Tennessee Tutorials are designed specifically for the Tennessee Academic Standards to prepare students for the Tennessee Comprehensive Assessment Program (TCAP) and the TNReady assessments.

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.

Unit 1: One-Variable Equations

- **ONE-STEP EQUATIONS AND INEQUALITIES**
  - M1.A.CED.A.1: Algebra Creating Equations Create equations that describe numbers or relationships. Create equations and inequalities in one variable and use them to solve problems.
  - M1.A.CED.A.3: Algebra Creating Equations Create equations that describe numbers or relationships. 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.
  - M1.A.REI.A.1: Algebra Reasoning with Equations and Inequalities Solve equations and inequalities in one variable. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
  - M1.F.BF.A.1.a: Functions Building Functions Build a function that models a relationship between two quantities. Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context.
- **MULTI-STEP EQUATIONS AND INEQUALITIES**
  - M1.A.CED.A.3: Algebra Creating Equations Create equations that describe numbers or relationships. 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.

- M1.A.REI.A.1: Algebra Reasoning with Equations and Inequalities Solve equations and inequalities in one variable. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
- M1.A.CED.A.1: Algebra Creating Equations Create equations that describe numbers or relationships. Create equations and inequalities in one variable and use them to solve problems.

Unit 2: Expressions, Equations, and Inequalities

- **LITERAL EQUATIONS**
  - M1.A.CED.A.1: Algebra Creating Equations Create equations that describe numbers or relationships. Create equations and inequalities in one variable and use them to solve problems.
  - M1.A.REI.A.1: Algebra Reasoning with Equations and Inequalities Solve equations and inequalities in one variable. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
  - M1.A.CED.A.4: Algebra Creating Equations Create equations that describe numbers or relationships. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.
- **MONITORING PRECISION AND ACCURACY**
  - M1.N.Q.A.1: Number and Quantity Quantities Reason quantitatively and use units to solve problems. 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.
  - M1.N.Q.A.2: Number and Quantity Quantities Reason quantitatively and use units to solve problems. Identify, interpret, and justify appropriate quantities for the purpose of descriptive modeling.
  - M1.N.Q.A.3: Number and Quantity Quantities Reason quantitatively and use units to solve problems. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Unit 3: Writing Equations and Inequalities

- **FORMULATING AND SOLVING EQUATIONS FROM WORD PROBLEMS**
  - M1.A.CED.A.1: Algebra Creating Equations Create equations that describe numbers or relationships. Create equations and inequalities in one variable and use them to solve problems.
  - M1.A.CED.A.3: Algebra Creating Equations Create equations that describe numbers or relationships. 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.

- M1.F.BF.A.1.a: Functions Building Functions Build a function that models a relationship between two quantities. Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context.
- M1.F.LE.A.1.b: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
- M1.F.LE.A.2: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs.
- M1.F.IF.B.3: Functions Interpreting Functions 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.
- M1.A.SSE.A.1.a: Algebra Seeing Structure in Expressions Interpret the structure of expressions. Interpret expressions that represent a quantity in terms of its context. Interpret parts of an expression, such as terms, factors, and coefficients.

- **FORMULATING AND SOLVING INEQUALITIES FROM WORD PROBLEMS**
  - M1.A.CED.A.1: Algebra Creating Equations Create equations that describe numbers or relationships. Create equations and inequalities in one variable and use them to solve problems.
  - M1.A.CED.A.3: Algebra Creating Equations Create equations that describe numbers or relationships. 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.
  - M1.A.REI.A.1: Algebra Reasoning with Equations and Inequalities Solve equations and inequalities in one variable. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.
  - M1.A.SSE.A.1.a: Algebra Seeing Structure in Expressions Interpret the structure of expressions. Interpret expressions that represent a quantity in terms of its context. Interpret parts of an expression, such as terms, factors, and coefficients.

Unit 4: Functions

- **FUNCTIONS AND RELATIONS**
  - M1.F.IF.A.2: Functions Interpreting Functions Understand the concept of a function and use function notation. Use function notation, evaluate functions for inputs in their domains, and

interpret statements that use function notation in terms of a context.

- M1.F.IF.A.1: Functions Interpreting Functions Understand the concept of a function and use function notation. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).
- M1.F.IF.B.3: Functions Interpreting Functions 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.
- M1.F.LE.A.2: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs.

- **DOMAIN AND RANGE**
  - M1.F.IF.A.1: Functions Interpreting Functions Understand the concept of a function and use function notation. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).
  - M1.F.IF.B.4: Functions Interpreting Functions Interpret functions that arise in applications in terms of the context. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
- **EVALUATING FUNCTIONS**
  - M1.F.IF.A.1: Functions Interpreting Functions Understand the concept of a function and use function notation. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).
  - M1.F.IF.A.2: Functions Interpreting Functions Understand the concept of a function and use function notation. Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.
  - M1.F.BF.A.1.a: Functions Building Functions Build a function that models a relationship between two quantities. Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context.

Unit 5: Graphing Linear Equations and Inequalities

- **GRAPHING AND ANALYZING LINEAR FUNCTIONS**

- M1.F.IF.A.1: Functions Interpreting Functions Understand the concept of a function and use function notation. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).
- M1.F.LE.A.2: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs.
- M1.F.IF.B.4: Functions Interpreting Functions Interpret functions that arise in applications in terms of the context. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
- M1.F.IF.B.3: Functions Interpreting Functions 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.
- M1.F.IF.C.6.a: Functions Interpreting Functions Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand and using technology. Graph linear and quadratic functions and show intercepts, maxima, and minima.

- **GRAPHING AND MANIPULATING Y = MX + B**
  - M1.A.CED.A.2: Algebra Creating Equations Create equations that describe numbers or relationships. Create equations in two or more variables to represent relationships between quantities; graph equations with two variables on coordinate axes with labels and scales.
  - M1.F.IF.A.1: Functions Interpreting Functions Understand the concept of a function and use function notation. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).
  - M1.F.IF.B.5: Functions Interpreting Functions 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.
  - M1.F.IF.C.6.a: Functions Interpreting Functions Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand and using technology. Graph linear and quadratic functions and show intercepts, maxima, and minima.
  - M1.F.LE.A.2: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Construct linear and exponential functions, including

arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs.

- M1.S.ID.C.5: Statistics and Probability Interpreting Categorical and Quantitative Data Interpret linear models. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
- M1.F.IF.B.3: Functions Interpreting Functions 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.
- M1.F.LE.A.1.b: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
- M1.F.LE.B.4: Functions Linear and Exponential Models Interpret expressions for functions in terms of the situation they model. Interpret the parameters in a linear or exponential function in terms of a context.

- **GRAPHS OF LINEAR INEQUALITIES**
  - M1.A.CED.A.3: Algebra Creating Equations Create equations that describe numbers or relationships. 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.
  - M1.A.REI.C.5: Algebra Reasoning with Equations and Inequalities Represent and solve equations and inequalities graphically. Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.
  - M1.A.REI.A.1: Algebra Reasoning with Equations and Inequalities Solve equations and inequalities in one variable. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Unit 6: Linear Equations

- **SLOPE**
  - M1.F.IF.B.5: Functions Interpreting Functions 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.
  - M1.F.IF.A.1: Functions Interpreting Functions Understand the concept of a function and use function notation. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f

is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).

- M1.F.IF.B.3: Functions Interpreting Functions 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.

- **SLOPE-INTERCEPT FORM OF A LINEAR EQUATION**
  - M1.S.ID.C.5: Statistics and Probability Interpreting Categorical and Quantitative Data Interpret linear models. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
  - M1.F.IF.A.1: Functions Interpreting Functions Understand the concept of a function and use function notation. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).
  - M1.F.IF.C.6.a: Functions Interpreting Functions Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand and using technology. Graph linear and quadratic functions and show intercepts, maxima, and minima.
  - M1.F.LE.A.2: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs.
  - M1.A.REI.C.3: Algebra Reasoning with Equations and Inequalities Represent and solve equations and inequalities graphically. 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).
  - M1.A.CED.A.3: Algebra Creating Equations Create equations that describe numbers or relationships. 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.
  - M1.F.IF.B.5: Functions Interpreting Functions 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.
- **POINT-SLOPE FORM OF A LINEAR EQUATION**
  - M1.F.IF.A.1: Functions Interpreting Functions Understand the concept of a function and use function notation. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f

is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).

- M1.F.LE.A.2: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs.
- M1.A.REI.C.3: Algebra Reasoning with Equations and Inequalities Represent and solve equations and inequalities graphically. 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).
- M1.F.IF.C.6.a: Functions Interpreting Functions Analyze functions using different representations. Graph functions expressed symbolically and show key features of the graph, by hand and using technology. Graph linear and quadratic functions and show intercepts, maxima, and minima.
- M1.A.CED.A.3: Algebra Creating Equations Create equations that describe numbers or relationships. 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.

Unit 7: Points, Lines, and Angles 1

- **POINTS, RAYS, LINE SEGMENTS, LINES, AND FIGURES**
  - M1.G.CO.A.1: Geometry Congruence Experiment with transformations in the plane. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, plane, distance along a line, and distance around a circular arc.
- **PARALLEL AND PERPENDICULAR LINES**
  - M1.G.CO.A.1: Geometry Congruence Experiment with transformations in the plane. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, plane, distance along a line, and distance around a circular arc.

Unit 8: Points, Lines, and Angles 2

- **PARALLEL LINES AND ANGLE RELATIONSHIPS**
  - M1.G.CO.A.1: Geometry Congruence Experiment with transformations in the plane. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, plane, distance along a line, and distance around a circular arc.
  - M1.G.CO.C.9: Geometry Congruence Prove geometric theorems. Prove theorems about lines and angles.
- **PERPENDICULAR BISECTOR AND ANGLE BISECTOR THEOREMS**

- M1.G.CO.A.1: Geometry Congruence Experiment with transformations in the plane. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, plane, distance along a line, and distance around a circular arc.
- M1.G.CO.C.9: Geometry Congruence Prove geometric theorems. Prove theorems about lines and angles.
- M1.G.CO.C.10: Geometry Congruence Prove geometric theorems. Prove theorems about triangles.

Unit 9: Coordinate Geometry

- **LENGTH AND THE DISTANCE FORMULA**
  - M1.G.CO.A.1: Geometry Congruence Experiment with transformations in the plane. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, plane, distance along a line, and distance around a circular arc.
- **CONJECTURES IN COORDINATE GEOMETRY**
  - M1.G.CO.A.2: Geometry Congruence Experiment with transformations in the plane. Represent transformations in the plane in multiple ways, including technology. Describe transformations as functions that take points in the plane (pre-image) as inputs and give other points (image) as outputs. Compare transformations that preserve distance and angle measure to those that do not (e.g., translation versus horizontal stretch).
  - M1.G.CO.C.10: Geometry Congruence Prove geometric theorems. Prove theorems about triangles.

Unit 10: Transformations and Congruence 1

- **DILATIONS, TRANSLATIONS, ROTATIONS, AND REFLECTIONS**
  - M1.G.CO.A.2: Geometry Congruence Experiment with transformations in the plane. Represent transformations in the plane in multiple ways, including technology. Describe transformations as functions that take points in the plane (pre-image) as inputs and give other points (image) as outputs. Compare transformations that preserve distance and angle measure to those that do not (e.g., translation versus horizontal stretch).
  - M1.G.CO.B.6: Geometry Congruence Understand congruence in terms of rigid motions. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to determine informally if they are congruent.
  - M1.G.CO.A.5: Geometry Congruence Experiment with transformations in the plane. Given a geometric figure and a rigid motion, draw the image of the figure in multiple ways, including technology. Specify a sequence of rigid motions that will carry a given figure onto another.
  - M1.G.CO.A.3: Geometry Congruence Experiment with transformations in the plane. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections

that carry the shape onto itself.

- M1.G.CO.A.4: Geometry Congruence Experiment with transformations in the plane. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.

- **TRANSFORMATIONS ON THE COORDINATE PLANE**
  - M1.G.CO.A.2: Geometry Congruence Experiment with transformations in the plane. Represent transformations in the plane in multiple ways, including technology. Describe transformations as functions that take points in the plane (pre-image) as inputs and give other points (image) as outputs. Compare transformations that preserve distance and angle measure to those that do not (e.g., translation versus horizontal stretch).
  - M1.G.CO.A.3: Geometry Congruence Experiment with transformations in the plane. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry the shape onto itself.
  - M1.G.CO.B.6: Geometry Congruence Understand congruence in terms of rigid motions. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to determine informally if they are congruent.
  - M1.G.CO.A.4: Geometry Congruence Experiment with transformations in the plane. Develop definitions of rotations, reflections, and translations in terms of angles, circles, perpendicular lines, parallel lines, and line segments.
  - M1.G.CO.A.5: Geometry Congruence Experiment with transformations in the plane. Given a geometric figure and a rigid motion, draw the image of the figure in multiple ways, including technology. Specify a sequence of rigid motions that will carry a given figure onto another.

Unit 11: Transformations and Congruence 2

- **TRIANGLES AND CONGRUENCE TRANSFORMATIONS**
  - M1.G.CO.B.6: Geometry Congruence Understand congruence in terms of rigid motions. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to determine informally if they are congruent.
  - M1.G.CO.B.7: Geometry Congruence Understand congruence in terms of rigid motions. Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
  - M1.G.CO.B.8: Geometry Congruence Understand congruence in terms of rigid motions. Explain how the criteria for triangle congruence (ASA, SAS, AAS, and SSS) follow from the definition of congruence in terms of rigid motions.
  - M1.G.CO.C.10: Geometry Congruence Prove geometric theorems. Prove theorems about triangles.
- **CONGRUENCE OF OTHER POLYGONS**

- M1.G.CO.B.6: Geometry Congruence Understand congruence in terms of rigid motions. Use geometric descriptions of rigid motions to transform figures and to predict the effect of a given rigid motion on a given figure; given two figures, use the definition of congruence in terms of rigid motions to determine informally if they are congruent.
- M1.G.CO.A.2: Geometry Congruence Experiment with transformations in the plane. Represent transformations in the plane in multiple ways, including technology. Describe transformations as functions that take points in the plane (pre-image) as inputs and give other points (image) as outputs. Compare transformations that preserve distance and angle measure to those that do not (e.g., translation versus horizontal stretch).
- M1.G.CO.A.5: Geometry Congruence Experiment with transformations in the plane. Given a geometric figure and a rigid motion, draw the image of the figure in multiple ways, including technology. Specify a sequence of rigid motions that will carry a given figure onto another.
- M1.G.CO.A.3: Geometry Congruence Experiment with transformations in the plane. Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry the shape onto itself.

Unit 12: Triangles

- **TRIANGLE ANGLE THEOREMS**
  - M1.G.CO.C.10: Geometry Congruence Prove geometric theorems. Prove theorems about triangles.
- **MEDIANS AND ALTITUDES OF TRIANGLES**
  - M1.G.CO.C.10: Geometry Congruence Prove geometric theorems. Prove theorems about triangles.

Unit 13: Quadrilaterals

- **PARALLELOGRAMS AND RECTANGLES**
  - M1.G.CO.C.11: Geometry Congruence Prove geometric theorems. Prove theorems about parallelograms.
- **SQUARES AND RHOMBI**
  - M1.G.CO.C.11: Geometry Congruence Prove geometric theorems. Prove theorems about parallelograms.

Unit 14: Linear Systems

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: GUESS AND CHECK**
  - M1.A.CED.A.2: Algebra Creating Equations Create equations that describe numbers or relationships. Create equations in two or more variables to represent relationships between quantities; graph equations with two variables on coordinate axes with labels and scales.
  - M1.A.CED.A.3: Algebra Creating Equations Create equations that describe numbers or relationships. 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.

- M1.A.REI.B.2: Algebra Reasoning with Equations and Inequalities Solve systems of equations. Write and solve a system of linear equations in context.
- M1.F.BF.A.1.a: Functions Building Functions Build a function that models a relationship between two quantities. Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context.

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: GRAPHING**
  - M1.A.CED.A.3: Algebra Creating Equations Create equations that describe numbers or relationships. 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.
  - M1.A.REI.B.2: Algebra Reasoning with Equations and Inequalities Solve systems of equations. Write and solve a system of linear equations in context.
  - M1.A.REI.C.4: Algebra Reasoning with Equations and Inequalities 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 approximate solutions using technology.
  - M1.A.CED.A.2: Algebra Creating Equations Create equations that describe numbers or relationships. Create equations in two or more variables to represent relationships between quantities; graph equations with two variables on coordinate axes with labels and scales.

Unit 15: Solving Linear Systems Algebraically

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: SUBSTITUTION**
  - M1.A.CED.A.2: Algebra Creating Equations Create equations that describe numbers or relationships. Create equations in two or more variables to represent relationships between quantities; graph equations with two variables on coordinate axes with labels and scales.
  - M1.A.REI.B.2: Algebra Reasoning with Equations and Inequalities Solve systems of equations. Write and solve a system of linear equations in context.
  - M1.A.CED.A.3: Algebra Creating Equations Create equations that describe numbers or relationships. 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.
- **SOLVING SYSTEMS OF LINEAR EQUATIONS: ELIMINATION**
  - M1.A.CED.A.2: Algebra Creating Equations Create equations that describe numbers or relationships. Create equations in two or more variables to represent relationships between quantities; graph equations with two variables on coordinate axes with labels and scales.
  - M1.A.REI.B.2: Algebra Reasoning with Equations and Inequalities Solve systems of equations. Write and solve a system of linear equations in context.

- M1.A.CED.A.3: Algebra Creating Equations Create equations that describe numbers or relationships. 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.

Unit 16: Working with Functions

- **LINEAR VERSUS NONLINEAR**
  - M1.F.IF.B.5: Functions Interpreting Functions 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.
  - M1.F.LE.A.1.a: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.
  - M1.F.LE.A.2: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs.
  - M1.F.IF.B.3: Functions Interpreting Functions 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.
  - M1.F.LE.A.1.b: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.
  - M1.F.LE.A.1.c: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which a quantity grows or decays by a constant factor per unit interval relative to another.
  - M1.F.IF.C.7: Functions Interpreting Functions 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).
- **ABSOLUTE VALUE FUNCTIONS**
  - M1.F.IF.A.1: Functions Interpreting Functions Understand the concept of a function and use function notation. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f

is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).

- M1.F.IF.B.4: Functions Interpreting Functions Interpret functions that arise in applications in terms of the context. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
- M1.F.IF.B.3: Functions Interpreting Functions 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 17: Exponential Functions, Equations, and Inequalities

- **EXPONENTIAL FUNCTIONS**
  - M1.A.SSE.A.1.a: Algebra Seeing Structure in Expressions Interpret the structure of expressions. Interpret expressions that represent a quantity in terms of its context. Interpret parts of an expression, such as terms, factors, and coefficients.
  - M1.A.SSE.A.1.b: Algebra Seeing Structure in Expressions Interpret the structure of expressions. Interpret expressions that represent a quantity in terms of its context. Interpret complicated expressions by viewing one or more of their parts as a single entity.
  - M1.F.LE.A.1.a: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.
  - M1.F.IF.B.5: Functions Interpreting Functions 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.
  - M1.F.LE.A.2: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs.
  - M1.F.LE.A.3: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly.
  - M1.F.IF.A.1: Functions Interpreting Functions Understand the concept of a function and use function notation. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its domain, then f(x) denotes the output of f corresponding to the input x. The graph of f is the graph of the equation y = f(x).

- M1.F.IF.B.3: Functions Interpreting Functions 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.
- M1.F.IF.B.4: Functions Interpreting Functions Interpret functions that arise in applications in terms of the context. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.
- M1.A.CED.A.1: Algebra Creating Equations Create equations that describe numbers or relationships. Create equations and inequalities in one variable and use them to solve problems.
- M1.F.BF.A.1.a: Functions Building Functions Build a function that models a relationship between two quantities. Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context.
- M1.F.LE.A.1.c: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which a quantity grows or decays by a constant factor per unit interval relative to another.
- M1.F.LE.B.4: Functions Linear and Exponential Models Interpret expressions for functions in terms of the situation they model. Interpret the parameters in a linear or exponential function in terms of a context.
- M1.A.SSE.B.2.a: Algebra Seeing Structure in Expressions Write expressions in equivalent forms to solve problems. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. Use the properties of exponents to rewrite exponential expressions.

- **EXPONENTIAL GROWTH AND DECAY**
  - M1.A.SSE.A.1.a: Algebra Seeing Structure in Expressions Interpret the structure of expressions. Interpret expressions that represent a quantity in terms of its context. Interpret parts of an expression, such as terms, factors, and coefficients.
  - M1.A.SSE.A.1.b: Algebra Seeing Structure in Expressions Interpret the structure of expressions. Interpret expressions that represent a quantity in terms of its context. Interpret complicated expressions by viewing one or more of their parts as a single entity.
  - M1.F.LE.A.1.a: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.
  - M1.F.LE.A.1.c: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Distinguish between situations that can be modeled

with linear functions and with exponential functions. Recognize situations in which a quantity grows or decays by a constant factor per unit interval relative to another.

- M1.F.LE.A.2: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs.
- M1.F.LE.B.4: Functions Linear and Exponential Models Interpret expressions for functions in terms of the situation they model. Interpret the parameters in a linear or exponential function in terms of a context.
- M1.F.LE.A.3: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly.
- M1.F.LE.A.1.b: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.

- **SOLVING EXPONENTIAL INEQUALITIES**
  - M1.F.LE.A.2: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs.
  - M1.A.CED.A.3: Algebra Creating Equations Create equations that describe numbers or relationships. 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.
  - M1.A.SSE.A.1.b: Algebra Seeing Structure in Expressions Interpret the structure of expressions. Interpret expressions that represent a quantity in terms of its context. Interpret complicated expressions by viewing one or more of their parts as a single entity.
  - M1.F.LE.A.1.c: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which a quantity grows or decays by a constant factor per unit interval relative to another.

Unit 18: Sequences

- **SEQUENCES**
  - M1.F.BF.A.1.a: Functions Building Functions Build a function that models a relationship between two quantities. Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context.

- M1.F.BF.A.2: Functions Building Functions Build a function that models a relationship between two quantities. Write arithmetic and geometric sequences with an explicit formula and use them to model situations.
- M1.F.LE.A.2: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs.

- **ARITHMETIC AND GEOMETRIC SEQUENCES**
  - M1.F.BF.A.2: Functions Building Functions Build a function that models a relationship between two quantities. Write arithmetic and geometric sequences with an explicit formula and use them to model situations.
  - M1.F.BF.A.1.a: Functions Building Functions Build a function that models a relationship between two quantities. Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context.
  - M1.F.LE.A.2: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a table, a description of a relationship, or input-output pairs.

Unit 19: Statistics

- **DATA ANALYSIS**
  - M1.S.ID.A.1: Statistics and Probability Interpreting Categorical and Quantitative Data Summarize, represent, and interpret data on a single count or measurement variable. Represent single or multiple data sets with dot plots, histograms, stem plots (stem and leaf), and box plots.
  - M1.S.ID.A.2: Statistics and Probability Interpreting Categorical and Quantitative Data Summarize, represent, and interpret data on a single count or measurement variable. 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.
  - M1.S.ID.A.3: Statistics and Probability Interpreting Categorical and Quantitative Data Summarize, represent, and interpret data on a single count or measurement variable. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
- **SCATTERPLOTS**
  - M1.S.ID.B.4.a: Statistics and Probability Interpreting Categorical and Quantitative Data Summarize, represent, and interpret data on two categorical and quantitative variables. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. 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.

- M1.S.ID.B.4.b: Statistics and Probability Interpreting Categorical and Quantitative Data Summarize, represent, and interpret data on two categorical and quantitative variables. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. Fit a linear function for a scatter plot that suggests a linear association.
- M1.S.ID.C.7: Statistics and Probability Interpreting Categorical and Quantitative Data Interpret linear models. Distinguish between correlation and causation.
- M1.F.IF.B.5: Functions Interpreting Functions 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.
- M1.S.ID.C.5: Statistics and Probability Interpreting Categorical and Quantitative Data Interpret linear models. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

- **SCATTERPLOTS AND MODELING**
  - M1.S.ID.B.4.a: Statistics and Probability Interpreting Categorical and Quantitative Data Summarize, represent, and interpret data on two categorical and quantitative variables. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. 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.
  - M1.S.ID.B.4.b: Statistics and Probability Interpreting Categorical and Quantitative Data Summarize, represent, and interpret data on two categorical and quantitative variables. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. Fit a linear function for a scatter plot that suggests a linear association.
  - M1.S.ID.C.6: Statistics and Probability Interpreting Categorical and Quantitative Data Interpret linear models. Compute (using technology) and interpret the correlation coefficient of a linear fit.
  - M1.S.ID.C.5: Statistics and Probability Interpreting Categorical and Quantitative Data Interpret linear models. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.
  - M1.F.LE.A.1.a: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.
  - M1.F.LE.A.1.c: Functions Linear and Exponential Models Construct and compare linear and exponential models and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Recognize situations in which a quantity grows or decays by a constant factor per unit interval relative to another.