

MCAP EOC Tutorials for Maryland are designed specifically for the Maryland College and Career Ready Standards to prepare students for the Maryland Comprehensive Assessment Program (MCAP). EOC Categories are at the heart of MCAP EOC Tutorial structure – bringing category-based learning to the student experience, and category-based performance and progress tracking to the teacher experience.

Math Tutorials offer targeted instruction, practice and review designed to develop computational fluency, deepen conceptual understanding, and apply mathematical practices. They automatically identify and address learning gaps down to elementary-level content, using adaptive remediation to bring students to grade-level no matter where they start. Students engage with the content in an interactive, feedback-rich environment as they progress through standards-aligned modules. By constantly honing the ability to apply their knowledge in abstract and real world scenarios, students build the depth of knowledge and higher order skills required to demonstrate their mastery when put to the test.

In each module, the Learn It and Try It make complex ideas accessible to students through focused content, modeled logic and process, multi-modal representations, and personalized feedback as students reason through increasingly challenging problems. The Review It offers a high impact summary of key concepts and relates those concepts to students' lives. The Test It assesses students' mastery of the module's concepts, providing granular performance data to students and teachers after each attempt. To help students focus on the content most relevant to them, unit-level pretests and posttests can quickly identify where students are strong and where they're still learning.

Test-Taking Strategies for EOC Tutorials allow students to practice and apply learning approaches that will hone their test-taking skills and focus them for success on the day of their EOC test.

Unit 1: Monitoring Precision and Accuracy

- **MONITORING PRECISION AND ACCURACY**

Unit 2: Rational Relationships

- **OPERATIONS WITH RATIONAL EXPRESSIONS**
 - A.REI.A.2: Understand solving equations as a process of reasoning and explain the reasoning. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
 - A.APR.D.6: Rewrite rational expressions. Rewrite simple rational expressions in different forms; write $\frac{p(x)}{q(x)}$ in the form $a + \frac{r(x)}{q(x)}$, where a , $r(x)$, $q(x)$, and $p(x)$ are polynomials with the degree of $r(x)$ less than the degree

of $(,)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.

- **SOLVING RATIONAL EQUATIONS**

- A.REI.A.2: Understand solving equations as a process of reasoning and explain the reasoning. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
- A.CED.A.1: Create equations that describe numbers or relationships. 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.

Unit 3: Two-Variable Linear Systems 1

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: GRAPHING**

- A2.M.4: Modeling Evidence Statements Interpret the solution to a real-world problem in terms of context.

Unit 4: Two-Variable Linear Systems 2

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: SUBSTITUTION**

- A2.M.6: Modeling Evidence Statements Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in the standards.
- A2.R.2: Reasoning Evidence Statements Given a system of equations, reason about the number of solutions.
- A.REI.D.11: Represent and solve equations and inequalities graphically. 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.

Unit 5: Two-Variable Linear Systems 3

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: ELIMINATION**

- A2.R.1: Reasoning Evidence Statements Given an equation, reason about the number and nature of the solutions.
- A2.R.9: Reasoning Evidence Statements Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures about trigonometric functions.

Unit 6: Solving Quadratic Equations 1

- **QUADRATIC FORMULA**

- A.REI.B.4b: Solve equations and inequalities in one variable. Solve quadratic equations with rational number coefficients 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.

- N.CN.C.7: Use complex numbers in polynomial identities and equations. Solve quadratic equations with real coefficients that have complex solutions.
- A2.M.4: Modeling Evidence Statements Interpret the solution to a real-world problem in terms of context.
- **COMPLETING THE SQUARE**
 - A.REI.B.4b: Solve equations and inequalities in one variable. Solve quadratic equations with rational number coefficients 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.
 - N.CN.C.7: Use complex numbers in polynomial identities and equations. Solve quadratic equations with real coefficients that have complex solutions.
 - F.LE.B.5: Interpret expressions for functions in terms of the situation they model. Interpret the parameters in a linear, quadratic or exponential function in terms of a context.
- **PARABOLAS**
 - F.IF.B.4: Interpret functions that arise in applications in terms of the context. 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.

Unit 7: Solving Quadratic Equations 2

- **SOLVING SQUARE ROOT EQUATIONS**
 - A2.M.6: Modeling Evidence Statements Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in the standards.
 - A.REI.A.2: Understand solving equations as a process of reasoning and explain the reasoning. Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.
 - A2.R.5: Reasoning Evidence Statements Identify a correct method and justification given two or more chains of reasoning.
- **SOLVING QUADRATIC EQUATIONS BY FACTORING**
 - A2.M.6: Modeling Evidence Statements Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in the standards.
 - A.CED.A.1: Create equations that describe numbers or relationships. 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.
 - A.REI.B.4b: Solve equations and inequalities in one variable. Solve quadratic equations with rational number coefficients 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.

- A.SSE.A.2: Interpret the structure of expressions. Use the structure of expressions to identify ways to rewrite it.
- F.LE.A.2: Construct and compare linear, quadratic and exponential models and solve problems. Construct linear, quadratic and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
- A2.R.1: Reasoning Evidence Statements Given an equation, reason about the number and nature of the solutions.

Unit 8: Addition and Subtraction of Polynomials

- **POLYNOMIAL BASICS**

- A.SSE.A.2: Interpret the structure of expressions. Use the structure of expressions to identify ways to rewrite it.

- **ADDITION AND SUBTRACTION OF POLYNOMIALS**

- A.SSE.A.2: Interpret the structure of expressions. Use the structure of expressions to identify ways to rewrite it.

Unit 9: Multiplication and Division of Polynomials

- **MULTIPLICATION OF POLYNOMIALS**

- A.SSE.A.2: Interpret the structure of expressions. Use the structure of expressions to identify ways to rewrite it.

- **DIVISION OF POLYNOMIALS**

- A.SSE.A.2: Interpret the structure of expressions. Use the structure of expressions to identify ways to rewrite it.
- A.APR.D.6: Rewrite rational expressions. Rewrite simple rational expressions in different forms; write $\frac{p(x)}{q(x)}$ in the form $a + \frac{r(x)}{q(x)}$, where a , $r(x)$, and $q(x)$ are polynomials with the degree of $r(x)$ less than the degree of $q(x)$, using inspection, long division, or, for the more complicated examples, a computer algebra system.

Unit 10: Graphs of Polynomial Functions

- **GRAPHS OF POLYNOMIAL FUNCTIONS**

- A2.R.10: Reasoning Evidence Statements Express reasoning about the relationship between zeros and factors of polynomials.
- F.BF.B.3: Build new functions from existing functions. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $f(x) - k$, $f(kx)$, and $f\left(\frac{x}{k}\right)$ 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.
- A.APR.B.3: Understand the relationship between zeros and the factors of polynomials. 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.

- F.IF.B.4: Interpret functions that arise in applications in terms of the context. 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.
- F.IF.C.7.c: Analyze functions using different representations. Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.

Unit 11: Factoring

- **FACTORING SPECIAL CASES**

- A.SSE.A.2: Interpret the structure of expressions. Use the structure of expressions to identify ways to rewrite it.

- **FACTORING CUBIC POLYNOMIALS**

- A.SSE.A.2: Interpret the structure of expressions. Use the structure of expressions to identify ways to rewrite it.

Unit 12: Factoring Higher-Order Polynomials

- **FACTORING HIGHER-ORDER POLYNOMIALS**

- A.SSE.A.2: Interpret the structure of expressions. Use the structure of expressions to identify ways to rewrite it.
- A.APR.B.3: Understand the relationship between zeros and the factors of polynomials. 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.

- **FACTOR THEOREM AND REMAINDER THEOREM**

- A.APR.B.2: Understand the relationship between zeros and the factors of polynomials. Know and apply the Remainder Theorem: For a polynomial $P(x)$ and a number r , the remainder on division by $x - r$ is $P(r)$, so $P(r) = 0$ if and only if $(x - r)$ is a factor of $P(x)$.

Unit 13: Complex Numbers and Quadratic Functions

- **COMPLEX NUMBERS**

- N.CN.A.1: Perform arithmetic operations with complex numbers. 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.
- N.CN.A.2: Perform arithmetic operations with complex numbers. Use the relation $i^2 = -1$ and the commutative, associative, and distributive properties to add, subtract, and multiply complex numbers.

- **COMPLEX NUMBERS AND QUADRATIC FUNCTIONS**

- N.CN.C.7: Use complex numbers in polynomial identities and equations. Solve quadratic equations with real coefficients that have complex solutions.
- A.REI.B.4b: Solve equations and inequalities in one variable. Solve quadratic equations with rational number coefficients 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.

- N.CN.A.1: Perform arithmetic operations with complex numbers. Know there is a complex number such that $z \cdot \bar{z} = 1$, and every complex number has the form $a + bi$ with a and b real.

Unit 14: Polynomial Identities

- **POLYNOMIAL IDENTITIES**

- A.APR.C.4: Use polynomial identities to solve problems. Prove polynomial identities and use them to describe numerical relationships.
- A.SSE.A.2: Interpret the structure of expressions. Use the structure of expressions to identify ways to rewrite it.
- A2.R.9: Reasoning Evidence Statements Construct, autonomously, chains of reasoning that will justify or refute propositions or conjectures about trigonometric functions.

Unit 15: Polynomial Identities and Complex Numbers

- **POLYNOMIAL IDENTITIES AND COMPLEX NUMBERS**

- A.SSE.A.2: Interpret the structure of expressions. Use the structure of expressions to identify ways to rewrite it.
- N.CN.C.7: Use complex numbers in polynomial identities and equations. Solve quadratic equations with real coefficients that have complex solutions.

Unit 16: Functions

- **FUNCTIONS AND RELATIONS**

- S.ID.B.6a: Summarize, represent and interpret data on two categorical and quantitative variables. Fit a function to the data; use functions fitted to data to solve problems in the real-world context of the data. Use given functions or choose a function suggested by the real-world context.

- **INVERSE FUNCTIONS**

- F.BF.B.4.a: Build new functions from existing functions. Solve an equation of the form $f(x) = c$ for a simple function that has an inverse and write an expression for the inverse.

Unit 17: Linear Relationships

- **SLOPE**

- F.LE.B.5: Interpret expressions for functions in terms of the situation they model. Interpret the parameters in a linear, quadratic or exponential function in terms of a context.
- F.IF.B.6: Interpret functions that arise in applications in terms of the context. 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.

- **GRAPHING AND ANALYZING LINEAR FUNCTIONS**

- F.LE.A.2: Construct and compare linear, quadratic and exponential models and solve problems. Construct linear, quadratic and exponential functions, including arithmetic and geometric sequences,

given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

- F.LE.B.5: Interpret expressions for functions in terms of the situation they model. Interpret the parameters in a linear, quadratic or exponential function in terms of a context.
- F.IF.B.4: Interpret functions that arise in applications in terms of the context. 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.
- **GRAPHING AND MANIPULATING $Y = MX + B$**
 - F.BF.B.3: Build new functions from existing functions. Identify the effect on the graph of replacing $()$ by $() + , () , ()$, and $(+)$ for specific values of (both positive and negative); find the value of 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.
 - F.IF.B.4: Interpret functions that arise in applications in terms of the context. 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.
 - F.LE.B.5: Interpret expressions for functions in terms of the situation they model. Interpret the parameters in a linear, quadratic or exponential function in terms of a context.

Unit 18: Laws of Exponents

- **LAWS OF EXPONENTS**
 - A2.R.11: Reasoning Evidence Statements Express reasoning about properties of exponents.
 - N.RN.A.1: Extend the properties of exponents to rational exponents. 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.
 - A.SSE.B.3c: Write expressions in equivalent forms to solve problems. Use the properties of exponents to transform expressions for exponential functions.

Unit 19: Exponential Relationships

- **EXPONENTIAL FUNCTIONS**
 - F.IF.C.7.e: Analyze functions using different representations. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
 - F.IF.B.4: Interpret functions that arise in applications in terms of the context. 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.
 - F.LE.B.5: Interpret expressions for functions in terms of the situation they model. Interpret the parameters in a linear, quadratic or exponential function in terms of a context.

- F.LE.A.2: Construct and compare linear, quadratic and exponential models and solve problems. Construct linear, quadratic and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
- **EXPONENTIAL GROWTH AND DECAY**
- F.LE.B.5: Interpret expressions for functions in terms of the situation they model. Interpret the parameters in a linear, quadratic or exponential function in terms of a context.
- F.IF.C.8.b: Analyze functions using different representations. Use the properties of exponents to interpret expressions for exponential functions.
- F.LE.A.2: Construct and compare linear, quadratic and exponential models and solve problems. Construct linear, quadratic and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
- **SOLVING EXPONENTIAL EQUATIONS**
- A.CED.A.1: Create equations that describe numbers or relationships. 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.
- F.LE.A.2: Construct and compare linear, quadratic and exponential models and solve problems. Construct linear, quadratic and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
- A2.M.4: Modeling Evidence Statements Interpret the solution to a real-world problem in terms of context.

Unit 20: Logarithmic Relationships 1

- **EVALUATING LOGARITHMIC EXPRESSIONS**
- A.SSE.A.2: Interpret the structure of expressions. Use the structure of expressions to identify ways to rewrite it.
- **LOGARITHMIC FUNCTIONS**
- F.IF.C.7.e: Analyze functions using different representations. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
- F.IF.B.4: Interpret functions that arise in applications in terms of the context. 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.

Unit 21: Logarithmic Relationships 2

- **SOLVING LOGARITHMIC EQUATIONS**

- A.CED.A.1: Create equations that describe numbers or relationships. 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.
- A2.R.1: Reasoning Evidence Statements Given an equation, reason about the number and nature of the solutions.

Unit 22: Sequences

• SEQUENCES

- F.IF.A.3: Understand the concept of a function and use function notation. 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 $n \geq 1$.
- F.BF.A.1a: Build a function that models a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a real-world context.

• ARITHMETIC AND GEOMETRIC SEQUENCES

- F.BF.A.2: Build a function that models a relationship between two quantities. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.
- F.IF.A.3: Understand the concept of a function and use function notation. 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 $n \geq 1$.
- F.BF.A.1a: Build a function that models a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a real-world context.

• SUMS OF GEOMETRIC SEQUENCES

- A.SSE.B.4: Write expressions in equivalent forms to solve problems. 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.

Unit 23: Modeling with Functions 1

• ANALYZING GRAPHS OF RATIONAL FUNCTIONS

• ANALYZING GRAPHS OF SQUARE ROOT FUNCTIONS

- F.BF.B.3: Build new functions from existing functions. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $f(x) - k$, $f(kx)$, 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.

• ANALYZING GRAPHS OF QUADRATIC FUNCTIONS

- F.LE.B.5: Interpret expressions for functions in terms of the situation they model. Interpret the parameters in a linear, quadratic or exponential function in terms of a context.

- F.BF.B.3: Build new functions from existing functions. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $f(x) - k$, $f(kx)$, and $f\left(\frac{x}{k}\right)$ 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.
- F.LE.A.2: Construct and compare linear, quadratic and exponential models and solve problems. Construct linear, quadratic and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
- F.IF.C.9: Analyze functions using different representations. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).

Unit 24: Modeling with Functions 2

• REPRESENTATIONS OF QUADRATIC FUNCTIONS

- F.LE.A.2: Construct and compare linear, quadratic and exponential models and solve problems. Construct linear, quadratic and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
- F.IF.C.8: Analyze functions using different representations. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
- A2.M.4: Modeling Evidence Statements Interpret the solution to a real-world problem in terms of context.
- A2.M.6: Modeling Evidence Statements Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in the standards.
- A.REI.B.4b: Solve equations and inequalities in one variable. Solve quadratic equations with rational number coefficients 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.
- A.CED.A.1: Create equations that describe numbers or relationships. 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.

• MODELING SITUATIONS WITH RATIONAL FUNCTIONS

- F.IF.C.8: Analyze functions using different representations. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function.
- A2.M.4: Modeling Evidence Statements Interpret the solution to a real-world problem in terms of context.

Unit 25: Working with Functions

- **LINEAR VERSUS NONLINEAR FUNCTIONS**

- A2.M.4: Modeling Evidence Statements Interpret the solution to a real-world problem in terms of context.
- F.LE.B.5: Interpret expressions for functions in terms of the situation they model. Interpret the parameters in a linear, quadratic or exponential function in terms of a context.
- F.IF.B.4: Interpret functions that arise in applications in terms of the context. 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.
- F.IF.B.6: Interpret functions that arise in applications in terms of the context. 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.

- **ARITHMETIC OPERATIONS ON FUNCTIONS**

- F.BF.A.1.b: Build a function that models a relationship between two quantities. 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.
- A2.M.6: Modeling Evidence Statements Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in the standards.

- **MULTIPLE REPRESENTATIONS OF FUNCTIONS**

- A2.M.4: Modeling Evidence Statements Interpret the solution to a real-world problem in terms of context.
- F.LE.B.5: Interpret expressions for functions in terms of the situation they model. Interpret the parameters in a linear, quadratic or exponential function in terms of a context.
- F.IF.C.9: Analyze functions using different representations. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).

Unit 26: Nonlinear Equations and Functions

- **SYSTEMS OF NONLINEAR EQUATIONS**

- A2.R.2: Reasoning Evidence Statements Given a system of equations, reason about the number of solutions.
- A.REI.C.7: Solve Systems of Equations. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.
- A.REI.D.11: Represent and solve equations and inequalities graphically. 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.

- **ABSOLUTE VALUE FUNCTIONS**

Unit 27: Parent Functions and Transformations

- **PARENT FUNCTIONS**

- F.IF.C.7.e: Analyze functions using different representations. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.

- **TRANSFORMATIONS OF PARENT FUNCTIONS**

- F.BF.B.3: Build new functions from existing functions. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $f(x) - k$, $f(kx)$, 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.

- **MULTIPLE TRANSFORMATIONS OF PARENT FUNCTIONS**

- F.BF.B.3: Build new functions from existing functions. Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $f(x) - k$, $f(kx)$, 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.

Unit 28: Radians and the Unit Circle

- **RADIANS AND THE UNIT CIRCLE**

- F.TF.A.1: Extend the domain of trigonometric functions using the unit circle. Understand radian measure of an angle as the length of the arc on the unit circle subtended by the angle.
- A2.R.6: Reasoning Evidence Statements Given a proposition, determine cases where the proposition is true or false.
- A2.M.2: Modeling Evidence Statements Construct a mathematical model to solve a problem.
- F.TF.A.2: Extend the domain of trigonometric functions using the unit circle. 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.
- A2.R.1: Reasoning Evidence Statements Given an equation, reason about the number and nature of the solutions.
- A2.M.6: Modeling Evidence Statements Solve multi-step contextual word problems with degree of difficulty appropriate to the course, requiring application of course-level knowledge and skills articulated in the standards.

Unit 29: Trigonometric Functions

- **TRIGONOMETRIC FUNCTIONS**

- F.IF.B.4: Interpret functions that arise in applications in terms of the context. 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.
- F.TF.B.5: Model periodic phenomena with trigonometric functions. Choose trigonometric functions to model periodic phenomena with specified amplitude, frequency, and midline.
- F.TF.C.8: Prove and apply trigonometric identities. Prove the Pythagorean identity $\sin^2 + \cos^2 = 1$ and use it to find $\sin()$, $\cos()$ or $\tan()$ given $\sin()$, $\cos()$ or $\tan()$ and the quadrant of the angle.

Unit 30: Two-Variable Data

- **SCATTERPLOTS AND MODELING**

- S.ID.B.6a: Summarize, represent and interpret data on two categorical and quantitative variables. Fit a function to the data; use functions fitted to data to solve problems in the real-world context of the data. Use given functions or choose a function suggested by the real-world context.

Unit 31: Test-Taking Strategies

- **STUDY HABITS**
- **BEING PREPARED AND GETTING STARTED**
- **WORDING IN TEST QUESTIONS**
- **WORDING IN ANSWER CHOICES**
- **QUESTIONS WITH PASSAGES AND VISUAL DATA**
- **ESSAY AND SHORT ANSWER QUESTIONS**
- **WORD PROBLEMS**