums: Geometric Series pp. M3-249A–M3-266
		MATHia Software	3: Inverting Functions	6: Finite Geometric Solutions	1: Introduction to Finite Geometric Series
				1: Exploring and Analyzing	 The Cat's Out of the Bag!: Generating Algebraic Expressions pp. M1-17A–M1-30
A.SSE.1b Interpret complicated expressions by viewing one or more of their parts as a single entity. For example, interpret $P(1+r)^n$ as the product of P and a factor not depending on P .	Interpret complicated expressions by viewing one or more of their parts as a single entity. For example,	Textbook	1: Analyzing Structure	Patterns	3: Samesies: Comparing Multiple Representations of Functions pp. M1-31A–M1-50
			2: Composing and Decomposing Figures and Functions	3: Blame It on the Rain: Modeling with Functions pp. M1-135A-M1-144	
		MATHia Software	1: Analyzing Structure	2: Graphs of Functions	2: Transforming Functions
		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	1: Relating Factors and Zeros	 Satisfactory Factoring: Factoring Polynomials to Identify Zeros pp. M2-7A–M2-22
	Use the structure of an expression				2: Divide and Conquer: Polynomial Division pp. M2-23A–M2-42
A.SSE.2	to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference			3: Rational Functions	4: Must Be a Rational Explanations: Operations with Rational Expressions pp. M2-183A–M2-200
of squares that can be factored $(x^2 - y^2)(x^2 + y^2)$.	of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.				5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201A–M2-222
			4: Investigating Periodic Functions	2: Trigonometric Equations	1: Chasing Theta: Solving Trigonometric Equations pp. M4-111A–M4-124
		MATHia Software	1: Analyzing Structure	3: Forms of Quadratic Functions	1: Examining the Shape and Structure of Quadratic Functions



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
A.SSE.2	Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.	MATHia Software	2: Developing Structural Similarities	2: Solving Polynomials	1: Factoring Higher Order Polynomials
A.SSE.3a	Factor a quadratic expression to reveal the zeros of the function it defines.	Textbook	2: Developing Structural Similarities	1: Relating Factors and Zeros	2: Divide and Conquer: Polynomial Division pp. M2-23A–M2-42
A.SSE.3c	Use the properties of exponents to transform expressions for exponential functions. For example the expression $1.15t$ can be rewritten as $(1.15^{(1/12))^{1}2t \approx 1.012^{1}2t$ to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.	Textbook	3: Inverting Functions	2: Exponential and Logarithmic Functions	 I Like to Move It: Transformations of Exponential and Logarithmic Functions pp. M3-137A–M3-158
A.SSE.4 Derive the formula for the sum of a finite geometric series (when the common ratio is not 1), and use the formula to solve problems. For example, calculate mortgage payments.*	Textbook	3: Inverting Functions	4: Applications of Growth Modeling	1: Series Are Sums: Geometric Series pp. M3-249A–M3-266	
	common ratio is not 1), and use the formula to solve problems.	MATHia Software	3: Inverting Functions	6: Finite Geometric Solutions	1: Introduction to Finite Geometric Series
	For example, calculate mortgage payments.*				2: Problem Solving using Finite Geometric Series
			1: Exploring and Analyzing Patterns	4: True to Form: Forms of Quadratic Functions pp. M1-51A–M1-78	
		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
	Understand that polynomials form		2: Developing Structural	1: Relating Factors and Zeros	2: Divide and Conquer: Polynomial Division pp. M2-23A–M2-42
A.APR.1	namely, they are closed under the operations of addition, subtraction,		Similarities		3: Closing Time: The Closure Property pp. M2-43A–M2-50
	and multiplication; add, subtract, and multiply polynomials.		1: Analyzing Structure	6: Characteristics of Polynomial Functions	1: Analyzing Polynomial Functions
		MATHia			1: Adding Polynomials with Higher Orders
		Software	2: Developing Structural Similarities	1: Polynomial Operations	2: Adding and Subtracting Higher-Order Functions
					3: Multiplying Higher Order Polynomials
	Know and apply the Remainder Theorem: For a polynomial $p(x)$	Textbook	2: Developing Structural Similarities	1: Relating Factors and Zeros	2: Divide and Conquer: Polynomial Division pp. M2-23A–M2-42
A.APR.2	and a number a, the remainder on division by $x - a$ is $p(a)$, so $p(a) = 0$ if and only if $(x - a)$ is a factor of $p(x)$.	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)
				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
			1. Applyzing Structure		Functions pp. M1-173A–M1-188
A.APR.3	Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a	Textbook		3: Characteristics of	 Poly-Wog: Key Characteristics of Polynomial Functions pp. M1-233A-M1-256
rough graph of the function defined by the polynomial.			Polynomial Functions	4: Function Construction: Building Cubic and Quartic Functions pp. M1-257A-M1-276	
		2: Developing Structural Similarities	1: Relating Factors and Zeros	1: Satisfactory Factoring: Factoring Polynomials to Identify Zeros pp. M2-7A–M2-22	
		MATHia	1. Applyzing Structure	6: Characteristics of	5: Identifying Zeros of Polynomials
		Software	T. Analyzing Structure	Polynomial Functions	6: Using Zeros to Sketch a Graph of Polynomial
A.APR.4	Prove polynomial identities and use them to describe numerical relationships. For example, the polynomial identity $(x^2 + y^2)^2 = (x^2 - y^2)^2 + (2xy)^2$ can be used to generate Pythagorean triples.	Textbook	2: Developing Structural Similarities	2: Polynomial Models	 Not a Case of Mistaken Identity: Exploring Polynomial Identities pp. M2-77A–M2-90
A.APR.5	(+) Know and apply the Binomial Theorem for the expansion of $(x + y)^n$ in powers of x and y for a positive integer n, where x and y are any numbers, with coefficients determined for example by Pascal's Triangle. (The Binomial Theorem can be proved by mathematical induction or by a combinatorial argument.)	Textbook	2: Developing Structural Similarities	2: Polynomial Models	2: Elegant Simplicity: Pascal's Triangle and the Binomial Theorem pp. M2-91A–M2-102



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
	Pewrite simple rational expressions	Textbook	2: Developing Structural Similarities	3: Rational Functions	 There's a Hole in My Function!: Graphical Discontinuities pp. M2-167A–M2-182
	in different forms; write $a(x)/b(x)$ in the form $q(x) + r(x)/b(x)$, where $a(x)$, b(x), $q(x)$, and $r(x)$ are polynomials				4: Must Be a Rational Explanations: Operations with Rational Expressions pp. M2-183A–M2-200
A.APR.6	with the degree of $r(x)$ less than the degree of $b(x)$, using inspection.			1: Polynomial Operations	4: Synthetic Division
long division, o complicated ex algebra system	long division, or, for the more	MATHIA			1: Simplifying Rational Expressions
	complicated examples, a computer algebra system.	Software	2: Developing Structural Similarities	4: Rational Expressions and Equations	2: Multiplying and Dividing Rational Expressions
					3: Adding and Subtracting Rational Expressions
				5: Rational Models	1: Modeling Rational Functions
A.APR.7	(+)Understand that rational expressions form a system analogous to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression; add, subtract, multiply, and divide rational expressions.	Textbook	2: Developing Structural Similarities	3: Rational Functions	4: Must Be a Rational Explanations: Operations with Rational Expressions pp. M2-183A–M2-200
A.CED.1	Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.	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



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
			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
	Create equations and inequalities in	Textbook		1: Relating Factors and Zeros	 Unequal Equals: Solving Polynomial Inequalities pp. M2-51A–M2-64
A.CED.1	one variable and use them to solve problems. Include equations arising from linear and quadratic functions,		2: Developing Structural Similarities	2: Pational Functions	 Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201A–M2-222
and simple rational and exponential functions.			S. Rational Functions	6: 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223A–M2-238	
			2: Developing Structural Similarities	2: Solving Polynomials	3: Solving Polynomial Inequalities
		MATHia Software		5: Rational Models	2: Using Rational Models
					3: Solving Work, Mixture, and Distance Problems
					4: Modeling and Solving with Rational Functions
A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.	Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	4: True to Form: Forms of Quadratic Functions pp. M1-51A–M1-78
 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods. 	Represent constraints by equations or inequalities, and by systems		1: Analyzing Structure	3: Characteristics of Polynomial Functions	 Level Up: Analyzing Polynomial Functions pp. M1-277A-M1-288
	of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.	Textbook	2: Developing Structural	1: Relating Factors and Zeros	 Unequal Equals: Solving Polynomial Inequalities pp. M2-51A–M2-64
			Similarities	2: Polynomial Models	 Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103A–M2-117
A.CED.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.	Textbook	3: Inverting Functions	1: Radical Functions	5: Into the Unknown: Solving Radical Equations pp. M3-71A–M3-80



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
Explain each step in solving a simple equation as following from	Explain each step in solving a simple equation as following from		2: Developing Structural	2: Patienal Eurotions	5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201A–M2-222
A.REI.1	the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a	Textbook	Similarities		 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223A–M2-238
	viable argument to justify a solution method.		4: Investigating Periodic Functions	2: Trigonometric Equations	 Chasing Theta: Solving Trigonometric Equations pp. M4-111A–M4-124
			2: Developing Structural	2: Dational Functions	5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201A–M2-222
A.REI.2	Solve simple rational and radical equations in one variable, and give	Textbook	Similarities		6: 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223A–M2-238
examples showing how extraneous solutions may arise.		3: Inverting Functions	1: Radical Functions	5: Into the Unknown: Solving Radical Equations pp. M3-71A–M3-80	
	MATHia	2. Developing Structural	3: Rational Functions	2: Modeling Ratios as Rational Functions	
		Software	Similarities	4: Rational Expressions and Equations	4: Solving Rational Equations that Result in Linear Equations
A.REI.4	Solve quadratic equations in one variable.	Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	5: The Root of the Problem: Solving Quadratic Equations pp. M1-79A–M1-92
A.REI.B.4a	Use the method of completing the square to transform any quadratic equation in <i>x</i> into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.	Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	5: The Root of the Problem: Solving Quadratic Equations pp. M1-79A–M1-92
Solve quadratic equations by inspection (e.g., for x^2 = 49), taking square roots, completing the	Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	5: The Root of the Problem: Solving Quadratic Equations pp. M1-79A–M1-92	
	square, the quadratic formula				2: Quadratic Modeling
A.REI.4b and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b .	MATHia Software	1: Analyzing Structure	3: Forms of Quadratic Functions	3: Quadratic Equation Solving	



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
A.REI.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.	Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	 The Root of the Problem: Solving Quadratic Equations pp. M1-79A–M1-92
A.REI.10	Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).	Textbook	1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	5: Planting the Seeds: Exploring Cubic Functions pp. M1-159A-M1-172
A.REI.11 A.REI.11 A.REI.11 E. Explain why the <i>x</i> -coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.*		1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	3: Blame It on the Rain: Modeling with Functions pp. M1-135A-M1-144	
	Explain why the <i>x</i> -coordinates of the points where the graphs of the countiers $y = f(y)$ and $y = g(y)$			3: Characteristics of Polynomial Functions	5: Level Up: Analyzing Polynomial Functions pp. M1-277A-M1-288
	intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using			2: Developing Structural Similarities	3: Rational Functions
	technology to graph the functions, make tables of values, or find successive approximations. Include	Textbook	3: Inverting Functions	2: Exponential and Logarithmic Functions	1: Half-Life: Comparing Linear and Exponential Functions pp. M3-93A–M3-106
	cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions *				2: Pert and Nert: Properties of Exponential Graphs pp. M3-107A–M3-124
			3: Exponential and Logarithmic Equations	3: More Than One Way to Crack an Egg: Solving Exponential Equations pp. M3-197A–M3-206	
F.IF.3	Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.	Textbook	3: Inverting Functions	4: Applications of Growth Modeling	3: This Is the Title of This Lesson: Fractals pp. M3-277–M3-293



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
	For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*	Textbook	1: Analyzing Structure	1: Exploring and Analyzing	 The Cat's Out of the Bag!: Generating Algebraic Expressions pp. M1-17A–M1-30
				Patterns	4: True to Form: Forms of Quadratic Functions pp. M1-51A–M1-78
				2: Composing and Decomposing Figures and Functions	 Planting the Seeds: Exploring Cubic Functions pp. M1-159A-M1-172
F.IF. 4				3: Characteristics of	 Poly-Wog: Key Characteristics of Polynomial Functions pp. M1-233A-M1-256
					5: Level Up: Analyzing Polynomial Functions pp. M1-277A-M1-288
			2: Developing Structural Similarities	2: Polynomial Models	 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)
				1: Radical Functions	 Strike That, Invert It: Inverses of Power Functions pp. M3-7A–M3-18 Such a Rad Lesson: Radical Functions pp. M3-19A–M3-40
			3: Inverting Functions		 Half-Life: Comparing Linear and Exponential Functions pp. M3-93A–M3-106
	For a function that models a relationship between two quantities,			2: Exponential and Logarithmic Functions	 Pert and Nert: Properties of Exponential Graphs pp. M3-107A–M3-124
	interpret key features of graphs and tables in terms of the quantities,	Textbook			3: Return of the Inverse: Logarithmic Functions pp. M3-125A–M3-136
and sketch gra features given of the relations include: interce where the func decreasing, po relative maxim symmetries; et	and sketch graphs showing key features given a verbal description of the relationship. Key features		4: Investigating Periodic Functions	1. Trigonomotric Polationching	2: A Sense of Deja Vu: Periodic Functions pp. M4-21A–M4-36
	include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.*				6: Farmer's Tan: The Tangent Function pp. M4-79A–M4-96
				2: Trigonometric Equations	 Wascally Wabbits: Modeling with Periodic Functions pp. M4-125A–M4-136
					4: Springs Eternal: The Damping Function pp. M4-147A–M4-158
				2: Graphs of Functions	1: Identifying Key Characteristics of Graphs of Functions
		MATHia			2: Classifying Polynomial Functions
		Software	1: Analyzing Structure	6: Characteristics of	3: Interpreting Key Features of Graphs in Terms of Quantities
					4: Identifying Key Characteristics of Polynomial Functions
			1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	 Planting the Seeds: Exploring Cubic Functions pp. M1-159A-M1-172
F.IF.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.*	Textbook	2: Developing Structural Similarities	2: Polynomial Models	 Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103A-M2-117
				3: Rational Functions	5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201A–M2-222



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
5 15 5	Relate the domain of a function to	Textbook	3: Inverting Functions	1: Radical Functions	 Such a Rad Lesson: Radical Functions pp. M3-19A–M3-40 Making Waves: Transformations of Radical Functions pp. M3-41A–M3-50
1.11.5	to the quantitative relationship it describes.*			2: Exponential and Logarithmic Functions	3: Return of the Inverse: Logarithmic Functions pp. M3-125A–M3-136
		MATHia Software	1: Analyzing Structure	5: Graphs of Polynomial Functions	1: Modeling Polynomial Functions
	Calculate and interpret the average rate of change of a function	Textbook	1: Analyzing Structure	3: Characteristics of Polynomial Functions	5: Level Up: Analyzing Polynomial Functions pp. M1-277A-M1-288
F.IF.6	(presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.*	MATHia Software	1: Analyzing Structure	6: Characteristics of Polynomial Functions	7: Understanding Average Rate of Change of Polynomial Functions
F.IF.7	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.*	Textbook	3: Inverting Functions	4: Applications of Growth Modeling	2: Paint by Numbers: Art and Transformations pp. M3-267A–M3-276
	Creak line and any datain	Textbook	NumberUnit(MATHia Software)3: Inverting Functions1: Radical Functions3: Inverting Functions2: Exponential and Logarithmic Functions1: Analyzing Structure5: Graphs of Polynomial Functions1: Analyzing Structure3: Characteristics of Polynomial Functions1: Analyzing Structure6: Characteristics of Polynomial Functions3: Inverting Functions4: Applications of Growth Modeling1: Analyzing Structure2: Composing and Decomposing Figures and Functions3: Inverting Functions4: Applications of Growth Modeling3: Inverting Functions1: Radical Functions3: Inverting Functions1: Inverses of Functions	2: Composing and	5: Planting the Seeds: Exploring Cubic Functions pp. M1-159A-M1-172
F.IF.7a	functions and show intercepts, maxima, and minima.			Functions	6: The Zero's the Hero: Decomposing Cubic Functions pp. M1-173A–M1-188
				2: Paint by Numbers: Art and Transformations pp. M3-267A–M3-276	
					1: Strike That, Invert It: Inverses of Power Functions pp. M3-7A–M3-18
	Graph square root, cube root	Taythaak	2. Inverting Eulertians	1: Radical Functions	2: Such a Rad Lesson: Radical Functions pp. M3-19A–M3-40
F.IF.7b	and piecewise-defined functions, including step functions and absolute value functions.	Textbook	3: Inverting Functions		3: Making Waves: Transformations of Radical Functions pp. M3-41A–M3-50
				4: Applications of Growth Modeling	2: Paint by Numbers: Art and Transformations pp. M3-267A–M3-276
		MATHia Software	3: Inverting Functions	1: Inverses of Functions	1: Investigating Inverses of Functions



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
F.IF.7b	Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	MATHia Software	3: Inverting Functions	1: Inverses of Functions	2: Graphing Square Root Functions
					4: Folds, Turns, and Zeros: Transforming Function Shapes pp. M1-145A-M1-158
F.IF.7c				2: Composing and Decomposing Figures and Functions	5: Planting the Seeds: Exploring Cubic Functions pp. M1-159A-M1-172
	Graph polynomial functions, identifying zeros when suitable factorizations are available, and	Textbook	1: Analyzing Structure		 6: The Zero's the Hero: Decomposing Cubic Functions pp. M1-173A–M1-188
	showing end behavior.			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
			3: Inverting Functions	4: Applications of Growth Modeling	2: Paint by Numbers: Art and Transformations pp. M3-267A–M3-276
		Textbook	2: Developing Structural	3: Rational Functions	1: There's a Fine Line Between a Numerator and a Denominator: Introduction to Rational Functions pp. M2-129A–M2-144
F.IF.7d	(+) Graph rational functions, identifying zeros and asymptotes when suitable factorizations are available, and showing end		Similarities		3: There's a Hole in My Function!: Graphical Discontinuities pp. M2-167A–M2-182
	behavior.		3: Inverting Functions	4: Applications of Growth Modeling	2: Paint by Numbers: Art and Transformations pp. M3-267A–M3-276
		MATHia Software	2: Developing Structural Similarities	3: Rational Functions	1: Introduction to Rational Functions
	Graph exponential and logarithmic functions, showing intercepts and			2: Exponential and	2: Pert and Nert: Properties of Exponential Graphs pp. M3-107A–M3-124
F.IF.7e	end behavior, and trigonometric functions, showing period, midline,	Textbook	3: Inverting Functions		3: Return of the Inverse: Logarithmic Functions pp. M3-125A–M3-136
	and amplitude.			4: Applications of Growth Modeling	2: Paint by Numbers: Art and Transformations pp. M3-267A–M3-276



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
					2: A Sense of Deja Vu: Periodic Functions pp. M4-21A–M4-36
F IF 7-	Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric	Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	 What Goes Around: The Sine and Cosine Functions pp. M4-49A–M4-64
	functions, showing period, midline, and amplitude.				6: Farmer's Tan: The Tangent Function pp. M4-79A–M4-96
		MATHia	3 [.] Inverting Functions	4: Exponential and	1: Properties of Exponential Graphs
		Software		Logarithmic Functions	2: Introduction to Logarithmic Functions
	Write a function defined by				 Patterns: They're Grrrrrowing!: Observing Patterns pp. M1-7A–M1-16
F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.IF.8 F.8F.8F.8F.8F.8F.8F.8F.8	an expression in different but equivalent forms to reveal and explain different properties of the	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
	function.				3: Samesies: Comparing Multiple Representations of Functions pp. M1-31A–M1-50
E IE 9a	Use the process of factoring and completing the square in a quadratic function to show zeros,	Taytback	2: Developing Structural	1: Relating Factors and Zeros	1: Satisfactory Factoring: Factoring Polynomials to Identify Zeros pp. M2-7A–M2-22
1.11.04	extreme values, and symmetry of the graph, and interpret these in terms of a context.	Textdook	Similarities	3: Rational Functions	 There's a Hole in My Function!: Graphical Discontinuities pp. M2-167A–M2-182
F.IF.8b	Use the properties of exponents to interpret expressions for exponential functions.	Textbook	3: Inverting Functions	2: Exponential and Logarithmic Functions	 Half-Life: Comparing Linear and Exponential Functions pp. M3-93A–M3-106
				1: Exploring and Analyzing Patterns	3: Samesies: Comparing Multiple Representations of Functions pp. M1-31A–M1-50
F.IF.9	Compare properties of two functions each represented in a different way (algebraically,	Textbook	1: Analyzing Structure	3: Characteristics of Polynomial Functions	6: To a Greater or Lesser Degree: Comparing Polynomial Functions pp. M1-289A-M1-304
	graphically, numerically in tables, or by verbal descriptions).			1: Exploring and Analyzing Patterns	4: True to Form: Forms of Quadratic Functions pp. M1-51A–M1-78
			3: Inverting Functions	1: Radical Functions	 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)
F.IF.9	Compare properties of two functions each represented in a different way (algebraically,	Textbook	3: Inverting Functions	2: Exponential and Logarithmic Functions	2: Pert and Nert: Properties of Exponential Graphs pp. M3-107A–M3-124
	graphically, numerically in tables, or by verbal descriptions).	MATHia Software	1: Analyzing Structure	6: Characteristics of Polynomial Functions	8: Comparing Polynomial Functions in Different Forms
F.BF.1	Write a function that describes a relationship between two quantities.*	Textbook	2: Developing Structural Similarities	2: Polynomial Models	 Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103A–M2-117
			1: Analyzing Structure	1: Exploring and Analyzing	2: The Cat's Out of the Bag!: Generating Algebraic Expressions pp. M1-17A–M1-30
F DF 4-	Determine an explicit expression,	Taythaalt		Patterns	4: True to Form: Forms of Quadratic Functions pp. M1-51A–M1-78
г.вг.та	F.BF.1a a recursive process, or steps for calculation from a context.	Textbook	2: Developing Structural Similarities	2: Polynomial Models	 Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103A–M2-117
			3: Inverting Functions	4: Applications of Growth Modeling	3: This Is the Title of This Lesson: Fractals pp. M3-277–M3-293
		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
	Combine standard function types using arithmetic operations. For example, build a function that models the temperature of a cooling body by adding a constant function to a decaying exponential,		2: Developing Structural Similarities	2: Polynomial Models	 Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103A–M2-117
F.BF.1b			1: Analyzing Structure	3: Characteristics of Polynomial Functions	4: Function Construction: Building Cubic and Quartic Functions pp. M1-257A-M1-276
	model.		4: Investigating Periodic Functions	2: Trigonometric Equations	4: Springs Eternal: The Damping Function pp. M4-147A–M4-158
		MATHia Software	1: Analyzing Structure	6: Characteristics of Polynomial Functions	1: Analyzing Polynomial Functions
F.BF.1c	(+) Compose functions.	Textbook	2: Developing Structural Similarities	2: Polynomial Models	 Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103A–M2-117
			3: Inverting Functions	1: Radical Functions	2: Such a Rad Lesson: Radical Functions pp. M3-19A–M3-40
F.BF.2	Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.*	MATHia Software	3: Inverting Functions	6: Finite Geometric Solutions	1: Introduction to Finite Geometric Series



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
				2: Composing and Decomposing Figures and Functions	 Folds, Turns, and Zeros: Transforming Function Shapes pp. M1-145A-M1-158
Id of ar (b th F.BF.3 E> ar gr re fr.			1: Analyzing Structure	2. Characteristics of	1: So Odd, I Can't Even: Power Functions pp. M1-203A-M1-216
	Identify the effect on the graph			Polynomial Functions	2: Math Class Needs a Makeover: Transformations of Polynomial Functions pp. M1-217A-M1-232
	of replacing $f(x)$ by $f(x) + k$, $kf(x)$, and $f(x + k)$ for specific values of k (both positive and negative); find	Textbook	2: Developing Structural Similarities	3: Rational Functions	2: Approaching Infinity: Transformations of Rational Functions pp. M2-145A–M2-166
	the value of <i>k</i> given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include		2: Inverting Eurotions	1: Radical Functions	3: Making Waves: Transformations of Radical Functions pp. M3-41A–M3-50
	recognizing even and odd functions from their graphs and algebraic expressions for them.		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
		MATHia Software		2: Graphs of Functions	2: Transforming Functions
			1: Analyzing Structure	3: Forms of Quadratic Functions	4: Quadratic Transformations
F.BF.4	Find inverse functions.	MATHia Software	3: Inverting Functions	1: Inverses of Functions	3: Sketching Graphs of Inverses
	Solve an equation of the form $f(x) = c$ for a simple function f	Taythook	2: Inverting Eurotions	1: Radical Functions	2: Such a Rad Lesson: Radical Functions pp. M3-19A–M3-40
F.BF.4a	that has an inverse and write an expression for the inverse. For	TEXIDOOK		2: Exponential and Logarithmic Functions	3: Return of the Inverse: Logarithmic Functions pp. M3-125A–M3-136
	example, $f(x) = 2x^3$ or $f(x) = (x + 1)/(x - 1)$ for $x \neq 1$.	MATHia Software	3: Inverting Functions	1: Inverses of Functions	4: Calculating Inverses of Linear Functions
F.BF.4b	(+) Verify by composition that one function is the inverse of another.	Textbook	3: Inverting Functions	1: Radical Functions	2: Such a Rad Lesson: Radical Functions pp. M3-19A–M3-40
F.BF.4c	(+) Read values of an inverse function from a graph or a table, given that the function has an inverse.	Textbook	3: Inverting Functions	1: Radical Functions	1: Strike That, Invert It: Inverses of Power Functions pp. M3-7A–M3-18
F.BF.4d	(+) Produce an invertible function from a non-invertible function by restricting the domain.	Textbook	3: Inverting Functions	1: Radical Functions	2: Such a Rad Lesson: Radical Functions pp. M3-19A–M3-40



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
					 All the Pieces of the Puzzle: Logarithmic Expressions pp. M3-171A–M3-184
	(+) Understand the inverse				2: Mad Props: Properties of Logarithms pp. M3-185A–M3-196
F.BF.5	relationship between exponents and logarithms and use this relationship to solve problems	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
	involving logarithms and exponents.				4: Logging On: Solving Logarithmic Equations pp. M3-207A–M3-222
	Construct linear and exponential		5: What's the Use?: Applications of Exponential and Logarithmic Equations pp. M3-223A–M3-236		
F.LE.2	Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).	Textbook	3: Inverting Functions	3: Exponential and Logarithmic Equations	 What's the Use?: Applications of Exponential and Logarithmic Equations pp. M3-223A–M3-236
	For exponential models, express as a logarithm the solution to	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
F.LE.4	$ab^{(ct)} = d$ where $a, c, and d$ are numbers and the base b is 2, 10, or e ; evaluate the logarithm using				5: What's the Use?: Applications of Exponential and Logarithmic Equations pp. M3-223A–M3-236
		MATHia		E. Colving Equations with Dasa	1: Solving Base 2 and Base 10 Equations
		Software	3: Inverting Functions	2, 10, or e	2: Solving Base e Equations
					3: Solving Any Base Equations
F.LE.5	Interpret the parameters in a linear or exponential function in terms of a context.	Textbook	3: Inverting Functions	2: Exponential and Logarithmic Functions	 Half-Life: Comparing Linear and Exponential Functions pp. M3-93A–M3-106
		Taythook	4: Investigating Periodic	1: Trigonometric Relationships	3: The Knights of the Round Table: Radian Measure pp. M4-37–M4-48
F.TF.1	Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.	TEXTDOOK	Functions	2: Trigonometric Equations	 Chasing Theta: Solving Trigonometric Equations pp. M4-111–M4-124
		MATHia Software	4: Investigating Periodic Functions	1: Graphs of Trigonometric Functions	1: Understanding the Unit Clrcle



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
	Explain how the unit circle in the coordinate plane enables the	Tauthaali	4: Investigating Periodic	1: Trigonometric Relationships	4: What Goes Around: The Sine and Cosine Functions pp. M4-49–M4-64
F.TF.2	extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit	Textbook	Functions	2: Trigonometric Equations	 Chasing Theta: Solving Trigonometric Equations pp. M4-105–M4-118
	circle.	MATHia Software	4: Investigating Periodic Functions	1: Graphs of Trigonometric Functions	1: Understanding the Unit Circle
	Use special triangles to determine geometrically the values of sine,				3: What Goes Around: The Sine and Cosine Functions pp. M4-49–M4-64
F.TF.3	cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosine, and tangent for $\pi - x$, $\pi + x$, and $2\pi - x$ in terms of their values for x, where x	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
	is any real number.				5: Farmer's Tan: The Tangent Function pp. M4-79A–M4-96
F.TF.4	(+) Use the unit circle to explain symmetry (odd and even) and periodicity of trigonometric functions.	Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	3: What Goes Around: The Sine and Cosine Functions pp. M4-49–M4-64
				1: Trigonometric Relationships	4: The Sines They Are A-Changin': Transformations of Sine and Cosine Functions pp. M4-65A–M4-78
	Choose trigonometric functions to	Textbook	4: Investigating Periodic Functions	2: Trigonometric Equations	3: Wascally Wabbits: Modeling with Periodic Functions pp. M4-125A–M4-136
F.TF.5	specified amplitude, frequency, and midline.*				4: The Wheel Deal: Modeling Motion with a Trigonometric Function pp. M4-137–M4-146
					5: Springs Eternal: The Damping Function pp. M4-147A–M4-158
		MATHia Software	4: Investigating Periodic Functions	1: Graphs of Trigonometric Functions	2: Representing Periodic Behavior
	Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find				1: Proving the Pythagorean Identity
F.TF.8	sin (θ) , cos (θ) , or tan (θ) given sin (θ) , cos (θ) , or tan (θ) and the quadrant of the angle.	MATHia Software	4: Investigating Periodic Functions	2: Pythagorean Identity	2: Using the Pythagorean Identity to Determine Sine, Cosine, or Tangent



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
G.SRT.9	(+) Derive the formula <i>A</i> = 1/2 <i>ab</i> sin(<i>C</i>) for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.	Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	1: The Deriving Force: Deriving the Triangle Area Formula, Law of Sines, and Law of Cosines pp. M4-7A–M4-20
G.SRT.10	(+) Prove the Laws of Sines and Cosines and use them to solve problems.	Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	 The Deriving Force: Deriving the Triangle Area Formula, Law of Sines, and Law of Cosines pp. M4-7A–M4-20
G.SRT.11	(+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).	Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	1: The Deriving Force: Deriving the Triangle Area Formula, Law of Sines, and Law of Cosines pp. M4-7A–M4-20
G.GMD.1	Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.	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
G.GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*	Textbook	1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	5: Planting the Seeds: Exploring Cubic Functions pp. M1-153A-M1-166
G.GMD.4	Identify the shapes of two- dimensional cross-sections of three dimensional objects, and	Textbook	1: Analyzing Structure	 Composing and Decomposing Figures and Functions 	 You Spin Me Round: Rotating Two- Dimensional Figures through Space pp. M1-105A–M1-120 Any Way You Slice It: Cross-Sections
	generated by rotations of two- dimensional objects.	MATHia Software	1: Analyzing Structure	4: Three-Dimensional Shapes	pp. M1-121A–M1-134 1: Visualizing Cross Sections of Three- Dimensional Shapes
G.MG.1	Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*	Textbook	1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	2: Any Way You Slice It: Cross-Sections pp. M1-121A–M1-134
G.MG.2	Apply concepts of density based on area and volume in modeling situations (e.g. persons per square	Textbook	2: Developing Structural Similarities	3: Rational Functions	6: 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223A–M2-238
	situations (e.g., persons per square mile, BTUs per cubic foot).*	3: Inverting	3: Inverting Functions	1: Radical Functions	 Such a Rad Lesson: Radical Functions pp. M3-19A–M3-40



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
G.MG.3	Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy	Textbook	1: Analyzing Structure	2: Composing and Decomposing Figures and Functions	 You Spin Me Round: Rotating Two- Dimensional Figures through Space pp. M1-105A–M1-120
	cost; working with typographic grid systems based on ratios).*		3: Inverting Functions	1: Radical Functions	2: Such a Rad Lesson: Radical Functions pp. M3-19A–M3-40
	Represent data with plots on				1: Recharge It!: Normal Distributions pp. M5-7A–M5-18
S.ID.1	the real number line (dot plots, histograms, and box plots).	Textbook	5: Relating Data and Decisions	1: Interpreting Data in Normal Distributions	2: The Form of Norm: The Empirical Rule for Normal Distributions pp. M5-19A–M5-32
S.ID.2	Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.	Textbook	5: Relating Data and Decisions	1: Interpreting Data in Normal Distributions	1: Recharge It!: Normal Distributions pp. M5-7A–M5-18
		Textbook	5: Relating Data and Decisions	1: Interpreting Data in Normal Distributions	 Recharge It!: Normal Distributions pp. M5-7A–M5-18
	Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate				2: The Form of Norm: The Empirical Rule for Normal Distributions pp. M5-19A–M5-32
S.ID.4	population percentages. Recognize that there are data sets for which such a procedure is not appropriate.				3: Above, Below, and Between the Lines: Z-Scores and Percentiles pp. M5-33A–M5-44
	tables to estimate areas under the normal curve.	MATHia			1: Applying the Empirical Rule for Normal Distributions
		Software	5: Relating Data and Decisions	1: Normal Distributions	2: Z-Scores and Percentiles
					3: Normal Distributions and Probability
	Fit a function to the data; use functions fitted to data to solve problems in the context of the data.	Touchards	2: Developing Structural Similarities	2: Polynomial Models	3: Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103A–M2-117
S.ID.6a	function suggested by the context. Emphasize linear, quadratic, and exponential models.	TEXTDOOK	3: Inverting Functions	3: Exponential and Logarithmic Equations	 What's the Use?: Applications of Exponential and Logarithmic Equations pp. M3-223A–M3-236



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
					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
S.IC.1	Understand statistics as a process for making inferences about population parameters based on a random sample from that	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
	population.				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
S.IC.2	Decide if a specified model is consistent with results from a given data-generating process, e.g., using simulation. For example, a model	model is ts from a given cess, e.g., using pple, a model falls heads up build a result use you to 2: Making Inferences and Justifying Conclusions	5. Relating Data and Decisions	2: Making Inferences and	4: How Much Different?: Using Statistical Significance to Make Inferences About Populations pp. M5-111A–M5-126
	says a spinning coin falls heads up with probability 0.Would a result of 5 tails in a row cause you to question the model?		Justifying Conclusions	 DIY: Designing a Study and Analyzing the Results pp. M5-127A–M5-134 	
	Recognize the nurposes of and				 Data, Data Everywhere: Sample Surveys, Observational Studies, and Experiments pp. M5-65A–M5-76
S.IC.3	differences among sample surveys, experiments, and observational studies; explain how randomization	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
	relates to each.				 DIY: Designing a Study and Analyzing the Results pp. M5-127A–M5-134



Standard ID	Description	Location	Module	Topic (Textbook)/ Unit(MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
S.IC.4	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.	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
S.IC.5	Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.	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
					 DIY: Designing a Study and Analyzing the Results pp. M5-127A–M5-134
S.IC.6	Evaluate reports based on data.	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
					 DIY: Designing a Study and Analyzing the Results pp. M5-127A–M5-134
S.MD.6	(+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).	Textbook	5: Relating Data and Decisions	1: Interpreting Data in Normal Distributions	4: Toh-May-Toh, Toh-Mah-Toh: Normal Distributions and Probability pp. M5-45A–M5-52
S.MD.7	(+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game).	Textbook	5: Relating Data and Decisions	1: Interpreting Data in Normal Distributions	4: Toh-May-Toh, Toh-Mah-Toh: Normal Distributions and Probability pp. M5-45A–M5-52