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| 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. | Textbook | 3: Inverting Functions | 1: Radical Functions | 4: Keepin' It Real: Rewriting Radical Expressions pp. M3-51–M3-70 |
| | | Rewriting Radicals MATHia Software | Algebra II | 3: Inverting Functions | 1: Radical Functions |
| | | Adding and Subtracting Radicals MATHia Software | | | 1: Radical Functions |
| | | Multiplying Radicals MATHia Software | | | 1: Radical Functions |
| | | Dividing Radicals MATHia Software | | | 1: Radical Functions |
| N-RN.2 | Rewrite expressions involving radicals and rational exponents using the properties of exponents. For example: Write equivalent representations that utilize both positive and negative exponents. | Textbook | 3: Inverting Functions | 1: Radical Functions | 4: Keepin' It Real: Rewriting Radical Expressions pp. M3-51–M3-70 |
| | | Rewriting Radicals with Variables MATHia Software | Algebra II | 3: Inverting Functions | 1: Radical Functions |
| | | Adding and Subtracting Radicals with Variables MATHia Software | | | 1: Radical Functions |
| 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 | 1: A Sense of Deja Vu: Periodic Functions pp. M4-7–M4-22 |
| 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. | Textbook | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns | 6: i Want to Believe: Imaginary and Complex Numbers pp. M1-93–M1-114 |

| 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. | Introduction to Complex Numbers MATHia Software | Algebra II | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns |
| | | Simplifying Radicals with Negative Radicands MATHia Software | | | 1: Exploring and Analyzing Patterns |
| | | Rewriting Powers of i MATHia Software | | | 1: Exploring and Analyzing Patterns |
| N-CN.2 | Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers. | Textbook | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns | 6: <i>i Want to Believe: Imaginary and Complex Numbers</i> pp. M1-93–M1-114 |
| | | Adding and Subtracting Complex Numbers MATHia Software | Algebra II | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns |
| | | Multiplying Complex Numbers MATHia Software | | | 1: Exploring and Analyzing Patterns |
| N-CN.7 | Solve quadratic equations with real coefficients that have complex solutions. | Textbook | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns | 6: <i>i Want to Believe: Imaginary and Complex Numbers</i> pp. M1-93–M1-114 |
| | | Solving Quadratic Equations with Complex Roots MATHia Software | Algebra II | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns |
| N-CN.8 | (+) Extend polynomial identities to the complex numbers. For example, rewrite $x^2 + 4$ as $(x + 2i)(x - 2i)$. | Textbook | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns | 6: <i>i Want to Believe: Imaginary and Complex Numbers</i> pp. M1-93–M1-114 |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|------------------|---|---|---------------------------------------|---|--|
| N-CN.8 | (+) Extend polynomial identities to the complex numbers. For example, rewrite $x^2 + 4$ as $(x + 2i)(x - 2i)$. | Textbook | 2: Developing Structural Similarities | 1: Relating Factors and Zeros | 1: Satisfactory Factoring: Factoring Polynomials to Identify Zeros pp. M2-7–M2-22 |
| | | | | | 2: Divide and Conquer: Polynomial Division pp. M2-23–M2-42 |
| N-CN.9 | (+) Know the Fundamental Theorem of Algebra; show that it is true for quadratic polynomials. | Textbook | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns | 6: i Want to Believe: Imaginary and Complex Numbers pp. M1-93–M1-114 |
| | | | | 2: Composing and Decomposing Functions | 4: The Zero's the Hero: Decomposing Cubic Functions pp. M1-167–M1-182 |
| A-SSE.1 | Interpret expressions that represent a quantity in terms of its context. | Exploring and Analyzing Patterns MATHia Software | Algebra II | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns |
| | | Comparing Familiar Function | | | 1: Exploring and Analyzing Patterns |
| | | Examining the Shape and Structure of Quadratic Functions MATHia Software | | | 1: Exploring and Analyzing Patterns |
| A-SSE.1.a | Interpret parts of an expression, such as terms, factors, and coefficients. | Textbook | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns | 4: True to Form: Forms of Quadratic Functions pp. M1-51–M1-78 |
| | | | 2: Developing Structural Similarities | 1: Relating Factors and Zeros | 2: Divide and Conquer: Polynomial Division pp. M2-23–M2-42 |
| | | | 3: Inverting Functions | 4: Applications of Growth Modeling | 1: Series Are Sums: Geometric Series pp. M3-249–M3-266 |
| A-SSE.1.b | 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 . | 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 |
| | | | | 2: Composing and Decomposing Functions | 3: Samesies: Comparing Multiple Representations of Functions pp. M1-31–M1-49 |
| | | | | | 1: Blame It on the Rain: Modeling with Functions pp. M1-129–M1-138 |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|------------------|--|---|---------------------------------------|---|--|
| A-SSE.1.b | 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 . | | Algebra II | 1: Analyzing Structure | 2: Composing and Decomposing Functions |
| 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 $(x^2 - y^2)(x^2 + y^2)$. | Textbook | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns | 4: True to Form: Forms of Quadratic Functions pp. M1-51–M1-78 |
| | | | 2: Developing Structural Similarities | 1: Relating Factors and Zeros | 1: Satisfactory Factoring: Factoring Polynomials to Identify Zeros pp. M2-7–M2-22 |
| | | | | 3: Rational Functions | 2: Divide and Conquer: Polynomial Division pp. M2-23–M2-42 |
| | | | 4: Investigating Periodic Functions | | 2: Trigonometric Equations |
| | | Examining the Shape and Structure of Quadratic Functions MATHia Software | Algebra II | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns |
| | | Factoring Higher-Order Polynomials MATHia Software | Algebra II | 2: Developing Structural Similarities | 1: Relating Factors and Zeros |
| A-SSE.3.a | Factor a quadratic expression to reveal the zeros of the function it defines. For example, $x^2 + 4x + 3 = (x + 3)(x + 1)$. | Textbook | 2: Developing Structural Similarities | 1: Relating Factors and Zeros | 2: Divide and Conquer: Polynomial Division pp. M2-23–M2-42 |
| A-SSE.3.c | Use the properties of exponents to transform expressions for exponential functions. | Textbook | 3: Inverting Functions | 2: Exponential and Logarithmic Functions | 4: I Like to Move It: Transformations of Exponential and Logarithmic Functions pp. M3-137–M3-158 |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|----------------|--|---|---------------------------------------|---|---|
| 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. 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. M3-249–M3-266 |
| | | Introduction to Finite Geometric Series MATHia Software | Algebra II | 3: Inverting Functions | 4: Applications of Growth Modeling |
| | | Problem Solving Using Finite Geometric Series MATHia Software | | | 4: Applications of Growth Modeling |
| A-APR.1 | Add, subtract, and multiply polynomials. Understand that polynomials form a system similar to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication. | Textbook | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns | 4: True to Form: Forms of Quadratic Functions pp. M1-51–M1-78 |
| | | | | 2: Composing and Decomposing Functions | 4: The Zero's the Hero: Decomposing Cubic Functions pp. M1-167–M1-182 |
| | | | 2: Developing Structural Similarities | 1: Relating Factors and Zeros | 2: Divide and Conquer: Polynomial Division pp. M2-23–M2-42 3: Closing Time: The Closure Property pp. M2-43–M2-50 |
| | | Analyzing Polynomial Functions MATHia Software | Algebra II | 1: Analyzing Structure | 3: Characteristics of Polynomial Functions |
| | | Using a Factor Table to Multiply Polynomials MATHia Software | | 2: Developing Structural Similarities | 1: Relating Factors and Zeros |
| | | Multiplying Polynomials MATHia Software | | | 1: Relating Factors and Zeros |
| | | | | | |
| A-APR.2 | Know and apply the Remainder Theorem: For a polynomial $p(x)$ 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 $p(x)$. | Textbook | 2: Developing Structural Similarities | 1: Relating Factors and Zeros | 2: Divide and Conquer: Polynomial Division pp. M2-23–M2-42 |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|--|--|---|---------------------------------------|--|--|
| A-APR.2 | Know and apply the Remainder Theorem: For a polynomial $p(x)$ 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 $p(x)$. | Solving Polynomial Functions MATHia Software | Algebra II | 2: Developing Structural Similarities | 1: Relating Factors and Zeros |
| A-APR.3 | Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial. | 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 | |
| | | Identifying Zeros of Polynomials MATHia Software | Algebra II | 1: Analyzing Structure | 3: Characteristics of Polynomial Functions |
| Using Zeros to Sketch Graphs of Polynomials MATHia Software | 3: Characteristics of Polynomial Functions | | | | |
| 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 | 1: Not a Case of Mistaken Identity: Exploring Polynomial Identities pp. M2-77–M2-89 |
| 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. | Textbook | 2: Developing Structural Similarities | 2: Polynomial Models | 2: Elegant Simplicity: Pascal's Triangle and the Binomial Theorem pp. M2-91–M2-102 |

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|----------------|--|--|---------------------------------------|---|--|
| 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. | Pascal's Triangle MATHia Software | Algebra II | 2: Developing Structural Similarities | 2: Polynomial Models |
| | | Binomial Theorem MATHia Software | | | 2: Polynomial Models |
| A-APR.6 | Rewrite simple rational expressions 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 with the degree of $r(x)$ less than the degree of $b(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system. | Textbook | 2: Developing Structural Similarities | 3: Rational Functions | 4: Must Be a Rational Explanation: Operations with Rational Expressions pp. M2-183–M2-200 |
| | | Synthetic Division MATHia Software | Algebra II | 2: Developing Structural Similarities | 1: Relating Factors and Zeros |
| | | Modeling Rational Functions MATHia Software | | | 3: Rational Functions |
| | | Rewriting Rational Expressions MATHia Software | | | 3: Rational Functions |
| | | Adding and Subtracting Rational Expressions MATHia Software | | | 3: Rational Functions |
| | | Multiplying and Dividing Rational Expressions MATHia Software | | | 3: Rational Functions |
| A-APR.7 | (+) Add, subtract, multiply, and divide rational expressions. Understand that rational expressions form a system similar to the rational numbers, closed under addition, subtraction, multiplication, and division by a nonzero rational expression. | Textbook | 2: Developing Structural Similarities | 3: Rational Functions | 4: Must Be a Rational Explanation: Operations with Rational Expressions pp. M2-183–M2-200 |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|----------------|---|------------|---------------------------------------|--|---|
| 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. M1-17–M1-30 |
| | | | | | 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 |
| | | | 2: Developing Structural Similarities | 1: Relating Factors and Zeros | 4: Unequal Equals: Solving Polynomial Inequalities pp. M2-51–M2-64 |
| | | | | | 3: Rational Functions |
| | | | | 6: 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223–M2-238 | |
| | | Algebra II | 2: Developing Structural Similarities | Solving Polynomial Inequalities MATHia Software | 1: Relating Factors and Zeros |
| | | | | Using Rational Models MATHia Software | 3: Rational Functions |
| | | | | Solving Work, Mixture, and Distance Problems MATHia Software | 3: Rational Functions |
| | | | | Modeling and Solving with Rational Functions MATHia Software | 3: Rational Functions |

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|--|---|--|---------------------------------------|---|---|---|
| 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. M1-51–M1-78 | |
| A-CED.3 | 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 cost constraints in various situations. | Textbook | 1: Analyzing Structure | 3: Characteristics of Polynomial Functions | 5: Level Up: Analyzing Polynomial Functions pp. M1-269–M1-280 | |
| | | | 2: Developing Structural Similarities | 1: Relating Factors and Zeros | 4: Unequal Equals: Solving Polynomial Inequalities pp. M2-51–M2-64 | |
| | | | | 2: Polynomial Models | 3: Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103–M2-117 | |
| A-CED.4 | Rearrange formulas (literal equations) to highlight a quantity of interest, using the same reasoning as in solving equations. For example, rearrange Ohm's law $V = IR$ to highlight resistance R . | Textbook | 2: Developing Structural Similarities | 3: Rational Functions | 6: 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223–M2-238 | |
| | | | 3: Inverting Functions | 1: Radical Functions | 5: Into the Unknown: Solving Radical Equations pp. M3-71–M3-80 | |
| A-REI.1 | Apply properties of mathematics to justify steps in solving equations in one variable. | Textbook | 2: Developing Structural Similarities | 3: Rational Functions | 5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201–M2-222 | |
| | | | 4: Investigating Periodic Functions | | 2: Trigonometric Equations | 6: 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223–M2-238 |
| | | Solving Sine and Cosine Equations (No Type In) MATHia Software | Algebra II | 4: Investigating Periodic Functions | 2: Trigonometric Equations | 2: Chasing Theta: Solving Trigonometric Equations pp. M4-105–M4-117 |
| | | | | | | 2: Trigonometric Equations |
| Solving Tangent Equations (No Type In) MATHia Software | 2: Trigonometric Equations | | | | | |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|------------------|---|--|--|---|---|
| A-REI.1 | Apply properties of mathematics to justify steps in solving equations in one variable. | Solving Tangent, Sine, and Cosine Equations (No Type In) MATHia Software | Algebra II | 4: Investigating Periodic Functions | 2: Trigonometric Equations |
| A-REI.2 | Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise. | Textbook | 2: Developing Structural Similarities | 3: Rational Functions | 5: Thunder. Thun- Thun- Thunder.: Solving Problems with Rational Equations pp. M2-201–M2-222 6: 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223–M2-238 |
| | | | 3: Inverting Functions | 1: Radical Functions | 5: Into the Unknown: Solving Radical Equations pp. M3-71–M3-80 |
| | | | Solving Rational Equations that Result in Linear Equations MATHia Software | Algebra II | 2: Developing Structural Similarities |
| | | Modeling Ratios as Rational Functions MATHia Software | | | 3: Rational Functions |
| 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. M1-79–M1-92 |
| A-REI.4.a | 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. | Textbook | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns | 5: The Root of the Problem: Solving Quadratic Equations pp. M1-79–M1-92 |

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|------------------|--|---|------------------------|---|---|
| A-REI.4.b | 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 $a - bi$ for real numbers a and b . | Textbook | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns | 5: The Root of the Problem: Solving Quadratic Equations pp. M1-79–M1-92 6: i Want to Believe: Imaginary and Complex Numbers pp. M1-93–M1-114 |
| | | Quadratic Modeling MATHia Software | Algebra II | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns |
| | | Solving Quadratic Equations by Factoring MATHia Software | | | 1: Exploring and Analyzing Patterns |
| | | Quadratic Equation Solving MATHia Software | | | 1: Exploring and Analyzing Patterns |
| 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 | 5: The Root of the Problem: Solving Quadratic Equations pp. M1-79–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 Functions | 3: Planting the Seeds: Exploring Cubic Functions pp. M1-153–M1-166 |
| A-REI.11 | 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 $f(x) = g(x)$; 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. | Textbook | 1: Analyzing Structure | 2: Composing and Decomposing Functions | 1: Blame It on the Rain: Modeling with Functions pp. M1-129–M1-138 |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|-----------------|---|----------|------------------------|---|--|
| A-REI.11 | 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 $f(x) = g(x)$; 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. | Textbook | 1: Analyzing Structure | 3: Characteristics of Polynomial Functions | 5: Level Up: Analyzing Polynomial Functions pp. M1-269–M1-280 |
| F-IF.3 | Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. *For example, the Fibonacci sequence is defined recursively by $f(0) = f(1) = 1$, $f(n + 1) = f(n) + f(n - 1)$ for n not equal to 1. | 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) |
|-------------------------------------|--|---|---|---|---|
| F-IF.4 | For a function that models a relationship between two quantities, o interpret key features of graphs and tables in terms of the quantities, and o 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 Patterns | 2: The Cat's Out of the Bag!: Generating Algebraic Expressions pp. M1-17–M1-30 4: True to Form: Forms of Quadratic Functions pp. M1-51–M1-78 |
| | | | | 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 |
| | | | | | 5: Level Up: Analyzing Polynomial Functions pp. M1-269–M1-280 |
| | | | 2: Developing Structural Similarities | 2: Polynomial Models | 3: Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103–M2-117 |
| | | | 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 |
| | | | | 2: Exponential and Logarithmic Functions | 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 | | |
| | | | 3: Return of the Inverse: Logarithmic Functions pp. M3-125–M3-136 | | |
| 4: Investigating Periodic Functions | 1: Trigonometric Relationships | 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 | | | |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|-------------|--|---|--|--|---|
| F-IF.4 | For a function that models a relationship between two quantities, o interpret key features of graphs and tables in terms of the quantities, and o 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 | 4: Investigating Periodic Functions | 2: Trigonometric Equations | 3: Wascally Wabbits: Modeling with Periodic Functions pp. M4-119–M4-130 5: Springs Eternal: The Damping Function pp. M4-141–M4-152 |
| | | Identifying Key | Algebra II | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns |
| | | Classifying Polynomial Functions MATHia Software | | | 3: Characteristics of Polynomial Functions |
| | | Identifying Key | | | 3: Characteristics of Polynomial Functions |
| | | Interpreting Key Features of Graphs in Terms of Quantities MATHia Software | | | 3: Characteristics of Polynomial Functions |
| F-IF.5 | Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function $h(n)$ gives the number of person-hours it takes to assemble n engines in a factory, then negative numbers would be an inappropriate domain for the function. | 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: Exponential and Logarithmic Functions | | 3: Return of the Inverse: Logarithmic Functions pp. M3-125–M3-136 |
| | | Modeling Polynomial Functions MATHia Software | Algebra II | 1: Analyzing Structure | 2: Composing and Decomposing Functions |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|-----------------|--|---|------------------------------------|--|--|
| 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. | Textbook | 1: Analyzing Structure | 3: Characteristics of Polynomial Functions | 5: Level Up: Analyzing Polynomial Functions pp. M1-269–M1-280 |
| | | | Algebra II | 1: Analyzing Structure | 3: Characteristics 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. M3-267–M3-276 |
| F-IF.7.a | Graph linear and quadratic functions and show intercepts, maxima, and minima. | Textbook | 1: Analyzing Structure | 2: Composing and Decomposing Functions | 3: Planting the Seeds: Exploring Cubic Functions pp. M1-153–M1-166 |
| | | | 3: Inverting Functions | 4: Applications of Growth Modeling | 4: The Zero's the Hero: Decomposing Cubic Functions pp. M1-167–M1-182 |
| F-IF.7.b | Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. | 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 |
| | | | | | 3: Making Waves: Transformations of Radical Functions pp. M3-41–M3-50 |
| | | | 4: Applications of Growth Modeling | 2: Paint By Numbers: Art and Transformations pp. M3-267–M3-276 | |
| | | Investigating Inverses of Functions MATHia Software | Algebra II | 3: Inverting Functions | 1: Radical Functions |
| | Graphing Square Root Functions MATHia Software | 1: Radical Functions | | | |
| F-IF.7.c | Graph polynomial functions, identifying zeros (using technology) or algebraic methods when suitable factorizations are available, and showing end behavior. | Textbook | 1: Analyzing Structure | 2: Composing and Decomposing Functions | 2: Folds, Turns, and Zeros: Transforming Function Shapes pp. M1-139–M1-152 |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|-----------------|---|--|--|---|---|
| F-IF.7.c | Graph polynomial functions, identifying zeros (using technology) or algebraic methods when suitable factorizations are available, and showing end behavior. | Textbook | 1: Analyzing Structure | 2: Composing and Decomposing Functions | 3: Planting the Seeds: Exploring Cubic Functions pp. M1-153-M1-166 |
| | | | | | 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 | |
| F-IF.7.d | (+) Graph rational functions, identifying zeros and discontinuities (asymptotes/holes) using technology, and algebraic methods when suitable factorizations are available, and showing end behavior. | 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 |
| | | Introduction to Rational Functions MATHia Software | Algebra II | 2: Developing Structural Similarities | 3: Rational Functions |
| F-IF.7.e | Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. | Textbook | 3: Inverting Functions | 2: Exponential and Logarithmic Functions | 2: Pert and Nert: Properties of Exponential Graphs pp. M3-107-M3-124 |
| | | | | | |
| | | | | 4: Applications of Growth Modeling | 2: Paint By Numbers: Art and Transformations pp. M3-267-M3-276 |
| | | | 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 | | | |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|-----------------|--|--|---------------------------------------|---|---|
| F-IF.7.e | Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. | Properties of Exponential Graphs MATHia Software | Algebra II | 3: Inverting Functions | 2: Exponential and Logarithmic Functions |
| | | Introduction to Logarithmic Functions MATHia Software | | | 2: Exponential and Logarithmic Functions |
| F-IF.8 | Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. | Textbook | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns | 1: Patterns: They're Grrrrrowing!: Observing Patterns pp. M1-7-M1-16 |
| | | | | | 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 |
| F-IF.8.a | 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. | Textbook | 2: Developing Structural Similarities | 1: Relating Factors and Zeros | 1: Satisfactory Factoring: Factoring Polynomials to Identify Zeros pp. M2-7-M2-22 |
| | | | | 3: Rational Functions | 3: There's a Hole in My Function!: Graphical Discontinuities pp. M2-167-M2-182 |
| F-IF.8.b | Use the properties of exponents to interpret expressions for exponential functions. | Textbook | 3: Inverting Functions | 2: Exponential and Logarithmic Functions | 1: Half-Life: Comparing Linear and Exponential Functions pp. M3-93-M3-106 |
| F-IF.9 | Compare properties of two functions each represented in a different way (algebraically, graphically, numerically, in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum. | Textbook | 1: Analyzing Structure | 1: Exploring and Analyzing Patterns | 3: Samesies: Comparing Multiple Representations of Functions pp. M1-31-M1-49 |
| | | | | 3: Characteristics of Polynomial Functions | 4: True to Form: Forms of Quadratic Functions pp. M1-51-M1-78 |
| | | | 3: Inverting Functions | 1: Radical Functions | 6: To a Greater or Lesser Degree: Comparing Polynomial Functions pp. M1-281-M1-296 |
| | | | | 2: Exponential and Logarithmic Functions | 3: Making Waves: Transformations of Radical Functions pp. M3-41-M3-50 |
| | | | | 2: Pert and Nert: Properties of Exponential Graphs pp. M3-107-M3-124 | |

| 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, graphically, numerically, in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum. | Comparing Polynomial Functions in Different Forms MATHia Software | Algebra II | 1: Analyzing Structure | 3: Characteristics of Polynomial Functions |
| F-BF.1 | Write a function that describes a relationship between two quantities. | Textbook | 2: Developing Structural Similarities | 2: Polynomial Models | 3: Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103–M2-117 |
| F-BF.1.a | Determine an explicit expression, a recursive process, or steps for calculation from a context. | 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: Inverting Functions | 4: Applications of Growth Modeling | 4: True to Form: Forms of Quadratic Functions pp. M1-51–M1-78 |
| F-BF.1.b | 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, and relate these functions to the model. | Textbook | 1: Analyzing Structure | 3: Characteristics of Polynomial Functions | 4: Function Construction: Building Cubic and Quartic Functions pp. M1-249–M1-268 |
| | | Analyzing Polynomial Functions MATHia Software | Algebra II | 1: Analyzing Structure | 3: Characteristics of Polynomial Functions |
| F-BF.1.c | (+) Compose functions. For example, if $T(y)$ is the temperature in the atmosphere as a function of height, and $h(t)$ is the height of a weather balloon as a function of time, then $T(h(t))$ is the temperature at the location of the weather balloon as a function of time. | Textbook | 3: Inverting Functions | 1: Radical Functions | 2: Such a Rad Lesson: Radical Functions pp. M3-19–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. | Textbook | 3: Inverting Functions | 4: Applications of Growth Modeling | 1: Series Are Sums: Geometric Series pp. M3-249–M3-266 |
| | | | | | 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) |
|-----------------|--|---|---------------------------------------|---|---|
| F-BF.3 | Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, 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. | 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: Math Class Needs a Makeover: Transformations of Polynomial Functions pp. M1-209–M1-224 |
| | | | 2: Developing Structural Similarities | 3: Rational Functions | 2: Approaching Infinity: Transformations of Rational Functions pp. M2-145–M2-166 |
| | | | 3: Inverting Functions | 1: Radical Functions | 3: Making Waves: Transformations of Radical Functions pp. M3-41–M3-50 |
| | | | | 2: Exponential and Logarithmic Functions | 4: I Like to Move It: Transformations of Exponential and Logarithmic Functions pp. M3-137–M3-158 |
| | | 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 | |
| | | Quadratic | Algebra II | 1: Analyzing Structure | 2: Composing and Decomposing Functions 2: Composing and Decomposing Functions |
| F-BF.4 | Find inverse functions. | Sketching Graphs of Inverses MATHia Software | Algebra II | 3: Inverting Functions | 1: Radical Functions |
| F-BF.4.a | 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. | Textbook | 3: Inverting Functions | 1: Radical Functions | 2: Such a Rad Lesson: Radical Functions pp. M3-19–M3-40 |
| | | Calculating Inverses of Linear Functions MATHia Software | | Algebra II | 2: Exponential and Logarithmic Functions |
| F-BF.4.b | (+) 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. M3-19–M3-40 |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|--|--|--|------------------------|--|--|
| F-BF.4.c | (+) 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. M3-7–M3-18 |
| F-BF.4.d | (+) 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. M3-19–M3-40 |
| F-BF.5 | (+) Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents. | Textbook | 3: Inverting Functions | 3: Exponential and Logarithmic Equations | 1: All the Pieces of the Puzzle: Logarithmic Expressions pp. M3-171–M3-184 |
| | | | | | 2: Mad Props: Properties of Logarithms pp. M3-185–M3-196 |
| | | | | | 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 |
| F-LE.2 | Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or input-output table of values. | Textbook | 3: Inverting Functions | 3: Exponential and Logarithmic Equations | 5: What's the Use?: Applications of Exponential and Logarithmic Equations pp. M3-223–M3-236 |
| | | | | | |
| F-LE.4 | For exponential models, express as a logarithm the solution to $abct = d$ where a , c , and d are numbers and the base b is 2, 10, or e ; evaluate the logarithm using technology. | 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 |
| | | Solving Base 2 and Base 10 Equations MATHia Software | Algebra II | 3: Inverting Functions | 3: Exponential and Logarithmic Equations |
| Solving Base e Equations MATHia Software | 3: Exponential and Logarithmic Equations | | | | |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|---------------|--|---|-------------------------------------|---|---|
| F-LE.4 | For exponential models, express as a logarithm the solution to $abct = d$ where a , c , and d are numbers and the base b is 2, 10, or e ; evaluate the logarithm using technology. | Solving Any Base Equations MATHia Software | Algebra II | 3: Inverting Functions | 3: Exponential and Logarithmic 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 | 1: Half-Life: Comparing Linear and Exponential Functions pp. M3-93–M3-106 |
| F-TF.1 | Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle. | Textbook | 4: Investigating Periodic Functions | 1: Trigonometric Relationships | 2: The Knights of the Round Table: Radian Measure pp. M4-23–M4-34 |
| | | | | 2: Trigonometric Equations | 2: Chasing Theta: Solving Trigonometric Equations pp. M4-105–M4-117 |
| F-TF.2 | 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. | Textbook | 4: Investigating Periodic Functions | 1: Trigonometric Relationships | 3: What Goes Around: The Sine and Cosine Functions pp. M4-35–M4-50 |
| | | | | 2: Trigonometric Equations | 2: Chasing Theta: Solving Trigonometric Equations pp. M4-105–M4-117 |
| F-TF.3 | (+) Use special triangles to determine geometrically the values of sine, cosine, tangent for $\pi/3$, $\pi/4$ and $\pi/6$, and use the unit circle to express the values of sine, cosines, and tangent for $-\pi/x$, $\pi+x$, and $2\pi-x$ in terms of their values for x , where x is any real number. | Textbook | 4: Investigating Periodic Functions | 1: Trigonometric Relationships | 3: What Goes Around: The Sine and Cosine Functions pp. M4-35–M4-50 |
| | | | | | 4: The Sines They Are A-Changin': Transformations of Sine and Cosine Functions pp. M4-51–M4-64 |
| 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 | 5: Farmer's Tan: The Tangent Function pp. M4-65–M4-82 |
| F-TF.5 | Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline. | Textbook | 4: Investigating Periodic Functions | 1: Trigonometric Relationships | 3: What Goes Around: The Sine and Cosine Functions pp. M4-35–M4-50 |
| | | | | | 4: The Sines They Are A-Changin': Transformations of Sine and Cosine Functions pp. M4-51–M4-64 |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|-------------|--|--|---------------------------------------|--|--|
| F-TF.5 | Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline. | Textbook | 4: Investigating Periodic Functions | 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 |
| | | | Algebra II | 4: Investigating Periodic Functions | 5: Springs Eternal: The Damping Function pp. M4-141–M4-152 |
| F-TF.8 | Prove the Pythagorean identity $\sin^2(x) + \cos^2(x) = 1$ and use it to calculate trigonometric ratios. | Textbook | 4: Investigating Periodic Functions | 2: Trigonometric Equations | 1: $\sin^2 ?$ Plus $\cos^2 ?$ Equals 1^2 : The Pythagorean Identity pp. M4-95–M4-104 |
| | | Proving the Pythagorean Identity MATHia Software | Algebra II | 4: Investigating Periodic Functions | 2: Trigonometric Equations |
| | | Using the Pythagorean Identity to Determine Sine, Cosine or Tangent MATHia Software | | | 2: Trigonometric Equations |
| G-GMD.3 | Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems. For example: Solve problems requiring determination of a dimension not given. | Textbook | 1: Analyzing Structure | 2: Composing and Decomposing Functions | 3: Planting the Seeds: Exploring Cubic Functions pp. M1-153–M1-166 |
| G-MG.2 | Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot). | Textbook | 2: Developing Structural Similarities | 3: Rational Functions | 6: 16 Tons and What Do You Get?: Solving Work, Mixture, Distance, and Cost Problems pp. M2-223–M2-238 |
| | | | 3: Inverting Functions | 1: Radical Functions | 2: Such a Rad Lesson: Radical Functions pp. M3-19–M3-40 |
| S-ID.1 | Represent data with plots on the real number line (dot plots, histograms, and box plots). | Textbook | 5: Relating Data and Decisions | 1: Interpreting Data in Normal Distributions | 1: Recharge It!: Normal Distributions pp. M5-7–M5-18 |
| | | | | | 2: The Form of Norm: The Empirical Rule for Normal Distributions pp. M5-19–M5-32 |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|-----------------|--|---|---------------------------------------|--|---|
| S-ID.1 | Represent data with plots on the real number line (dot plots, histograms, and box plots). | Creating Relative Frequency Histograms MATHia Software | Algebra II | 5: Relating Data and Decisions | 1: Interpreting Data in Normal Distributions |
| 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. M5-7–M5-18 |
| S-ID.4 | Use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages. Recognize that there are data sets for which such a procedure is not appropriate. Use calculators, spreadsheets, and tables to estimate areas under the normal curve. | Textbook | 5: Relating Data and Decisions | 1: Interpreting Data in Normal Distributions | 1: Recharge It!: Normal Distributions pp. M5-7–M5-18 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 |
| | | Applying the Empirical Rule for Normal Distributions MATHia Software | Algebra II | 5: Relating Data and Decisions | 1: Interpreting Data in Normal Distributions |
| | | Z-Scores and Percentiles MATHia Software | | | 1: Interpreting Data in Normal Distributions |
| | | Normal Distributions and Probability MATHia Software | | | 1: Interpreting Data in Normal Distributions |
| S-ID.6.a | Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. | Textbook | 2: Developing Structural Similarities | 2: Polynomial Models | 3: Modeling Gig: Modeling with Polynomial Functions and Data pp. M2-103–M2-117 |

| Standard ID | Description | Location | Module | Topic (Textbook)/ Unit (MATHia Software) | Lesson (Textbook) / Workspace (MATHia Software) |
|-----------------|---|--|--------------------------------|---|--|
| S-ID.6.a | Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. | Textbook | 3: Inverting Functions | 3: Exponential and Logarithmic Equations | 5: What's the Use?: Applications of Exponential and Logarithmic Equations pp. M3-223–M3-236 |
| | | Exploring Polynomial Regression MATHia Software | Algebra II | 2: Developing Structural Similarities | 2: Polynomial Models |
| S-IC.1 | Understand statistics as a process for making inferences about population parameters based on a random sample from that population. | 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 |
| 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 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? | 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 |
| S-IC.3 | Recognize the purposes of and differences among sample surveys, experiments, and observational studies; explain how randomization relates to each. | 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 |
| | | | | | 5: DIY: Designing a Study and Analyzing the Results pp. M5-127–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. M5-95–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 |
| 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. M5-111–M5-126 |
| 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. M5-95–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 |
| 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. M5-45–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. M5-45–M5-52 |