Florida Tutorials are designed specifically for the New Florida Standards for Math and English Language Arts and the Next Generation Sunshine State Standards (NGSSS) for science and social studies to prepare students for the Florida Standards Assessments and the NGSSS End-of-Course (EOC) exams.

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: Properties of Exponents

- **SIMPLIFYING SQUARE ROOTS**
  - MA.912.NSO.1.1: Number Sense and Operations Extend previous understanding of the Laws of Exponents to include rational exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions involving rational exponents.
  - MA.912.NSO.1.4: Number Sense and Operations Apply previous understanding of operations with rational numbers to add, subtract, multiply and divide numerical radicals.
- **LAWS OF EXPONENTS**
  - MA.912.NSO.1.1: Number Sense and Operations Extend previous understanding of the Laws of Exponents to include rational exponents. Apply the Laws of Exponents to evaluate numerical expressions and generate equivalent numerical expressions involving rational exponents.
  - MA.912.NSO.1.2: Number Sense and Operations Generate equivalent algebraic expressions using the properties of exponents.

Unit 2: Equations and Inequalities

- **ONE-STEP EQUATIONS AND INEQUALITIES**

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- MA.912.AR.2.6: Algebraic Reasoning Given a mathematical or real-world context, write and solve one-variable linear inequalities, including compound inequalities. Represent solutions algebraically or graphically.

- **MULTI-STEP EQUATIONS AND INEQUALITIES**
  - MA.912.AR.2.6: Algebraic Reasoning Given a mathematical or real-world context, write and solve one-variable linear inequalities, including compound inequalities. Represent solutions algebraically or graphically.
  - MA.912.AR.2.1: Algebraic Reasoning Given a real-world context, write and solve one-variable multi-step linear equations.
- **AXIOMS OF EQUALITY**
  - MA.912.AR.2.1: Algebraic Reasoning Given a real-world context, write and solve one-variable multi-step linear equations.
- **LITERAL EQUATIONS**
  - MA.912.AR.1.2: Algebraic Reasoning Rearrange equations or formulas to isolate a quantity of interest.

Unit 3: Writing Expressions and Equations

- **FORMULATING AND SIMPLIFYING ALGEBRAIC EXPRESSIONS**
  - MA.912.AR.1.1: Algebraic Reasoning Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity.
  - MA.912.AR.2.7: Algebraic Reasoning Write two-variable linear inequalities to represent relationships between quantities from a graph or a written description within a mathematical or real-world context.
  - MA.912.NSO.1.2: Number Sense and Operations Generate equivalent algebraic expressions using the properties of exponents.
- **FORMULATING AND SOLVING EQUATIONS FROM WORD PROBLEMS**
  - MA.912.AR.2.5: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.AR.1.1: Algebraic Reasoning Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity.
  - MA.912.AR.2.1: Algebraic Reasoning Given a real-world context, write and solve one-variable multi-step linear equations.
- **FORMULATING AND SOLVING INEQUALITIES FROM WORD PROBLEMS**
  - MA.912.AR.2.6: Algebraic Reasoning Given a mathematical or real-world context, write and solve one-variable linear inequalities, including compound inequalities. Represent solutions algebraically or graphically.

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Unit 4: Functions

- **FUNCTIONS AND RELATIONS**
  - MA.912.AR.2.2: Algebraic Reasoning Write a linear two-variable equation to represent relationships between quantities from a graph, a written description or a table of values within a mathematical or real-world context.
  - MA.912.F.1.2: Functions Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output.
  - MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
  - MA.912.AR.2.5: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context.
- **DOMAIN AND RANGE**
  - MA.912.DP.1.2: Data Analysis and Probability Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display.
  - MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
  - MA.912.AR.3.7: Algebraic Reasoning Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features.
  - MA.912.AR.3.8: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.F.1.6: Functions Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions.
  - MA.912.F.1.5: Functions Compare key features of linear functions each represented algebraically, graphically, in tables or written descriptions.
  - MA.912.AR.2.5: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context.
- **EVALUATING FUNCTIONS**
  - MA.912.F.1.2: Functions Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output.
  - MA.912.AR.2.5: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context.

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- MA.912.AR.3.7: Algebraic Reasoning Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features.
- MA.912.AR.3.8: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context.

Unit 5: Graphs of Linear Equations and Inequalities

- **SLOPE**
  - MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
  - MA.912.F.1.3: Functions Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval.
  - MA.912.AR.2.5: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.AR.3.7: Algebraic Reasoning Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features.
  - MA.912.AR.2.2: Algebraic Reasoning Write a linear two-variable equation to represent relationships between quantities from a graph, a written description or a table of values within a mathematical or real-world context.
  - MA.912.AR.2.3: Algebraic Reasoning Write a linear two-variable equation for a line that is parallel or perpendicular to a given line and goes through a given point.
  - MA.912.F.1.5: Functions Compare key features of linear functions each represented algebraically, graphically, in tables or written descriptions.
- **GRAPHING AND ANALYZING LINEAR FUNCTIONS**
  - MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
  - MA.912.AR.2.5: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.AR.2.2: Algebraic Reasoning Write a linear two-variable equation to represent relationships between quantities from a graph, a written description or a table of values within a mathematical or real-world context.
  - MA.912.F.1.3: Functions Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval.
  - MA.912.F.1.2: Functions Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output.
- **GRAPHING AND MANIPULATING Y = MX + B**

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- MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
- MA.912.AR.2.5: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context.
- MA.912.AR.2.2: Algebraic Reasoning Write a linear two-variable equation to represent relationships between quantities from a graph, a written description or a table of values within a mathematical or real-world context.
- MA.912.F.2.1: Functions Identify the effect on the graph or table of a given function after replacing () by () + , (), () and (+) for specific values of .
- MA.912.F.2.1: Functions Identify the effect on the graph or table of a given function after replacing () by () + , (), () and (+) for specific values of .
- MA.912.F.2.1: Functions Identify the effect on the graph or table of a given function after replacing () by () + , (), () and (+) for specific values of .
- MA.912.F.2.1: Functions Identify the effect on the graph or table of a given function after replacing () by () + , (), () and (+) for specific values of .
- MA.912.F.1.5: Functions Compare key features of linear functions each represented algebraically, graphically, in tables or written descriptions.

- **GRAPHS OF LINEAR INEQUALITIES**
  - MA.912.AR.2.8: Algebraic Reasoning Given a mathematical or real-world context, graph the solution set to a two-variable linear inequality.
  - MA.912.AR.2.7: Algebraic Reasoning Write two-variable linear inequalities to represent relationships between quantities from a graph or a written description within a mathematical or real-world context.
  - MA.912.AR.2.6: Algebraic Reasoning Given a mathematical or real-world context, write and solve one-variable linear inequalities, including compound inequalities. Represent solutions algebraically or graphically.

Unit 6: Linear Equations

- **SLOPE-INTERCEPT FORM OF A LINEAR EQUATION**
  - MA.912.F.1.3: Functions Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval.
  - MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
  - MA.912.AR.2.5: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.AR.2.2: Algebraic Reasoning Write a linear two-variable equation to represent relationships between quantities from a graph, a written description or a table of values within a mathematical or

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real-world context.

- MA.912.AR.1.2: Algebraic Reasoning Rearrange equations or formulas to isolate a quantity of interest.
- MA.912.F.1.5: Functions Compare key features of linear functions each represented algebraically, graphically, in tables or written descriptions.
- MA.912.AR.2.3: Algebraic Reasoning Write a linear two-variable equation for a line that is parallel or perpendicular to a given line and goes through a given point.

- **POINT-SLOPE FORM OF A LINEAR EQUATION**
  - MA.912.AR.2.5: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.AR.2.2: Algebraic Reasoning Write a linear two-variable equation to represent relationships between quantities from a graph, a written description or a table of values within a mathematical or real-world context.
  - MA.912.AR.1.2: Algebraic Reasoning Rearrange equations or formulas to isolate a quantity of interest.
  - MA.912.AR.2.3: Algebraic Reasoning Write a linear two-variable equation for a line that is parallel or perpendicular to a given line and goes through a given point.

Unit 7: Linear Systems

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: GUESS AND CHECK**
  - MA.912.AR.9.6: Algebraic Reasoning Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or nonviable options.
  - MA.912.AR.9.1: Algebraic Reasoning Given a mathematical or real-world context, write and solve a system of two-variable linear equations algebraically or graphically.
- **SOLVING SYSTEMS OF LINEAR EQUATIONS: GRAPHING**
  - MA.912.AR.9.6: Algebraic Reasoning Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or nonviable options.
  - MA.912.AR.9.1: Algebraic Reasoning Given a mathematical or real-world context, write and solve a system of two-variable linear equations algebraically or graphically.
- **SOLVING SYSTEMS OF LINEAR EQUATIONS: SUBSTITUTION**
  - MA.912.AR.2.2: Algebraic Reasoning Write a linear two-variable equation to represent relationships between quantities from a graph, a written description or a table of values within a mathematical or real-world context.
  - MA.912.AR.9.6: Algebraic Reasoning Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or nonviable options.
  - MA.912.AR.9.1: Algebraic Reasoning Given a mathematical or real-world context, write and solve a system of two-variable linear equations algebraically or graphically.
  - MA.912.AR.1.2: Algebraic Reasoning Rearrange equations or formulas to isolate a quantity of interest.

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- **SOLVING SYSTEMS OF LINEAR EQUATIONS: ELIMINATION**
  - MA.912.AR.2.2: Algebraic Reasoning Write a linear two-variable equation to represent relationships between quantities from a graph, a written description or a table of values within a mathematical or real-world context.
  - MA.912.AR.9.6: Algebraic Reasoning Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or nonviable options.
  - MA.912.AR.9.1: Algebraic Reasoning Given a mathematical or real-world context, write and solve a system of two-variable linear equations algebraically or graphically.
- **SOLVING SYSTEMS OF LINEAR INEQUALITIES**
  - MA.912.AR.9.6: Algebraic Reasoning Given a real-world context, represent constraints as systems of linear equations or inequalities. Interpret solutions to problems as viable or nonviable options.
  - MA.912.AR.2.7: Algebraic Reasoning Write two-variable linear inequalities to represent relationships between quantities from a graph or a written description within a mathematical or real-world context.
  - MA.912.AR.2.8: Algebraic Reasoning Given a mathematical or real-world context, graph the solution set to a two-variable linear inequality.
  - MA.912.AR.9.4: Algebraic Reasoning Graph the solution set of a system of two-variable linear inequalities.

Unit 8: Exponential Functions and Equations

- **EXPONENTIAL FUNCTIONS**
  - MA.912.AR.5.3: Algebraic Reasoning Given a mathematical or real-world context, classify an exponential function as representing growth or decay.
  - MA.912.F.1.3: Functions Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval.
  - MA.912.AR.1.1: Algebraic Reasoning Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity.
  - MA.912.AR.5.6: Algebraic Reasoning Given a table, equation or written description of an exponential function, graph that function and determine its key features.
  - MA.912.F.1.6: Functions Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions.
  - MA.912.F.1.2: Functions Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output.
  - MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
  - MA.912.AR.5.4: Algebraic Reasoning Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical

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or real-world context.

- MA.912.FL.3.2: Financial Literacy Solve real-world problems involving simple, compound and continuously compounded interest.
- MA.912.FL.3.4: Financial Literacy Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth.

- **EXPONENTIAL GROWTH AND DECAY**
  - MA.912.F.1.3: Functions Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval.
  - MA.912.AR.1.1: Algebraic Reasoning Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity.
  - MA.912.AR.5.3: Algebraic Reasoning Given a mathematical or real-world context, classify an exponential function as representing growth or decay.
  - MA.912.F.1.6: Functions Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions.
  - MA.912.AR.5.6: Algebraic Reasoning Given a table, equation or written description of an exponential function, graph that function and determine its key features.
  - MA.912.F.1.1: Functions Given an equation or graph that defines a function, classify the function type. Given an input-output table, determine a function type that could represent it.
  - MA.912.F.1.8: Functions Determine whether a linear, quadratic or exponential function best models a given real-world situation.
  - MA.912.FL.3.2: Financial Literacy Solve real-world problems involving simple, compound and continuously compounded interest.
  - MA.912.F.1.2: Functions Given a function represented in function notation, evaluate the function for an input in its domain. For a real-world context, interpret the output.
  - MA.912.FL.3.4: Financial Literacy Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth.
  - MA.912.AR.5.4: Algebraic Reasoning Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context.

Unit 9: Polynomials

- **POLYNOMIAL BASICS**
  - MA.912.AR.1.1: Algebraic Reasoning Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity.

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- **ADDITION AND SUBTRACTION OF POLYNOMIALS**
  - MA.912.AR.1.3: Algebraic Reasoning Add, subtract and multiply polynomial expressions with rational number coefficients.
- **MULTIPLICATION OF POLYNOMIALS**
  - MA.912.AR.1.3: Algebraic Reasoning Add, subtract and multiply polynomial expressions with rational number coefficients.
- **DIVISION OF POLYNOMIALS**
  - MA.912.AR.1.4: Algebraic Reasoning Divide a polynomial expression by a monomial expression with rational number coefficients.

Unit 10: Factoring

- **FACTORING QUADRATIC TRINOMIALS**
  - MA.912.AR.1.7: Algebraic Reasoning Rewrite a polynomial expression as a product of polynomials over the real number system.
  - MA.912.AR.1.1: Algebraic Reasoning Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity.
  - MA.912.AR.3.6: Algebraic Reasoning Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
  - MA.912.AR.1.3: Algebraic Reasoning Add, subtract and multiply polynomial expressions with rational number coefficients.
- **FACTORING SPECIAL CASES**
  - MA.912.AR.3.7: Algebraic Reasoning Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features.
  - MA.912.AR.3.8: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.AR.1.1: Algebraic Reasoning Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity.
  - MA.912.AR.1.7: Algebraic Reasoning Rewrite a polynomial expression as a product of polynomials over the real number system.
  - MA.912.AR.3.1: Algebraic Reasoning Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system.
  - MA.912.AR.3.6: Algebraic Reasoning Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
- **FACTORING HIGHER-ORDER POLYNOMIALS**

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- MA.912.AR.1.1: Algebraic Reasoning Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity.
- MA.912.AR.1.7: Algebraic Reasoning Rewrite a polynomial expression as a product of polynomials over the real number system.

Unit 11: Graphs of Quadratic Functions

- **QUADRATIC FUNCTIONS**
  - MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
  - MA.912.AR.3.7: Algebraic Reasoning Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features.
  - MA.912.AR.3.8: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.AR.3.6: Algebraic Reasoning Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
  - MA.912.F.1.1: Functions Given an equation or graph that defines a function, classify the function type. Given an input-output table, determine a function type that could represent it.
  - MA.912.AR.1.1: Algebraic Reasoning Identify and interpret parts of an equation or expression that represent a quantity in terms of a mathematical or real-world context, including viewing one or more of its parts as a single entity.
  - MA.912.AR.3.4: Algebraic Reasoning Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context.
  - MA.912.F.1.6: Functions Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions.
  - MA.912.AR.3.1: Algebraic Reasoning Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system.
- **ANALYZING GRAPHS OF QUADRATIC FUNCTIONS**
  - MA.912.AR.3.7: Algebraic Reasoning Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features.
  - MA.912.AR.3.8: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.F.1.1: Functions Given an equation or graph that defines a function, classify the function type. Given an input-output table, determine a function type that could represent it.

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- MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
- MA.912.F.2.1: Functions Identify the effect on the graph or table of a given function after replacing () by () + , (), () and (+) for specific values of .
- MA.912.F.2.1: Functions Identify the effect on the graph or table of a given function after replacing () by () + , (), () and (+) for specific values of .
- MA.912.F.1.6: Functions Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions.
- MA.912.AR.3.4: Algebraic Reasoning Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context.

- **REPRESENTATIONS OF QUADRATIC FUNCTIONS**
  - MA.912.AR.1.2: Algebraic Reasoning Rearrange equations or formulas to isolate a quantity of interest.
  - MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
  - MA.912.AR.3.7: Algebraic Reasoning Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features.
  - MA.912.AR.3.4: Algebraic Reasoning Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context.
  - MA.912.AR.3.8: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.AR.3.5: Algebraic Reasoning Given the -intercepts and another point on the graph of a quadratic function, write the equation for the function.
  - MA.912.AR.3.5: Algebraic Reasoning Given the -intercepts and another point on the graph of a quadratic function, write the equation for the function.
  - MA.912.AR.3.6: Algebraic Reasoning Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.

Unit 12: Solving Quadratic Functions

- **SOLVING QUADRATIC FUNCTIONS BY FACTORING**
  - MA.912.AR.3.7: Algebraic Reasoning Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features.
  - MA.912.AR.3.8: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context.

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- MA.912.AR.3.1: Algebraic Reasoning Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system.
- MA.912.AR.3.6: Algebraic Reasoning Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
- MA.912.AR.1.7: Algebraic Reasoning Rewrite a polynomial expression as a product of polynomials over the real number system.
- MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
- MA.912.AR.3.5: Algebraic Reasoning Given the -intercepts and another point on the graph of a quadratic function, write the equation for the function.
- MA.912.AR.3.4: Algebraic Reasoning Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context.
- MA.912.AR.3.5: Algebraic Reasoning Given the -intercepts and another point on the graph of a quadratic function, write the equation for the function.

- **COMPLETING THE SQUARE**
  - MA.912.AR.3.8: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.AR.3.1: Algebraic Reasoning Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system.
  - MA.912.AR.1.2: Algebraic Reasoning Rearrange equations or formulas to isolate a quantity of interest.
  - MA.912.AR.3.7: Algebraic Reasoning Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features.
  - MA.912.F.1.6: Functions Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions.
  - MA.912.AR.3.6: Algebraic Reasoning Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
  - MA.912.AR.3.4: Algebraic Reasoning Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context.
- **QUADRATIC FORMULA**
  - MA.912.AR.3.8: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.AR.3.1: Algebraic Reasoning Given a mathematical or real-world context, write and solve one-variable quadratic equations over the real number system.

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- MA.912.AR.3.6: Algebraic Reasoning Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
- MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
- MA.912.AR.3.7: Algebraic Reasoning Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features.
- MA.912.AR.3.4: Algebraic Reasoning Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context.

Unit 13: Parent Functions and Transformations

- **LINEAR AND EXPONENTIAL PARENT FUNCTIONS**
  - MA.912.F.1.3: Functions Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval.
  - MA.912.AR.2.5: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.F.1.1: Functions Given an equation or graph that defines a function, classify the function type. Given an input-output table, determine a function type that could represent it.
  - MA.912.F.1.6: Functions Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions.
  - MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
  - MA.912.AR.5.6: Algebraic Reasoning Given a table, equation or written description of an exponential function, graph that function and determine its key features.
- **QUADRATIC PARENT FUNCTION**
  - MA.912.AR.3.7: Algebraic Reasoning Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features.
  - MA.912.AR.3.8: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.F.1.1: Functions Given an equation or graph that defines a function, classify the function type. Given an input-output table, determine a function type that could represent it.
- **TRANSFORMATIONS OF THE LINEAR AND EXPONENTIAL PARENT FUNCTIONS**
  - MA.912.F.2.1: Functions Identify the effect on the graph or table of a given function after replacing () by () + , (), () and (+) for specific values of .
- **TRANSFORMATIONS OF THE QUADRATIC PARENT FUNCTION**

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- MA.912.F.2.1: Functions Identify the effect on the graph or table of a given function after replacing () by () + , (), () and (+) for specific values of .
- MA.912.AR.3.7: Algebraic Reasoning Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features.
- MA.912.F.2.1: Functions Identify the effect on the graph or table of a given function after replacing () by () + , (), () and (+) for specific values of .

Unit 14: Working with Functions

- **LINEAR VERSUS NONLINEAR FUNCTIONS**
  - MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
  - MA.912.AR.5.6: Algebraic Reasoning Given a table, equation or written description of an exponential function, graph that function and determine its key features.
  - MA.912.F.1.1: Functions Given an equation or graph that defines a function, classify the function type. Given an input-output table, determine a function type that could represent it.
  - MA.912.F.1.6: Functions Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions.
  - MA.912.FL.3.2: Financial Literacy Solve real-world problems involving simple, compound and continuously compounded interest.
  - MA.912.FL.3.4: Financial Literacy Explain the relationship between simple interest and linear growth. Explain the relationship between compound interest and exponential growth and the relationship between continuously compounded interest and exponential growth.
  - MA.912.AR.2.5: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.F.1.8: Functions Determine whether a linear, quadratic or exponential function best models a given real-world situation.
  - MA.912.F.1.3: Functions Calculate and interpret the average rate of change of a real-world situation represented graphically, algebraically or in a table over a specified interval.
- **ABSOLUTE VALUE FUNCTIONS**
  - MA.912.AR.4.3: Algebraic Reasoning Given a table, equation or written description of an absolute value function, graph that function and determine its key features.
  - MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
  - MA.912.F.2.1: Functions Identify the effect on the graph or table of a given function after replacing () by () + , (), () and (+) for specific values of .

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- MA.912.F.1.6: Functions Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions.

- **MULTIPLE REPRESENTATIONS OF FUNCTIONS**
  - MA.912.AR.2.4: Algebraic Reasoning Given a table, equation or written description of a linear function, graph that function, and determine and interpret its key features.
  - MA.912.AR.2.5: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with linear functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.AR.1.2: Algebraic Reasoning Rearrange equations or formulas to isolate a quantity of interest.
  - MA.912.AR.2.2: Algebraic Reasoning Write a linear two-variable equation to represent relationships between quantities from a graph, a written description or a table of values within a mathematical or real-world context.
  - MA.912.F.1.6: Functions Compare key features of linear and nonlinear functions each represented algebraically, graphically, in tables or written descriptions.
  - MA.912.F.1.5: Functions Compare key features of linear functions each represented algebraically, graphically, in tables or written descriptions.
  - MA.912.AR.3.7: Algebraic Reasoning Given a table, equation or written description of a quadratic function, graph that function, and determine and interpret its key features.
  - MA.912.AR.3.4: Algebraic Reasoning Write a quadratic function to represent the relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context.
  - MA.912.AR.3.8: Algebraic Reasoning Solve and graph mathematical and real-world problems that are modeled with quadratic functions. Interpret key features and determine constraints in terms of the context.
  - MA.912.AR.3.6: Algebraic Reasoning Given an expression or equation representing a quadratic function, determine the vertex and zeros and interpret them in terms of a real-world context.
  - MA.912.AR.5.6: Algebraic Reasoning Given a table, equation or written description of an exponential function, graph that function and determine its key features.
  - MA.912.AR.5.4: Algebraic Reasoning Write an exponential function to represent a relationship between two quantities from a graph, a written description or a table of values within a mathematical or real-world context.

Unit 15: Statistics

- **DATA ANALYSIS**
  - MA.912.AR.2.7: Algebraic Reasoning Write two-variable linear inequalities to represent relationships between quantities from a graph or a written description within a mathematical or real-world context.
  - MA.912.DP.1.1: Data Analysis and Probability Given a set of data, select an appropriate method to represent the data, depending on whether it is numerical or categorical data and on whether it is

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univariate or bivariate.

- MA.912.DP.1.2: Data Analysis and Probability Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display.

- **FREQUENCY TABLES**
  - MA.912.DP.1.1: Data Analysis and Probability Given a set of data, select an appropriate method to represent the data, depending on whether it is numerical or categorical data and on whether it is univariate or bivariate.
  - MA.912.DP.3.1: Data Analysis and Probability Construct a two-way frequency table summarizing bivariate categorical data. Interpret joint and marginal frequencies and determine possible associations in terms of a real-world context.
  - MA.912.DP.1.2: Data Analysis and Probability Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display.
- **SCATTERPLOTS**
  - MA.912.DP.1.2: Data Analysis and Probability Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display.
  - MA.912.DP.1.1: Data Analysis and Probability Given a set of data, select an appropriate method to represent the data, depending on whether it is numerical or categorical data and on whether it is univariate or bivariate.
  - MA.912.DP.1.3: Data Analysis and Probability Explain the difference between correlation and causation in the contexts of both numerical and categorical data.
  - MA.912.DP.2.4: Data Analysis and Probability Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and -intercept of the model. Use the model to solve real-world problems in terms of the context of the data.
  - MA.912.DP.2.6: Data Analysis and Probability Given a scatter plot with a line of fit and residuals, determine the strength and direction of the correlation. Interpret strength and direction within a real-world context.
- **SCATTERPLOTS AND MODELING**
  - MA.912.DP.2.4: Data Analysis and Probability Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and -intercept of the model. Use the model to solve real-world problems in terms of the context of the data.
  - MA.912.DP.1.2: Data Analysis and Probability Interpret data distributions represented in various ways. State whether the data is numerical or categorical, whether it is univariate or bivariate and interpret the different components and quantities in the display.

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- MA.912.DP.2.6: Data Analysis and Probability Given a scatter plot with a line of fit and residuals, determine the strength and direction of the correlation. Interpret strength and direction within a real-world context.
- MA.912.DP.1.3: Data Analysis and Probability Explain the difference between correlation and causation in the contexts of both numerical and categorical data.
- MA.912.DP.2.4: Data Analysis and Probability Fit a linear function to bivariate numerical data that suggests a linear association and interpret the slope and -intercept of the model. Use the model to solve real-world problems in terms of the context of the data.
- MA.912.F.1.8: Functions Determine whether a linear, quadratic or exponential function best models a given real-world situation.
- MA.912.AR.5.3: Algebraic Reasoning Given a mathematical or real-world context, classify an exponential function as representing growth or decay.

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