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Integrated Math II High School Math Solution
Correlation to the 2013 California Academic Standards

CARNEGIE LEARNING

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
N.RN.1	Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. For example, we define 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.	Integrated Math II Textbook	3: Exploring Functions	2: Exponentials	1: Got Chills . . . They're Multiplyin': Exponential Functions and Rational Exponents pp. M3-89–M3-106
		Integrated Math II MATHia Software	3: Exploring Functions	4: Rational Exponents	2: Properties of Rational Exponents
N.RN.2	Rewrite expressions involving radicals and rational exponents using the properties of exponents.	Integrated Math II Textbook	1: Reasoning with Shapes	2: Justifying Line and Angle Relationships	4: Identical Twins: Perpendicular Bisector and Isosceles Triangle Theorems pp. M1-143–M1-163
			3: Exploring Functions	2: Exponentials	1: Got Chills . . . They're Multiplyin': Exponential Functions and Rational Exponents pp. M3-89–M3-106
			4: Seeing Structure	1: Solving Quadratic Equations	2: Solutions, More or Less: Representing Solutions to Quadratic Equations pp. M4-33–M4-46
					5: Ladies and Gents, Please Welcome the Quadratic Formula!: The Quadratic Formula pp. M4-81–M4-102
		Integrated Math II MATHia Software	3: Exploring Functions	4: Rational Exponents	3: Rewriting Expressions with Radical and Rational Exponents
N.RN.3	Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.	Integrated Math II Textbook	3: Exploring Functions	2: Exponentials	1: Got Chills . . . They're Multiplyin': Exponential Functions and Rational Exponents pp. M3-89–M3-106
			4: Seeing Structure	1: Solving Quadratic Equations	5: Ladies and Gents, Please Welcome the Quadratic Formula!: The Quadratic Formula pp. M4-81–M4-102
N.CN.1	Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.	Integrated Math II Textbook	4: Seeing Structure	1: Solving Quadratic Equations	5: Ladies and Gents, Please Welcome the Quadratic Formula!: The Quadratic Formula pp. M4-81–M4-102
				2: Applications of Quadratics	1: *i* Want to Believe: Imaginary and Complex Numbers pp. M4-115–M4-136
		Integrated Math II MATHia Software	4: Seeing Structure	4: Operations with Complex Numbers	1: Introduction to Complex Numbers

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
N.CN.1	Know there is a complex number i such that $i^2 = -1$, and every complex number has the form $a + bi$ with a and b real.	Integrated Math II MATHia Software	4: Seeing Structure	4: Operations with Complex Numbers	2: Simplifying Radicals with Negative Radicands
					3: Simplifying Powers of i
N.CN.2	Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.	Integrated Math II Textbook	4: Seeing Structure	2: Applications of Quadratics	1: *i* Want to Believe: Imaginary and Complex Numbers pp. M4-115–M4-136
		Integrated Math II	4: Seeing Structure	4: Operations with Complex Numbers	4: Adding and Subtracting Complex Numbers
					5: Multiplying Complex Numbers
N.CN.7	Solve quadratic equations with real coefficients that have complex solutions.	Integrated Math II Textbook	4: Seeing Structure	2: Applications of Quadratics	1: *i* Want to Believe: Imaginary and Complex Numbers pp. M4-115–M4-136
		Integrated Math II MATHia Software	4: Seeing Structure	4: Operations with Complex Numbers	6: Solving Quadratic Equations with Complex Roots
N.CN.8(+)	(+) Extend polynomial identities to the complex numbers. For example, rewrite $x^2 + 4$ as $(x + 2i)(x - 2i)$.	Integrated Math II Textbook	4: Seeing Structure	2: Applications of Quadratics	1: *i* Want to Believe: Imaginary and Complex Numbers pp. M4-115–M4-136
N.CN.9(+)	(+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials.	Integrated Math II Textbook	4: Seeing Structure	2: Applications of Quadratics	1: *i* Want to Believe: Imaginary and Complex Numbers pp. M4-115–M4-136
A.SSE.1a	Interpret parts of an expression, such as terms, factors, and coefficients.*	Integrated Math II Textbook	3: Exploring Functions	3: Introduction to Quadratics	2: Endless Forms Most Beautiful: Key Characteristics of Quadratic Functions pp. M3-167–M3-190
					4: You Lose Some, You Lose Some: Multiple Representations of Quadratic Functions pp. M3-217–M3-232
			4: Seeing Structure	1: Solving Quadratic Equations	1: This Time, with Polynomials: Adding, Subtracting and Multiplying Polynomials pp. M4-7–M4-31
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.	Integrated Math II Textbook	3: Exploring Functions	2: Exponentials	2: Turn That Frown Upside Down: Growth and Decay Functions pp. M3-107–M3-118
			4: Seeing Structure	1: Solving Quadratic Equations	5: Ladies and Gents, Please Welcome the Quadratic Formula!: The Quadratic Formula pp. M4-81–M4-102

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 $(x^2 - y^2)(x^2 + y^2)$.	Integrated Math II Textbook	4: Seeing Structure	1: Solving Quadratic Equations	2: Solutions, More or Less: Representing Solutions to Quadratic Equations pp. M4-33–M4-46
					3: Transforming Solutions: Solutions to Quadratic Equations in Vertex Form pp. M4-47–M4-57
		Integrated Math II MATHia Software	4: Seeing Structure	2: Quadratic Equation Solving	4: Factoring using Difference of Squares
A.SSE.3a	Factor a quadratic expression to reveal the zeros of the function it defines.*	Integrated Math II Textbook	3: Exploring Functions	3: Introduction to Quadratics	2: Endless Forms Most Beautiful: Key Characteristics of Quadratic Functions pp. M3-167–M3-190
					3: More Than Meets the Eye: Transformations of Quadratic Functions pp. M3-191–M3-216
			4: Seeing Structure	1: Solving Quadratic Equations	2: Solutions, More or Less: Representing Solutions to Quadratic Equations pp. M4-33–M4-46
					3: Transforming Solutions: Solutions to Quadratic Equations in Vertex Form pp. M4-47–M4-57
		Integrated Math II MATHia Software	4: Seeing Structure	2: Quadratic Equation Solving	2: Factoring Trinomials with Coefficients of One
					3: Factoring Trinomials with Coefficients Other than One
					5: Factoring Quadratic Expressions
					7: Problem Solving Using Factoring
				3: Forms of Quadratics	1: Converting Quadratics to General Form
					2: Converting Quadratics to Factored Form
					3: Converting Quadratics to Vertex Form
A.SSE.3b	Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.*	Integrated Math II Textbook	4: Seeing Structure	1: Solving Quadratic Equations	4: The Missing Link: Factoring and Completing the Square pp. M4-59–M4-80
		Integrated Math II MATHia Software	4: Seeing Structure	2: Quadratic Equation Solving	9: Problem Solving Using Completing the Square
				3: Forms of Quadratics	1: Converting Quadratics to General Form
					2: Converting Quadratics to Factored Form
					3: Converting Quadratics to Vertex Form

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
A.SSE.3c	Use the properties of exponents to transform expressions for exponential functions. For example the expression 1.15*t* can be rewritten as (1.15^(1/12))^12*t* ≈ 1.012^12*t* to reveal the approximate equivalent monthly interest rate if the annual rate is 15%.*	Integrated Math II Textbook	3: Exploring Functions	2: Exponentials	3: Just So . . . Basic: Horizontal Dilations of Exponential Functions pp. M3-119–M3-131
A.APR.1	Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	Integrated Math II Textbook	4: Seeing Structure	1: Solving Quadratic Equations	1: This Time, with Polynomials: Adding, Subtracting and Multiplying Polynomials pp. M4-7–M4-31
		Integrated Math II MATHia Software	4: Seeing Structure	1: Polynomial Operations	1: Introduction to Polynomial Arithmetic
					3: Adding Polynomials
					4: Subtracting Polynomials
					5: Using a Factor Table to Multiply Polynomials
					6: Multiplying Binomials
A.CED.1	Create equations and inequalities in one variable including ones with absolute value and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. CA*	Integrated Math II Textbook	3: Exploring Functions	2: Exponentials	2: Turn That Frown Upside Down: Growth and Decay Functions pp. M3-107–M3-118
			4: Seeing Structure	2: Applications of Quadratics	2: Ahead of the Curve: Solving Quadratic Inequalities pp. M4-137–M4-146
		Integrated Math II MATHia Software	3: Exploring Functions	4: Rational Exponents	4: Solving Contextual Exponential Equations Using Common Bases
				6: Modeling Quadratic Functions	1: Modeling Area as Product of Monomial and Binomial
					2: Modeling Area as Product of Two Binomials
					3: Interpreting Maximums of Quadratic Models
A.CED.2	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.*	Integrated Math II Textbook	3: Exploring Functions	1: Functions Derived From Linear Relationships	2: Play Ball!: Absolute Value Equations and Inequalities pp. M3-25–M3-38
			4: Seeing Structure	2: Applications of Quadratics	2: Ahead of the Curve: Solving Quadratic Inequalities pp. M4-137–M4-146
					3: All Systems Are Go!: Systems of Quadratic Equations pp. M4-147–M4-158
		Integrated Math II MATHia Software	3: Exploring Functions	3: Compare Linear and Exponential Models	4: Modeling Equations with a Starting Point Other Than 1
					5: Modeling Equations with a Starting Point Other Than 1

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
A.CED.4	Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.* [Include formulas involving quadratic terms.]	Integrated Math II Textbook	3: Exploring Functions	3: Introduction to Quadratics	4: You Lose Some, You Lose Some: Multiple Representations of Quadratic Functions pp. M3-217–M3-232
A.REI.4	Solve quadratic equations in one variable.	Integrated Math II Textbook	4: Seeing Structure	1: Solving Quadratic Equations	5: Ladies and Gents, Please Welcome the Quadratic Formula!: The Quadratic Formula pp. M4-81–M4-102
				2: Applications of Quadratics	2: Ahead of the Curve: Solving Quadratic Inequalities pp. M4-137–M4-146
A.REI.4a	Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.	Integrated Math II Textbook	4: Seeing Structure	1: Solving Quadratic Equations	4: The Missing Link: Factoring and Completing the Square pp. M4-59–M4-80
					5: Ladies and Gents, Please Welcome the Quadratic Formula!: The Quadratic Formula pp. M4-81–M4-102
				2: Applications of Quadratics	2: Ahead of the Curve: Solving Quadratic Inequalities pp. M4-137–M4-146
		Integrated Math II	4: Seeing Structure	2: Quadratic Equation Solving	8: Completing the Square
					10: Deriving the Quadratic Formula
A.REI.4b	Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b.	Integrated Math II Textbook	4: Seeing Structure	1: Solving Quadratic Equations	2: Solutions, More or Less: Representing Solutions to Quadratic Equations pp. M4-33–M4-46
					5: Ladies and Gents, Please Welcome the Quadratic Formula!: The Quadratic Formula pp. M4-81–M4-102
				2: Applications of Quadratics	1: i Want to Believe: Imaginary and Complex Numbers pp. M4-115–M4-136
					2: Ahead of the Curve: Solving Quadratic Inequalities pp. M4-137–M4-146
		Integrated Math II MATHia	4: Seeing Structure	2: Quadratic Equation Solving	6: Solving Quadratic Equations by Factoring
					10: Deriving the Quadratic Formula
					11: Solving Quadratic Equations

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 $x^2 + y^2 = 3$.	Integrated Math II Textbook	4: Seeing Structure	2: Applications of Quadratics	3: All Systems Are Go!: Systems of Quadratic Equations pp. M4-147–M4-158
				3: Circles on the Coordinate Plane	2: A Blip on the Radar: Determining Points On a Circle pp. M4-201–M4-216
F.IF.4	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.*	Integrated Math II Textbook	3: Exploring Functions	1: Functions Derived From Linear Relationships	3: I Graph in Pieces: Linear Piecewise Functions pp. M3-39–M3-52
				3: Introduction to Quadratics	1: Up and Down or Down and Up: Exploring Quadratic Functions pp. M3-151–M3-166
					2: Endless Forms Most Beautiful: Key Characteristics of Quadratic Functions pp. M3-167–M3-190
		Integrated Math II MATHia	3: Exploring Functions	6: Modeling Quadratic Functions	4: Modeling Projectile Motion
					5: Recognizing Key Features of Vertical Motion Graphs
F.IF.5	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes*	Integrated Math II Textbook	3: Exploring Functions	3: Introduction to Quadratics	1: Up and Down or Down and Up: Exploring Quadratic Functions pp. M3-151–M3-166
F.IF.6	Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.*	Integrated Math II Textbook	3: Exploring Functions	3: Introduction to Quadratics	2: Endless Forms Most Beautiful: Key Characteristics of Quadratic Functions pp. M3-167–M3-190
		Integrated Math II MATHia Software	3: Exploring Functions	3: Compare Linear and Exponential Models	3: Calculating and Interpreting Average Rate of Change
F.IF.7a	Graph linear and quadratic functions and show intercepts, maxima, and minima.*	Integrated Math II Textbook	3: Exploring Functions	3: Introduction to Quadratics	1: Up and Down or Down and Up: Exploring Quadratic Functions pp. M3-151–M3-166
					2: Endless Forms Most Beautiful: Key Characteristics of Quadratic Functions pp. M3-167–M3-190
		Integrated Math II MATHia Software	3: Exploring Functions	8: Properties of Quadratic Functions	2: Sketching Quadratic 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.*	Integrated Math II Textbook	3: Exploring Functions	1: Functions Derived From Linear Relationships	1: Putting the V in Absolute Value: Defining Absolute Value Functions and Transformations pp. M3-7–M3-24
					2: Play Ball!: Absolute Value Equations and Inequalities pp. M3-25–M3-38
					3: I Graph in Pieces: Linear Piecewise Functions pp. M3-39–M3-52
					4: Step by Step: Step Functions pp. M3-53–M3-64
			4: Seeing Structure	2: Applications of Quadratics	4: Model Behavior: Using Quadratic Functions to Model Data pp. M4-159–M4-174
		Integrated Math II MATHia Software	3: Exploring Functions	1: Absolute Value Equations	1: Building Absolute Value Functions
				2: Graphs of Piecewise Functions	1: Introduction to Piecewise Functions
					2: Graphing Linear Piecewise Functions
					3: Interpreting Piecewise Functions
					4: Using Linear Piecewise Functions
					5: Analyzing Step Functions
F.IF.8a	Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.	Integrated Math II Textbook	3: Exploring Functions	3: Introduction to Quadratics	2: Endless Forms Most Beautiful: Key Characteristics of Quadratic Functions pp. M3-167–M3-190
			4: Seeing Structure	1: Solving Quadratic Equations	4: The Missing Link: Factoring and Completing the Square pp. M4-59–M4-80
		Integrated Math II MATHia Software	3: Exploring Functions	8: Properties of Quadratic Functions	1: Identifying Properties of Quadratic Functions
			4: Seeing Structure	2: Quadratic Equation Solving	8: Completing the Square
				3: Forms of Quadratics	1: Converting Quadratics to General Form
					2: Converting Quadratics to Factored Form
					3: Converting Quadratics to Vertex Form

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
F.IF.8b	Use the properties of exponents to interpret expressions for exponential functions. For example, identify percent rate of change in functions such as $y = (1.02)^t$, $y = (0.97)^t$, $y = (1.01)^{(12t0,}$ and $y = (1.2)^{(t/10)}$, and classify them as representing exponential growth or decay.	Integrated Math II Textbook	3: Exploring Functions	2: Exponentials	2: Turn That Frown Upside Down: Growth and Decay Functions pp. M3-107–M3-118
		Integrated Math I MATHia Software	3: Investigating Growth and Decay	2: Rational Exponents	1: Using the Properties of Exponents
		Integrated Math II MATHia Software	3: Exploring Functions	4: Rational Exponents	1: Using the Properties of Exponents
F.IF.9	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).	Integrated Math II Textbook	3: Exploring Functions	3: Introduction to Quadratics	4: You Lose Some, You Lose Some: Multiple Representations of Quadratic Functions pp. M3-217–M3-232
		Integrated Math II MATHia Software	3: Exploring Functions	3: Compare Linear and Exponential Models	6: Comparing Exponential Functions in Different Forms
				8: Properties of Quadratic Functions	3: Comparing Quadratic Functions in Different Forms
F.BF.1a	Determine an explicit expression, a recursive process, or steps for calculation from a context.*	Integrated Math II Textbook	3: Exploring Functions	2: Exponentials	1: Got Chills . . . They're Multiplyin': Exponential Functions and Rational Exponents pp. M3-89–M3-106
F.BF.1b	Combine standard function types using arithmetic operations.*	Integrated Math II Textbook	3: Exploring Functions	2: Exponentials	4: Saving Strategies: Modeling with and Combining Function Types pp. M3-133–M3-142
		Integrated Math II MATHia Software	4: Seeing Structure	6: Function Operations	1: Adding and Subtracting Linear Functions

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
F.BF.3	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $kf(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.	Integrated Math II Textbook	3: Exploring Functions	1: Functions Derived From Linear Relationships	1: Putting the V in Absolute Value: Defining Absolute Value Functions and Transformations pp. M3-7–M3-24
				2: Exponentials	3: Just So . . . Basic: Horizontal Dilations of Exponential Functions pp. M3-119–M3-131
				3: Introduction to Quadratics	3: More Than Meets the Eye: Transformations of Quadratic Functions pp. M3-191–M3-216
		Integrated Math II MATHia Software	3: Exploring Functions	5: Linear and Exponential Transformations	1: Introduction to Transforming Exponential Functions
					2: Shifting Vertically
					3: Shifting Horizontally
					4: Reflecting and Dilating using Graphs
					5: Transforming using Tables of Values
					6: Using Multiple Transformations
				7: Linear and Quadratic Transformations	1: Shifting Vertically
					2: Shifting Horizontally
					3: Reflecting and Dilating using Graphs
					4: Transforming Using Tables of Values
					5: Using Multiple Transformations
			4: Seeing Structure	1: Polynomial Operations	2: Operating with Functions on the Coordinate Plane
F.BF.4	Find inverse functions.	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 II MATHia Software	4: Seeing Structure	7: Inverses of Functions	1: Recognizing Graphs of Inverses
F.BF.4a	Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse. For example, $f(x) = 2x^3$.	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
			4: Seeing Structure	2: Applications of Quadratics	4: Model Behavior: Using Quadratic Functions to Model Data pp. M4-159–M4-174

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
F.LE.3	Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.*	Integrated Math II Textbook	3: Exploring Functions	2: Exponentials	2: Turn That Frown Upside Down: Growth and Decay Functions pp. M3-107–M3-118
				3: Introduction to Quadratics	4: You Lose Some, You Lose Some: Multiple Representations of Quadratic Functions pp. M3-217–M3-232
F.LE.6	Apply quadratic functions to physical problems, such as the motion of an object under the force of gravity. CA*	Integrated Math II Textbook	3: Exploring Functions	3: Introduction to Quadratics	1: Up and Down or Down and Up: Exploring Quadratic Functions pp. M3-151–M3-166
			4: Seeing Structure	2: Applications of Quadratics	2: Ahead of the Curve: Solving Quadratic Inequalities pp. M4-137–M4-146
					3: All Systems Are Go!: Systems of Quadratic Equations pp. M4-147–M4-158
F.TF.8	Prove the Pythagorean identity $\sin^2(\theta) + \cos^2(\theta) = 1$ and use it to find $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ given $\sin(\theta)$, $\cos(\theta)$, or $\tan(\theta)$ and the quadrant of the angle.	Integrated Math II Textbook	4: Seeing Structure	3: Circles on the Coordinate Plane	3: $\sin^2(\theta)$ Plus $\cos^2(\theta)$ Equals 1^2: The Pythagorean Identity pp. M4-217–M4-226
G.CO.9	Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.	Integrated Math II Textbook	1: Reasoning with Shapes	2: Justifying Line and Angle Relationships	1: Proof Positive: Forms of Proof pp. M1-85–M1-106
					2: A Parallel Universe: Proving Parallel Line Theorems pp. M1-107–M1-125
					4: Identical Twins: Perpendicular Bisector and Isosceles Triangle Theorems pp. M1-143–M1-163
		Integrated Math II MATHia Software	1: Reasoning with Shapes	3: Angle Properties	1: Calculating and Justifying Angle Measures
					2: Calculating Angle Measures
				4: Introduction to Proofs with Segments and Angles	3: Connecting Steps in Angle Proofs
					4: Using Angle Theorems
				5: Lines Cut by a Transversal	1: Classifying Angles Formed by Transversals
					2: Calculating Angles Formed by Transversals
					3: Calculating Angles Formed by Multiple Transversals
				6: Parallel Lines Theorems	1: Proving Parallel Lines Theorems
					2: Proving the Converses of Parallel Lines Theorems

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
G.CO.10	Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.	Integrated Math II Textbook	1: Reasoning with Shapes	2: Justifying Line and Angle Relationships	3: Ins and Outs: Interior and Exterior Angles of Polygons pp. M1-127–M1-142
					4: Identical Twins: Perpendicular Bisector and Isosceles Triangle Theorems pp. M1-143–M1-163
				3: Using Congruence Theorems	1: SSS, SAS, ASA, . . . S.O.S!: Using Triangle Congruence to Determine Relationships Between Segments pp. M1-209–M1-220
		Integrated Math II MATHia Software	1: Reasoning with Shapes	7: Proving Triangles Congruent	1: Proving Triangles Congruent using SAS and SSS
					2: Proving Triangles Congruent using AAS and ASA
				8: Using Triangle Congruence	1: Proving Theorems using Congruent Triangles
					2: Proving Triangle Theorems
					3: Using Triangle Theorems
				11: Extending Triangle Congruence Theorems	1: Proving Triangles Congruent using HL and HA
G.CO.11	Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.	Integrated Math II Textbook	1: Reasoning with Shapes	3: Using Congruence Theorems	2: Props To You: Properties of Quadrilaterals pp. M1-221–M1-247
		Integrated Math II MATHia Software	1: Reasoning with Shapes	12: Properties of Parallelograms	1: Understanding Parallelograms
					2: Determining Parts of Quadrilaterals and Parallelograms
				13: Parallelogram Proofs	1: Proofs about Parallelograms
G.SRT.1a	A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing through the center unchanged.	Integrated Math II Textbook	2: Investigating Proportionality	1: Similarity	3: Keep It in Proportion: Theorems About Proportionality pp. M2-37–M2-64
G.SRT.1b	The dilation of a line segment is longer or shorter in the ratio given by the scale factor.	Integrated Math II Textbook	2: Investigating Proportionality	1: Similarity	1: Big, Little, Big, Little: Dilating Figures to Create Similar Figures pp. M2-7–M2-21

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
G.SRT.2	Given two figures, use the definition of similarity in terms of similarity transformations to decide if they are similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all corresponding pairs of angles and the proportionality of all corresponding pairs of sides.	Integrated Math II Textbook	2: Investigating Proportionality	1: Similarity	1: Big, Little, Big, Little: Dilating Figures to Create Similar Figures pp. M2-7–M2-21
					2: Similar Triangles or Not?: Establishing Triangle Similarity Criteria pp. M2-23–M2-35
		Integrated Math II MATHia Software	2: Investigating Proportionality	1: Similar Triangles	1: Understanding Similarity
G.SRT.3	Use the properties of similarity transformations to establish the Angle- Angle (AA) criterion for two triangles to be similar.	Integrated Math II Textbook	2: Investigating Proportionality	1: Similarity	2: Similar Triangles or Not?: Establishing Triangle Similarity Criteria pp. M2-23–M2-35
					4: This Isn't Your Average Mean: More Similar Triangles pp. M2-65–M2-78
G.SRT.4	Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.	Integrated Math II Textbook	2: Investigating Proportionality	1: Similarity	3: Keep It in Proportion: Theorems About Proportionality pp. M2-37–M2-64
					4: This Isn't Your Average Mean: More Similar Triangles pp. M2-65–M2-78
		Integrated Math II MATHia	1: Reasoning with Shapes	9: Special Right Triangles	1: Introduction to Special Right Triangles
					2: Calculating the Lengths of Sides of Special Right Triangles
G.SRT.5	Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.	Integrated Math II Textbook	1: Reasoning with Shapes	3: Using Congruence Theorems	1: SSS, SAS, ASA, . . . S.O.S!: Using Triangle Congruence to Determine Relationships Between Segments pp. M1-209–M1-220
			2: Investigating Proportionality	1: Similarity	4: This Isn't Your Average Mean: More Similar Triangles pp. M2-65–M2-78
					5: Run It Up the Flagpole: Application of Similar Triangles pp. M2-79–M2-93
		Integrated Math II MATHia Software	1: Reasoning with Shapes	9: Special Right Triangles	2: Calculating the Lengths of Sides of Special Right Triangles
			2: Investigating Proportionality	1: Similar Triangles	2: Calculating Corresponding Parts of Similar Triangles
					3: Proofs Using Similar Triangles

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
G.SRT.6	Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.	Integrated Math II Textbook	2: Investigating Proportionality	2: Trigonometry	1: Three Angle Measure: Introduction to Trigonometry pp. M2-121–M2-135
					2: The Tangent Ratio: Tangent Ratio, Cotangent Ratio, and Inverse Tangent pp. M2-137–M2-153
					3: The Sine Ratio: Sine Ratio, Cosecant Ratio, and Inverse Sine pp. M2-155–M2-169
					4: The Cosine Ratio: Cosine Ratio, Secant Ratio, and Inverse Cosine pp. M2-171–M2-185
		Integrated Math II MATHia Software	2: Investigating Proportionality	2: Trigonometric Ratios	1: Introduction to Trigonometric Ratios
G.SRT.7	Explain and use the relationship between the sine and cosine of complementary angles.	Integrated Math II Textbook	2: Investigating Proportionality	2: Trigonometry	5: We Complement Each Other: Complement Angle Relationships pp. M2-187–M2-198
		Integrated Math II MATHia Software	2: Investigating Proportionality	2: Trigonometric Ratios	4: Relating Sines and Cosines of Complementary Angles
G.SRT.8	Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems.*	Integrated Math II Textbook	2: Investigating Proportionality	2: Trigonometry	2: The Tangent Ratio: Tangent Ratio, Cotangent Ratio, and Inverse Tangent pp. M2-137–M2-153
					3: The Sine Ratio: Sine Ratio, Cosecant Ratio, and Inverse Sine pp. M2-155–M2-169
					4: The Cosine Ratio: Cosine Ratio, Secant Ratio, and Inverse Cosine pp. M2-171–M2-185
					5: We Complement Each Other: Complement Angle Relationships pp. M2-187–M2-198
		Integrated Math II MATHia Software	2: Investigating Proportionality	2: Trigonometric Ratios	2: Using One Trigonometric Ratio to Solve Problems
					3: Using Multiple Trigonometric Ratios to Solve Problems

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
G.SRT.8.1	Derive and use the trigonometric ratios for sepcial right triangles (30°, 60°, 90° and 45°, 45°, 90°). CA	Integrated Math II Textbook	2: Investigating Proportionality	2: Trigonometry	1: Three Angle Measure: Introduction to Trigonometry pp. M2-121–M2-135
					2: The Tangent Ratio: Tangent Ratio, Cotangent Ratio, and Inverse Tangent pp. M2-137–M2-153
					3: The Sine Ratio: Sine Ratio, Cosecant Ratio, and Inverse Sine pp. M2-155–M2-169
					4: The Cosine Ratio: Cosine Ratio, Secant Ratio, and Inverse Cosine pp. M2-171–M2-185
G.C.1	Prove that all circles are similar.	Integrated Math II Textbook	2: Investigating Proportionality	3: Circles and Volume	1: All Circles Great and Small: Similarity Relationships in Circles pp. M2-211–M2-228
		Integrated Math II MATHia Software	1: Reasoning with Shapes	2: Properties of Circles	1: Introduction to Circles
G.C.2	Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.	Integrated Math II Textbook	1: Reasoning with Shapes	1: Composing and Decomposing Shapes	1: Running Circles Around Geometry: Using Circles to Make Conjectures pp. M1-7–M1-22
				2: Justifying Line and Angle Relationships	5: Corners in a Round Room: Angle Relationships Inside and Outside Circles pp. M1-165–M1-194
				3: Using Congruence Theorems	3: Three-Chord Song: Relationships Between Chords pp. M1-249–M1-263
		Integrated Math II MATHia Software	1: Reasoning with Shapes	2: Properties of Circles	1: Introduction to Circles
					2: Determining Central and Inscribed Angles in Circles
				10: Angles and Circles	1: Determining Interior and Exterior Angles in Circles
			2: Investigating Proportionality	3: Arc Length	2: Determining Chords in Circles

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
G.C.3	Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.	Integrated Math II Textbook	1: Reasoning with Shapes	1: Composing and Decomposing Shapes	2: The Quad Squad: Conjectures About Quadrilaterals pp. M1-23–M1-40
					3: Tri- Tri- Tri- and Separate Them: Conjectures About Triangles pp. M1-41–M1-54
					4: What's the Point?: Points of Concurrency pp. M1-55–M1-72
				2: Justifying Line and Angle Relationships	5: Corners in a Round Room: Angle Relationships Inside and Outside Circles pp. M1-165–M1-194
		Integrated Math II MATHia Software	1: Reasoning with Shapes	2: Properties of Circles	3: Angles of an Inscribed Quadrilateral
G.C.4(+)	(+) Construct a tangent line from a point outside a given circle to the circle.	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. M1-165–M1-194
G.C.5	Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and define the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector. Convert between degrees and radians. CA	Integrated Math II Textbook	2: Investigating Proportionality	3: Circles and Volume	1: All Circles Great and Small: Similarity Relationships in Circles pp. M2-211–M2-228
					2: A Slice of Pi: Sectors and Segments of a Circle pp. M2-229–M2-248
		Integrated Math II MATHia	2: Investigating Proportionality	3: Arc Length	1: Relating Arc Length and Radius
					3: Calculating the Area of a Sector
G.GPE.1	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 the Coordinate Plane	1: X^2 Plus Y^2 Equals $Radius^2$: Deriving the Equation for a Circle pp. M4-187–M4-200
					2: A Blip on the Radar: Determining Points On a Circle pp. M4-201–M4-216
		Integrated Math II MATHia	4: Seeing Structure	8: Equation of a Circle	1: Deriving the Equation of a Circle
					2: Determining the Radius and Center of a Circle
G.GPE.2	Derive the equation of a parabola given a focus and directrix.	Integrated Math II Textbook	4: Seeing Structure	3: Circles on the Coordinate Plane	4: Going the Equidistance: Equation of a Parabola pp. M4-227–M4-254

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
G.GPE.4	Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1,√3) lies on the circle centered at the origin and containing the point (0, 2). [Include simple circle theorems.]	Integrated Math II Textbook	4: Seeing Structure	3: Circles on the Coordinate Plane	2: A Blip on the Radar: Determining Points On a Circle pp. M4-201–M4-216
G.GPE.6	Find the point on a directed line segment between two given points that partitions the segment in a given ratio.	Integrated Math II Textbook	2: Investigating Proportionality	1: Similarity	6: Jack's Spare Key: Partitioning Segments in Given Ratios pp. M2-95–M2-108
		Integrated Math II	2: Investigating Proportionality	1: Similar Triangles	4: Partitioning Segments in Given Ratios
					5: Partitioning Segments Proportionately
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.	Integrated Math II Textbook	2: Investigating Proportionality	3: Circles and Volume	1: All Circles Great and Small: Similarity Relationships in Circles pp. M2-211–M2-228
					2: A Slice of Pi: Sectors and Segments of a Circle pp. M2-229–M2-248
					3: Cakes and Pancakes: Building Three-Dimensional Figures pp. M2-249–M2-266
					4: Get to the Point: Building Volume and Surface Area Formulas pp. M2-267–M2-290
G.GMD.3	Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*	Integrated Math II Textbook	2: Investigating Proportionality	3: Circles and Volume	4: Get to the Point: Building Volume and Surface Area Formulas pp. M2-267–M2-290
		Integrated Math II MATHia Software	2: Investigating Proportionality	4: Volume	2: Calculating Volume of Cylinders
					3: Calculating Volume of Pyramids
					4: Calculating Volume of Cones
					5: Calculating Volume of Spheres

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
G.GMD.5	Know that the effect of a scale factor k greater than zero on length, area, and volume is to multiply each by k, k^2, and k^3, respectively; determine length, area and volume measures using scale factors. CA*	Course 2 Textbook	1: Thinking Proportionally	1: Circles and Ratio	2: That's a Spicy Pizza: Area of Circles pp. M1-19–M1-32
			5: Constructing and Measuring	2: Three-Dimensional Figures	3: Hey, Mister, Got Some Bird Seed?: Volume of Pyramids pp. M5-107–M5-127
		Course 3 Textbook	5: Applying Powers	2: Volume of Curved Figures	1: Drum Roll, Please!: Volume of a Cylinder pp. M5-85–M5-98
					2: Cone of Silence: Volume of a Cone pp. M5-99–M5-112
		Integrated Math I Textbook	IModule 1 M2: Exploring Constant Change	4: Shapes on a Coordinate Plane	2: Know It Inside Out: Area and Perimeter of Triangles and Rectangles on the Coordinate Plane pp. M2-287–M2-300
G.GMD.6	Verify experimentally that in a triangle, angles opposite longer sides are larger, sides opposite larger angles are longer, and the sum of any two side lengths is greater than the remaining side length; apply these relationships to solve real-world and mathematical problems. CA	Course 2 Textbook	5: Constructing and Measuring	1: Angles and Triangles	3: Consider Every Side: Constructing Triangles Given Sides pp. M5-39–M5-52
		Course 3 Textbook	4: Expanding Number Systems	2: The Pythagorean Theorem	1: The Right Triangle Connection: The Pythagorean Theorem pp. M4-55–M4-74
S.CP.1	Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ('or," "and," "not").*	Integrated Math II Textbook	5: Making Informed Decisions	1: Independence and Conditional Probability	1: What Are the Chances?: Compound Sample Spaces pp. M5-7–M5-25
S.CP.2	Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent.*	Integrated Math II Textbook	5: Making Informed Decisions	1: Independence and Conditional Probability	2: And?: Compound Probability with "And" pp. M5-27–M5-40
					4: And, Or, and More!: Calculating Compound Probability pp. M5-57–M5-70
		Integrated Math II MATHia Software	5: Making Informed Decisions	1: Independence and Conditional Probability	1: Independent Events

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
S.CP.3	Understand the conditional probability of *A* given *B* as P(*A* and *B*)/P(*B*), and interpret independence of *A* and *B* as saying that the conditional probability of *A* given *B* is the same as the probability of *A*, and the conditional probability of *B* given *A* is the same as the probability of *B*.*	Integrated Math II Textbook	5: Making Informed Decisions	2: Computing Probabilities	2: It All Depends: Conditional Probability pp. M5-99–M5-112
		Integrated Math II MATHia Software	5: Making Informed Decisions	1: Independence and Conditional Probability	2: Conditional Probability
S.CP.4	Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in tenth grade. Do the same for other subjects and compare the results.*	Integrated Math II Textbook	5: Making Informed Decisions	2: Computing Probabilities	1: Table Talk: Compound Probability for Data Displayed in Two-Way Tables pp. M5-81–M5-98
		Integrated Math II MATHia Software	5: Making Informed Decisions	2: Computing Probabilities	1: Understanding Frequency Tables
S.CP.5	Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations.*	Integrated Math II Textbook	5: Making Informed Decisions	2: Computing Probabilities	2: It All Depends: Conditional Probability pp. M5-99–M5-112
		Integrated Math II MATHia Software	5: Making Informed Decisions	2: Computing Probabilities	2: Recognizing Concepts of Conditional Probability
S.CP.6	Find the conditional probability of *A* given *B* as the fraction of *B*'s outcomes that also belong to *A*, and interpret the answer in terms of the model.*	Integrated Math II Textbook	5: Making Informed Decisions	2: Computing Probabilities	2: It All Depends: Conditional Probability pp. M5-99–M5-112
		Integrated Math II MATHia Software	5: Making Informed Decisions	1: Independence and Conditional Probability	2: Conditional Probability

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
S.CP.7	Apply the Addition Rule, P(*A* or *B*) = P(*A*) + P(*B*) - P(*A* and *B*), and interpret the answer in terms of the model.*	Integrated Math II Textbook	5: Making Informed Decisions	1: Independence and Conditional Probability	3: Or?: Compound Probability with "Or" pp. M5-41–M5-55
					4: And, Or, and More!: Calculating Compound Probability pp. M5-57–M5-70
		Integrated Math II MATHia Software	5: Making Informed Decisions	2: Computing Probabilities	3: Calculating Compound Probabilities
S.CP.8(+)	(+) Apply the general Multiplication Rule in a uniform probability model, P(*A* and *B*) = P(*A*)P(*B* | *A*) = P(*B*)P(*A* | *B*), and interpret the answer in terms of the model.*	Integrated Math II Textbook	5: Making Informed Decisions	1: Independence and Conditional Probability	2: And?: Compound Probability with "And" pp. M5-27–M5-40
					4: And, Or, and More!: Calculating Compound Probability pp. M5-57–M5-70
S.CP.9(+)	(+) Use permutations and combinations to compute probabilites of compound events and solve problems.*	Integrated Math II Textbook	5: Making Informed Decisions	2: Computing Probabilities	3: Give Me 5!: Permutations and Combinations pp. M5-113–M5-134
					4: A Different Kind of Court Trial: Independent Trials pp. M5-135–M5-148
S.MD.6(+)	(+) Use probabilities to make fair decisions (e.g., drawing by lots, using a random number generator).*	Integrated Math II Textbook	5: Making Informed Decisions	2: Computing Probabilities	5: What Do You Expect?: Expected Value pp. M5-149–M5-164
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).*	Integrated Math II Textbook	5: Making Informed Decisions	2: Computing Probabilities	5: What Do You Expect?: Expected Value pp. M5-149–M5-164