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Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
ALGII.1	Identify numbers written in the form $a + bi$, where a and b are real numbers and $i^2 = -1$, as complex numbers.	Algebra II Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	6: <i>i</i> Want to Believe: Imaginary and Complex Numbers pp. M1-93–M1-114
		MATHia Software	1: Analyzing Structure	4: Operations with Complex Numbers	1: Introduction to Complex Numbers 2: Simplifying Radicals with Negative Radicands 3: Simplifying Powers of i
ALGII.1a	Add, subtract, and multiply complex numbers using the commutative, associative, and distributive properties.	Algebra II Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	6: <i>i</i> Want to Believe: Imaginary and Complex Numbers pp. M1-93–M1-114
		MATHia Software	1: Analyzing Structure	4: Operations with Complex Numbers	4: Adding and Subtracting Complex Numbers 5: Multiplying Complex Numbers
ALGII.2	Use matrices to represent and manipulate data.	Supplement	Available as a Supplement	1: Matrices	1: Inside the Matrix: Introduction to Matrices and Matrix Operations pp. MS-1–MS-18
ALGII.3	Multiply matrices by scalars to produce new matrices.	Supplement	Available as a Supplement	1: Matrices	1: Inside the Matrix: Introduction to Matrices and Matrix Operations pp. MS-1–MS-18
ALGII.4	Add, subtract, and multiply matrices of appropriate dimensions.	Supplement	Available as a Supplement	1: Matrices	1: Inside the Matrix: Introduction to Matrices and Matrix Operations pp. MS-1–MS-18
ALGII.6	Factor polynomials using common factoring techniques, and use the factored form of a polynomial to reveal the zeros of the function it defines.	Algebra II Textbook	1: Analyzing Structure	2: Composing and Decomposing Functions	1: Blame It on the Rain: Modeling with Functions pp. M1-129–M1-138 4: The Zero's the Hero: Decomposing Cubic Functions pp. M1-167–M1-182
				3: Characteristics of Polynomial Functions	3: Poly-Wog: Key Characteristics of Polynomial Functions pp. M1-225–M1-248 4: Function Construction: Building Cubic and Quartic Functions pp. M1-249–M1-268
		2: Developing Structural Similarities	1: Relating Factors and Zeros	1: Satisfactory Factoring: Factoring Polynomials to Identify Zeros pp. M2-7–M2-22	
		MATHia Software	1: Analyzing Structure	5: Graphs of Polynomial Functions	6: Identifying Zeros of Polynomials 7: Using Zeros to Sketch a Graph of Polynomial
ALGII.7	Prove polynomial identities and use them to describe numerical relationships.	Algebra II Textbook	2: Developing Structural Similarities	2: Polynomial Models	1: Not a Case of Mistaken Identity: Exploring Polynomial Identities pp. M2-77–M2-89

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
ALGII.8	Explain why extraneous solutions to an equation may arise and how to check to be sure that a candidate solution satisfies an equation. Extend to radical equations.	Algebra II Textbook	2: Developing Structural Similarities	3: Rational Functions	5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201–M2-222
			3: Inverting Functions	1: Radical Functions	6: 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223–M2-238
		MATHia Software	2: Developing Structural Similarities	4: Rational Functions	5: Into the Unknown: Solving Radical Equations pp. M3-71–M3-80
				5: Rational Expressions and Equations	2: Modeling Ratios as Rational Functions
ALGII.9	For exponential models, express as a logarithm the solution to $ab^{ct}=d$, where a , c , and d are real numbers and the base b is 2 or 10; evaluate the logarithm using technology to solve an exponential equation.	Algebra II Textbook	3: Inverting Functions	3: Exponential and Logarithmic Equations	3: More Than One Way to Crack an Egg: Solving Exponential Equations pp. M3-197–M3-206
					4: Logging On: Solving Logarithmic Equations pp. M3-207–M3-222
					5: What's the Use?: Applications of Exponential and Logarithmic Equations pp. M3-223–M3-236
		MATHia Software	3: Inverting Functions	5: Solve Equations with Base 2, 10, or e	1: Solving Base 2 and Base 10 Equations
					2: Solving Base e Equations
					3: Solving Any Base Equations
ALGII.10	Create equations and inequalities in one variable and use them to solve problems. Extend to equations arising from polynomial, trigonometric (sine and cosine), logarithmic, radical, and general piecewise functions.	Algebra II Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	2: The Cat's Out of the Bag!: Generating Algebraic Expressions pp. M1-17–M1-30
					3: Samesies: Comparing Multiple Representations of Functions pp. M1-31–M1-49
			2: Developing Structural Similarities	1: Relating Factors and Zeros	4: True to Form: Forms of Quadratic Functions pp. M1-51–M1-78
					4: Unequal Equals: Solving Polynomial Inequalities pp. M2-51–M2-64

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ALGII.10	Create equations and inequalities in one variable and use them to solve problems. Extend to equations arising from polynomial, trigonometric (sine and cosine), logarithmic, radical, and general piecewise functions.	Algebra II Textbook	2: Developing Structural Similarities	3: Rational Functions	5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201–M2-222
		MATHia Software	2: Developing Structural Similarities	3: Polynomial Models	6: 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223–M2-238
				6: Rational Models	4: Solving Polynomial Inequalities
					2: Using Rational Models
3: Solving Work, Mixture, and Distance Problems					
4: Modeling and Solving with Rational Functions					
ALGII.11	Solve quadratic equations with real coefficients that have complex solutions.	Algebra II Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	6: <i>i</i> Want to Believe: Imaginary and Complex Numbers pp. M1-93–M1-114
		MATHia Software	1: Analyzing Structure	4: Operations with Complex Numbers	6: Solving Quadratic Equations with Complex Roots
ALGII.12	Solve simple equations involving exponential, radical, logarithmic, and trigonometric functions using inverse functions.	Algebra II Textbook	3: Inverting Functions	1: Radical Functions	2: Such a Rad Lesson: Radical Functions pp. M3-19–M3-40
		MATHia Software	3: Inverting Functions	2: Exponential and Logarithmic Functions	3: Return of the Inverse: Logarithmic Functions pp. M3-125–M3-136
1: Inverses of Functions	4: Calculating Inverses of Linear Functions				
ALGII.13	Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales and use them to make predictions. Extend to polynomial, trigonometric (sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions.	Algebra II Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	4: True to Form: Forms of Quadratic Functions pp. M1-51–M1-78
ALGII.14	Explain why the x -coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$.	Algebra II Textbook	1: Analyzing Structure	2: Composing and Decomposing Functions	1: Blame It on the Rain: Modeling with Functions pp. M1-129–M1-138
			2: Developing Structural Similarities	3: Characteristics of Polynomial Functions	5: Level Up: Analyzing Polynomial Functions pp. M1-269–M1-280
				3: Rational Functions	5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201–M2-222

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ALGII.14	Explain why the x -coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$.	Algebra II Textbook	3: Inverting Functions	2: Exponential and Logarithmic Functions	1: Half-Life: Comparing Linear and Exponential Functions pp. M3-93–M3-106
				3: Exponential and Logarithmic Equations	2: Pert and Nert: Properties of Exponential Graphs pp. M3-107–M3-124
					3: More Than One Way to Crack an Egg: Solving Exponential Equations pp. M3-197–M3-206
ALGII.14a	Find the approximate solutions of an equation graphically, using tables of values, or finding successive approximations, using technology where appropriate. Extend to cases where $f(x)$ and/or $g(x)$ are polynomial, trigonometric (sine and cosine), logarithmic, radical, and general piecewise functions.	Algebra II Textbook	1: Analyzing Structure	2: Composing and Decomposing Functions	1: Blame It on the Rain: Modeling with Functions pp. M1-129–M1-138
				3: Characteristics of Polynomial Functions	5: Level Up: Analyzing Polynomial Functions pp. M1-269–M1-280
			2: Developing Structural Similarities	3: Rational Functions	5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201–M2-222
				3: Inverting Functions	2: Exponential and Logarithmic Functions
			3: Exponential and Logarithmic Equations		2: Pert and Nert: Properties of Exponential Graphs pp. M3-107–M3-124
			3: More Than One Way to Crack an Egg: Solving Exponential Equations pp. M3-197–M3-206		
ALGII.15	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). Extend to polynomial, trigonometric (sine and cosine), logarithmic, radical, and general piecewise functions.	Algebra II Textbook	1: Analyzing Structure	1: Exploring and Analyzing Patterns	3: Samesies: Comparing Multiple Representations of Functions pp. M1-31–M1-49
				4: True to Form: Forms of Quadratic Functions pp. M1-51–M1-78	
			3: Characteristics of Polynomial Functions	6: To a Greater or Lesser Degree: Comparing Polynomial Functions pp. M1-281–M1-296	
			3: Inverting Functions	1: Radical Functions	3: Making Waves: Transformations of Radical Functions pp. M3-41–M3-50
		2: Exponential and Logarithmic Functions		2: Pert and Nert: Properties of Exponential Graphs pp. M3-107–M3-124	
MATHia Software	1: Analyzing Structure	5: Graphs of Polynomial Functions	9: Comparing Polynomial Functions in Different Forms		

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ALGII.16	Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k \cdot f(x)$, $f(k \cdot x)$, 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. Extend to polynomial, trigonometric (sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions.	Algebra II Textbook	1: Analyzing Structure	2: Composing and Decomposing Functions	2: Folds, Turns, and Zeros: Transforming Function Shapes pp. M1-139–M1-152
				3: Characteristics of Polynomial Functions	1: So Odd, I Can't Even: Power Functions pp. M1-195–M1-208
			2: Developing Structural Similarities		3: Rational Functions
				3: Inverting Functions	1: Radical Functions
			4: Investigating Periodic Functions		2: Exponential and Logarithmic Functions
				MATHia Software	1: Analyzing Structure
		2: Graphs of Functions	2: Transforming Functions		
		3: Forms of Quadratic Functions	4: Quadratic Transformations		
		ALGII.17	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. Note: Key features include intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries (including even and odd); end behavior; and periodicity. Extend to polynomial, trigonometric (sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions.	Algebra II Textbook	1: Analyzing Structure
4: True to Form: Forms of Quadratic Functions pp. M1-51–M1-78					

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ALGII.17	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. Note: Key features include intercepts; intervals where the function is increasing, decreasing, positive, or negative; maximums and minimums; symmetries (including even and odd); end behavior; and periodicity. Extend to polynomial, trigonometric (sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions.	Algebra II Textbook	1: Analyzing Structure	2: Composing and Decomposing Functions	3: Planting the Seeds: Exploring Cubic Functions pp. M1-153–M1-166
				3: Characteristics of Polynomial Functions	3: Poly-Wog: Key Characteristics of Polynomial Functions pp. M1-225–M1-248
			2: Developing Structural Similarities	2: Polynomial Models	3: Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103–M2-117
					3: Inverting Functions
			2: Exponential and Logarithmic Functions	2: Such a Rad Lesson: Radical Functions pp. M3-19–M3-40	
				1: Trigonometric Relationships	1: Half-Life: Comparing Linear and Exponential Functions pp. M3-93–M3-106
					2: Pert and Nert: Properties of Exponential Graphs pp. M3-107–M3-124
			4: Investigating Periodic Functions	3: Return of the Inverse: Logarithmic Functions pp. M3-125–M3-136	
				1: A Sense of Deja Vu: Periodic Functions pp. M4-7–M4-22	
				5: Farmer's Tan: The Tangent Function pp. M4-65–M4-82	
		MATHia Software	1: Analyzing Structure	2: Graphs of Functions	1: Identifying Key Characteristics of Graphs of Functions
				5: Graphs of Polynomial Functions	3: Classifying Polynomial Functions
					4: Interpreting Key Features of Graphs in Terms of Quantities
				5: Identifying Key Characteristics of Polynomial Functions	

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ALGII.18	Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. Extend to polynomial, trigonometric (sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions.	Algebra II Textbook	1: Analyzing Structure	2: Composing and Decomposing Functions	3: Planting the Seeds: Exploring Cubic Functions pp. M1-153–M1-166
			2: Developing Structural Similarities	2: Polynomial Models	3: Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103–M2-117
				3: Rational Functions	5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201–M2-222
			3: Inverting Functions	1: Radical Functions	2: Such a Rad Lesson: Radical Functions pp. M3-19–M3-40
		2: Exponential and Logarithmic Functions		3: Making Waves: Transformations of Radical Functions pp. M3-41–M3-50	
		MATHia Software	1: Analyzing Structure	5: Graphs of Polynomial Functions	3: Return of the Inverse: Logarithmic Functions pp. M3-125–M3-136
ALGII.19	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. Extend to polynomial, trigonometric (sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions.	Algebra II Textbook	1: Analyzing Structure	3: Characteristics of Polynomial Functions	5: Level Up: Analyzing Polynomial Functions pp. M1-269–M1-280
		MATHia Software	1: Analyzing Structure	5: Graphs of Polynomial Functions	8: Understanding Average Rate of Change of Polynomial Functions
ALGII.20	Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. Extend to polynomial, trigonometric (sine and cosine), logarithmic, reciprocal, radical, and general piecewise functions.	Algebra II Textbook	3: Inverting Functions	4: Applications of Growth Modeling	2: Paint By Numbers: Art and Transformations pp. M3-267–M3-276
ALGII.20a	Graph polynomial functions expressed symbolically, identifying zeros when suitable factorizations are available, and showing end behavior.	Algebra II Textbook	1: Analyzing Structure	2: Composing and Decomposing Functions	2: Folds, Turns, and Zeros: Transforming Function Shapes pp. M1-139–M1-152
					3: Planting the Seeds: Exploring Cubic Functions pp. M1-153–M1-166

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ALGII.20a	Graph polynomial functions expressed symbolically, identifying zeros when suitable factorizations are available, and showing end behavior.	Algebra II Textbook	1: Analyzing Structure	2: Composing and Decomposing Functions	4: The Zero's the Hero: Decomposing Cubic Functions pp. M1-167-M1-182
				3: Characteristics of Polynomial Functions	1: So Odd, I Can't Even: Power Functions pp. M1-195-M1-208 4: Function Construction: Building Cubic and Quartic Functions pp. M1-249-M1-268
			3: Inverting Functions	4: Applications of Growth Modeling	2: Paint By Numbers: Art and Transformations pp. M3-267-M3-276
ALGII.20b	Graph sine and cosine functions expressed symbolically, showing period, midline, and amplitude.	Algebra II Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	1: A Sense of Deja Vu: Periodic Functions pp. M4-7-M4-22 3: What Goes Around: The Sine and Cosine Functions pp. M4-35-M4-50 5: Farmer's Tan: The Tangent Function pp. M4-65-M4-82
ALGII.20c	Graph logarithmic functions expressed symbolically, showing intercepts and end behavior.	Algebra II Textbook	3: Inverting Functions	2: Exponential and Logarithmic Functions	3: Return of the Inverse: Logarithmic Functions pp. M3-125-M3-136
		MATHia Software	3: Inverting Functions	4: Applications of Growth Modeling	2: Paint By Numbers: Art and Transformations pp. M3-267-M3-276
ALGII.20d	Graph reciprocal functions expressed symbolically, identifying horizontal and vertical asymptotes.	Algebra II Textbook	2: Developing Structural Similarities	3: Rational Functions	1: There's a Fine Line Between a Numerator and a Denominator: Introduction to Rational Functions pp. M2-129-M2-144 3: There's a Hole in My Function!: Graphical Discontinuities pp. M2-167-M2-182
			3: Inverting Functions	4: Applications of Growth Modeling	2: Paint By Numbers: Art and Transformations pp. M3-267-M3-276
		MATHia Software	2: Developing Structural Similarities	4: Rational Functions	1: Introduction to Rational Functions
ALGII.20e	Graph square root and cube root functions expressed symbolically.	Algebra II Textbook	3: Inverting Functions	1: Radical Functions	1: Strike That, Invert It: Inverses of Power Functions pp. M3-7-M3-18 2: Such a Rad Lesson: Radical Functions pp. M3-19-M3-40

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ALGII.20e	Graph square root and cube root functions expressed symbolically.	Algebra II Textbook	3: Inverting Functions	1: Radical Functions	3: Making Waves: Transformations of Radical Functions pp. M3-41–M3-50
		MATHia Software	3: Inverting Functions	4: Applications of Growth Modeling	2: Paint By Numbers: Art and Transformations pp. M3-267–M3-276
				1: Inverses of Functions	1: Investigating Inverses of Functions 2: Graphing Square Root Functions
ALGII.20f	Compare the graphs of inverse functions and the relationships between their key features, including but not limited to quadratic, square root, exponential, and logarithmic functions.	Algebra II Textbook	3: Inverting Functions	1: Radical Functions	1: Strike That, Invert It: Inverses of Power Functions pp. M3-7–M3-18
ALGII.21	Explain how the unit circle in the coordinate plane enables the extension of trigonometric functions to all real numbers, interpreted as radian measures of angles traversed counterclockwise around the unit circle, building on work with non-right triangle trigonometry.	Algebra II Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	3: What Goes Around: The Sine and Cosine Functions pp. M4-35–M4-50
		MATHia Software	4: Investigating Periodic Functions	2: Trigonometric Equations	2: Chasing Theta: Solving Trigonometric Equations pp. M4-105–M4-117
				1: Graphs of Trigonometric Functions	1: Understanding the Unit Circle
ALGII.22	Use the mathematical modeling cycle to solve real-world problems involving polynomial, trigonometric (sine and cosine), logarithmic, radical, and general piecewise functions, from the simplification of the problem through the solving of the simplified problem, the interpretation of its solution, and the checking of the solution's feasibility.	Algebra II Textbook	1: Analyzing Structure	2: Composing and Decomposing Functions	1: Blame It on the Rain: Modeling with Functions pp. M1-129–M1-138
ALGII.23	Use mathematical and statistical reasoning about normal distributions to draw conclusions and assess risk; limit to informal arguments.	Algebra II Textbook	5: Relating Data and Decisions	1: Interpreting Data in Normal Distributions	2: The Form of Norm: The Empirical Rule for Normal Distributions pp. M5-19–M5-32
					3: Above, Below, and Between the Lines: Z-Scores and Percentiles pp. M5-33–M5-44
					4: Toh-May-Toh, Toh-Mah-Toh: Normal Distributions and Probability pp. M5-45–M5-52

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ALGII.23	Use mathematical and statistical reasoning about normal distributions to draw conclusions and assess risk; limit to informal arguments.	Algebra II 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. M5-95–M5-110
					4: How Much Different?: Using Statistical Significance to Make Inferences About Populations pp. M5-111–M5-126
					5: DIY: Designing a Study and Analyzing the Results pp. M5-127–M5-134
ALGII.24	Design and carry out an experiment or survey to answer a question of interest, and write an informal persuasive argument based on the results.	Algebra II Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	1: Data, Data Everywhere: Sample Surveys, Observational Studies, and Experiments pp. M5-65–M5-75
					2: Ample Sample Examples: Sampling Methods and Randomization pp. M5-77–M5-94
					3: A Vote of Confidence: Using Confidence Intervals to Estimate Unknown Population Means pp. M5-95–M5-110
					4: How Much Different?: Using Statistical Significance to Make Inferences About Populations pp. M5-111–M5-126
					5: DIY: Designing a Study and Analyzing the Results pp. M5-127–M5-134
ALGII.25	From a normal distribution, use technology to find the mean and standard deviation and estimate population percentages by applying the empirical rule.	Algebra II Textbook	5: Relating Data and Decisions	1: Interpreting Data in Normal Distributions	2: The Form of Norm: The Empirical Rule for Normal Distributions pp. M5-19–M5-32
					3: Above, Below, and Between the Lines: Z-Scores and Percentiles pp. M5-33–M5-44
					4: Toh-May-Toh, Toh-Mah-Toh: Normal Distributions and Probability pp. M5-45–M5-52
				2: Making Inferences and Justifying Conclusions	3: A Vote of Confidence: Using Confidence Intervals to Estimate Unknown Population Means pp. M5-95–M5-110
		MATHia Software	5: Relating Data and Decisions	1: Normal Distributions	1: Applying the Empirical Rule for Normal Distributions

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ALGII.25	From a normal distribution, use technology to find the mean and standard deviation and estimate population percentages by applying the empirical rule.	MATHia Software	5: Relating Data and Decisions	1: Normal Distributions	2: Z-Scores and Percentiles	
					3: Normal Distributions and Probability	
ALGII.25b	Estimate areas under a normal curve to solve problems in context, using calculators, spreadsheets, and tables as appropriate.	Algebra II Textbook	5: Relating Data and Decisions	1: Interpreting Data in Normal Distributions	2: The Form of Norm: The Empirical Rule for Normal Distributions pp. M5-19–M5-32	
					3: Above, Below, and Between the Lines: Z-Scores and Percentiles pp. M5-33–M5-44	
					4: Toh-May-Toh, Toh-Mah-Toh: Normal Distributions and Probability pp. M5-45–M5-52	
		MATHia Software	5: Relating Data and Decisions	1: Normal Distributions	2: Making Inferences and Justifying Conclusions	3: A Vote of Confidence: Using Confidence Intervals to Estimate Unknown Population Means pp. M5-95–M5-110
					1: Applying the Empirical Rule for Normal Distributions	
					2: Z-Scores and Percentiles	
3: Normal Distributions and Probability						
ALGII.26	Describe the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each.	Algebra II Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	1: Data, Data Everywhere: Sample Surveys, Observational Studies, and Experiments pp. M5-65–M5-75	
					2: Ample Sample Examples: Sampling Methods and Randomization pp. M5-77–M5-94	
ALGII.27	Distinguish between a statistic and a parameter and use statistical processes to make inferences about population parameters based on statistics from random samples from that population.	Algebra II Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	2: Ample Sample Examples: Sampling Methods and Randomization pp. M5-77–M5-94	
					3: A Vote of Confidence: Using Confidence Intervals to Estimate Unknown Population Means pp. M5-95–M5-110	
ALGII.28	Describe differences between randomly selecting samples and randomly assigning subjects to experimental treatment groups in terms of inferences drawn regarding a population versus regarding cause and effect.	Algebra II Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	2: Ample Sample Examples: Sampling Methods and Randomization pp. M5-77–M5-94	

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
ALGII.29	Explain the consequences, due to uncontrolled variables, of non-randomized assignment of subjects to groups in experiments.	Algebra II Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	2: Ample Sample Examples: Sampling Methods and Randomization pp. M5-77–M5-94
ALGII.30	Evaluate where bias, including sampling, response, or nonresponse bias, may occur in surveys, and whether results are representative of the population of interest.	Algebra II Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	2: Ample Sample Examples: Sampling Methods and Randomization pp. M5-77–M5-94
ALGII.31	Evaluate the effect of sample size on the expected variability in the sampling distribution of a sample statistic.	Algebra II Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	2: Ample Sample Examples: Sampling Methods and Randomization pp. M5-77–M5-94
					3: A Vote of Confidence: Using Confidence Intervals to Estimate Unknown Population Means pp. M5-95–M5-110
ALGII.31a	Simulate a sampling distribution of sample means from a population with a known distribution, observing the effect of the sample size on the variability.	Algebra II Textbook	5: Relating Data and Decisions	2: Making Inferences and Justifying Conclusions	2: Ample Sample Examples: Sampling Methods and Randomization pp. M5-77–M5-94
					3: A Vote of Confidence: Using Confidence Intervals to Estimate Unknown Population Means pp. M5-95–M5-110
ALGII.31b	Demonstrate that the standard deviation of each simulated sampling distribution is the known standard deviation of the population divided by the square root of the sample size.	Algebra II 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. M5-95–M5-110
ALGII.32	Produce a sampling distribution by repeatedly selecting samples of the same size from a given population or from a population simulated by bootstrapping (resampling with replacement from an observed sample). Do initial examples by hand, then use technology to generate a large number of samples.	Algebra II 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. M5-95–M5-110
ALGII.32a	Verify that a sampling distribution is centered at the population mean and approximately normal if the sample size is large enough.	Algebra II 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. M5-95–M5-110

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
ALGII.32b	Verify that 95% of sample means are within two standard deviations of the sampling distribution from the population mean.	Algebra II 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. M5-95–M5-110
ALGII.32c	Create and interpret a 95% confidence interval based on an observed mean from a sampling distribution.	Algebra II 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. M5-95–M5-110
ALGII.33	Use data from a randomized experiment to compare two treatments; limit to informal use of simulations to decide if an observed difference in the responses of the two treatment groups is unlikely to have occurred due to randomization alone, thus implying that the difference between the treatment groups is meaningful.	Algebra II 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. M5-111–M5-126
					5: DIY: Designing a Study and Analyzing the Results pp. M5-127–M5-134
ALGII.34	Define the radian measure of an angle as the constant of proportionality of the length of an arc it intercepts to the radius of the circle; in particular, it is the length of the arc intercepted on the unit circle.	Algebra II Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	2: The Knights of the Round Table: Radian Measure pp. M4-23–M4-34
ALGII.35	Choose trigonometric functions (sine and cosine) to model periodic phenomena with specified amplitude, frequency, and midline.	Algebra II Textbook	4: Investigating Periodic Functions	1: Trigonometric Relationships	4: The Sines They Are A-Changin': Transformations of Sine and Cosine Functions pp. M4-51–M4-64
				2: Trigonometric Equations	3: Wascally Wabbits: Modeling with Periodic Functions pp. M4-119–M4-130
					4: The Wheel Deal: Modeling Motion with a Trigonometric Function pp. M4-131–M4-140
		MATHia Software	4: Investigating Periodic Functions	1: Graphs of Trigonometric Functions	5: Springs Eternal: The Damping Function pp. M4-141–M4-152

Standard ID	Description	Location	Module	Topic (Textbook)/ Unit (MATHia Software)	Lesson (Textbook) / Workspace (MATHia Software)
ALGII.36	Prove the Pythagorean identity $\sin^2\theta + \cos^2\theta = 1$ and use it to calculate trigonometric ratios.	Algebra II Textbook	4: Investigating Periodic Functions	2: Trigonometric Equations	1: $\sin^2\theta + \cos^2\theta = 1$: The Pythagorean Identity pp. M4-95–M4-104
		MATHia Software	4: Investigating Periodic Functions	2: Pythagorean Identity	1: Proving the Pythagorean Identity 2: Using the Pythagorean Identity to Determine Sine, Cosine, or Tangent
ALGII.37	Derive and apply the formula $A = 1/2 \cdot ab \cdot \sin(C)$ for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side, extending the domain of sine to include right and obtuse angles.	Geometry Textbook	3: Investigating Proportionality	2: Trigonometry	6: A Deriving Force: Deriving the Triangle Area Formula, the Law of Sines, and the Law of Cosines pp. M3-199–M3-212
ALGII.38	Derive and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles. Extend the domain of sine and cosine to include right and obtuse angles.	Geometry Textbook	3: Investigating Proportionality	2: Trigonometry	6: A Deriving Force: Deriving the Triangle Area Formula, the Law of Sines, and the Law of Cosines pp. M3-199–M3-212