OHEOC Tutorials for Ohio are designed specifically for the Ohio Learning Standards to prepare students for the Ohio End Of Course assessments. EOC Categories are at the heart of OHEOC Tutorial structure – bringing category-based learning to the student experience, and category-based performance and progress tracking to the teacher experience.

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

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

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

### Unit 1: Precision and Accuracy

- **MONITORING PRECISION AND ACCURACY**
  - OH.Math.HSN.Q.1: 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.
  - OH.Math.HSN.Q.2: Quantities Reason quantitatively and use units to solve problems. Define appropriate quantities for the purpose of descriptive modeling.
  - OH.Math.HSN.Q.3: Quantities Reason quantitatively and use units to solve problems. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

### Unit 2: Expressions, Equations, and Inequalities


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- **ONE-STEP EQUATIONS AND INEQUALITIES**
  - OH.Math.HSA.REI.3: 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.
  - OH.Math.HSA.REI.1: Reasoning with Equations and Inequalities Understand solving equations as a process of reasoning and explain the reasoning. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
- **MULTI-STEP EQUATIONS AND INEQUALITIES**
  - OH.Math.HSA.REI.3: 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.
  - OH.Math.HSA.REI.1: Reasoning with Equations and Inequalities Understand solving equations as a process of reasoning and explain the reasoning. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
  - OH.Math.HSA.CED.3a: 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 non-viable options in a modeling context. While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.
- **AXIOMS OF EQUALITY**
  - OH.Math.HSA.REI.1: Reasoning with Equations and Inequalities Understand solving equations as a process of reasoning and explain the reasoning. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.
  - OH.Math.HSA.REI.3: 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.
- **LITERAL EQUATIONS**
  - OH.Math.HSA.REI.3: 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.
  - OH.Math.HSA.CED.4b: 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. Focus on formulas in which the variable of interest is linear.

## Unit 3: Writing Equations and Inequalities

- **FORMULATING AND SOLVING EQUATIONS FROM WORD PROBLEMS**


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- OH.Math.HSA.SSE.1a: 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.
- OH.Math.HSA.CED.1a: Creating Equations Create equations that describe numbers or relationships. Create equations and inequalities in one variable and use them to solve problems. Focus on applying linear and simple exponential expressions.
- OH.Math.HSA.CED.3a: 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 non-viable options in a modeling context. While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.
- OH.Math.HSA.REI.3: 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.

- **FORMULATING AND SOLVING INEQUALITIES FROM WORD PROBLEMS**
  - OH.Math.HSA.CED.1a: Creating Equations Create equations that describe numbers or relationships. Create equations and inequalities in one variable and use them to solve problems. Focus on applying linear and simple exponential expressions.
  - OH.Math.HSA.CED.3a: 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 non-viable options in a modeling context. While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.
  - OH.Math.HSA.REI.3: 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 4: Functions

- **FUNCTIONS AND RELATIONS**
  - OH.Math.HSF.IF.2: 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.
  - OH.Math.HSF.IF.1: 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 is a function and is an element of its domain, then () denotes the output of corresponding to the input . The graph of is the graph of the equation = ().
- **DOMAIN AND RANGE**


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- OH.Math.HSF.IF.1: 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 is a function and is an element of its domain, then () denotes the output of corresponding to the input . The graph of is the graph of the equation = ().
- OH.Math.HSF.IF.5a: 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. Focus on linear and exponential functions.

- **EVALUATING FUNCTIONS**
  - OH.Math.HSF.IF.2: 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.

## Unit 5: Graphing Linear Equations

- **GRAPHING AND ANALYZING LINEAR FUNCTIONS**
  - OH.Math.HSA.REI.10: 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).
  - OH.Math.HSF.LE.5: Linear, Quadratic, 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.
  - OH.Math.HSF.IF.7a: Interpreting Functions Analyze functions using different representations. Graph functions expressed symbolically and indicate key features of the graph, by hand in simple cases and using technology for more complicated cases. Include applications and how key features relate to characteristics of a situation, making selection of a particular type of function model appropriate. Graph linear functions and indicate intercepts.
  - OH.Math.HSF.LE.2: Linear, Quadratic, and Exponential Models Construct and compare linear, quadratic, and exponential models, and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).
- **GRAPHING AND MANIPULATING Y = MX + B**
  - OH.Math.HSF.IF.7a: Interpreting Functions Analyze functions using different representations. Graph functions expressed symbolically and indicate key features of the graph, by hand in simple cases and using technology for more complicated cases. Include applications and how key features relate to characteristics of a situation, making selection of a particular type of function model appropriate. Graph linear functions and indicate intercepts.

## Unit 6: Linear Equations

- **SLOPE-INTERCEPT FORM OF A LINEAR EQUATION**


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- OH.Math.HSF.IF.7a: Interpreting Functions Analyze functions using different representations. Graph functions expressed symbolically and indicate key features of the graph, by hand in simple cases and using technology for more complicated cases. Include applications and how key features relate to characteristics of a situation, making selection of a particular type of function model appropriate. Graph linear functions and indicate intercepts.
- OH.Math.HSA.SSE.1a: 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.
- OH.Math.HSF.LE.5: Linear, Quadratic, 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.

- **POINT-SLOPE FORM OF A LINEAR EQUATION**
  - OH.Math.HSA.CED.2a: Creating Equations Create equations that describe numbers or relationships. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. Focus on applying linear and simple exponential expressions.
  - OH.Math.HSF.LE.2: Linear, Quadratic, and Exponential Models Construct and compare linear, quadratic, and exponential models, and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

## Unit 7: Linear Systems

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: GUESS AND CHECK**
  - OH.Math.HSA.CED.3a: 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 non-viable options in a modeling context. While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.
  - OH.Math.HSA.REI.6a: Reasoning with Equations and Inequalities Solve systems of equations. Solve systems of linear equations algebraically and graphically. Limit to pairs of linear equations in two variables.
- **SOLVING SYSTEMS OF LINEAR EQUATIONS: GRAPHING**
  - OH.Math.HSA.CED.3a: 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 non-viable options in a modeling context. While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.
  - OH.Math.HSA.REI.11: Reasoning with Equations and Inequalities Represent and solve equations and inequalities graphically. Explain why the -coordinates of the points where the graphs of the equation =


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() and = () intersect are the solutions of the equation () = (); find the solutions approximately, e.g., using technology to graph the functions, making tables of values, or finding successive approximations.

- OH.Math.HSA.REI.6a: Reasoning with Equations and Inequalities Solve systems of equations. Solve systems of linear equations algebraically and graphically. Limit to pairs of linear equations in two variables.

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: SUBSTITUTION**
  - OH.Math.HSA.CED.3a: 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 non-viable options in a modeling context. While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.
  - OH.Math.HSA.CED.4b: 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. Focus on formulas in which the variable of interest is linear.
  - OH.Math.HSA.REI.6a: Reasoning with Equations and Inequalities Solve systems of equations. Solve systems of linear equations algebraically and graphically. Limit to pairs of linear equations in two variables.
- **SOLVING SYSTEMS OF LINEAR EQUATIONS: ELIMINATION**
  - OH.Math.HSA.CED.3a: 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 non-viable options in a modeling context. While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.
  - OH.Math.HSA.REI.6a: Reasoning with Equations and Inequalities Solve systems of equations. Solve systems of linear equations algebraically and graphically. Limit to pairs of linear equations in two variables.
  - OH.Math.HSA.REI.5: Reasoning with Equations and Inequalities Solve systems of equations. Verify that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

## Unit 8: Solving and Graphing Linear Inequalities

- **GRAPHS OF LINEAR INEQUALITIES**
  - OH.Math.HSA.REI.12: 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.
- **SOLVING SYSTEMS OF LINEAR INEQUALITIES**
  - OH.Math.HSA.REI.12: 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


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(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.

## Unit 9: Linear and Nonlinear Parent Functions

- **LINEAR VERSUS NONLINEAR**
  - OH.Math.HSF.LE.1a: Linear, Quadratic, and Exponential Models Construct and compare linear, quadratic, and exponential models, and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Show that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.
  - OH.Math.HSF.LE.1b: Linear, Quadratic, and Exponential Models Construct and compare linear, quadratic, 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.
  - OH.Math.HSF.BF.1a.i: 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 context. Focus on linear and exponential functions.
  - OH.Math.HSA.REI.10: 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).
  - OH.Math.HSF.IF.4a: 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. Focus on linear and exponential functions.
- **LINEAR AND EXPONENTIAL PARENT FUNCTIONS**
  - OH.Math.HSA.REI.10: 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).
  - OH.Math.HSF.IF.4a: 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. Focus on linear and exponential functions.
  - OH.Math.HSF.IF.5a: 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. Focus on linear and exponential functions.

## Unit 10: Exponential Functions

- **EXPONENTIAL FUNCTIONS**


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- OH.Math.HSA.SSE.1a: 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.
- OH.Math.HSA.SSE.1b: 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.
- OH.Math.HSF.LE.5: Linear, Quadratic, 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.
- OH.Math.HSF.IF.7e: Interpreting Functions Analyze functions using different representations. Graph functions expressed symbolically and indicate key features of the graph, by hand in simple cases and using technology for more complicated cases. Include applications and how key features relate to characteristics of a situation, making selection of a particular type of function model appropriate. Graph simple exponential functions, indicating intercepts and end behavior.
- OH.Math.HSF.IF.4a: 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. Focus on linear and exponential functions.
- OH.Math.HSF.LE.1c: Linear, Quadratic, and Exponential Models Construct and compare linear, quadratic, 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 percent rate per unit interval relative to another.
- OH.Math.HSF.IF.5a: 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. Focus on linear and exponential functions.

- **EXPONENTIAL GROWTH AND DECAY**
  - OH.Math.HSA.SSE.1a: 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.
  - OH.Math.HSA.SSE.1b: 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.
  - OH.Math.HSF.LE.1c: Linear, Quadratic, and Exponential Models Construct and compare linear, quadratic, 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 percent rate per unit interval relative to another.
  - OH.Math.HSF.IF.4a: 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


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graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. Focus on linear and exponential functions.

- OH.Math.HSF.LE.1a: Linear, Quadratic, and Exponential Models Construct and compare linear, quadratic, and exponential models, and solve problems. Distinguish between situations that can be modeled with linear functions and with exponential functions. Show that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.

### Unit 11: Exponential Functions and Inequalities

- **TRANSFORMATIONS OF THE LINEAR AND EXPONENTIAL PARENT FUNCTIONS**
  - OH.Math.HSA.SSE.3c: 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 transform expressions for exponential functions.
- **SOLVING EXPONENTIAL INEQUALITIES**
  - OH.Math.HSA.CED.3a: 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 non-viable options in a modeling context. While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.

### Unit 12: Working with Functions

- **MULTIPLE REPRESENTATIONS OF FUNCTIONS**
  - OH.Math.HSF.IF.9a: 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). Focus on linear and exponential functions.
- **INVERSE FUNCTIONS**
  - OH.Math.HSF.BF.4a: Building Functions Build new functions from existing functions. Find inverse functions. Informally determine the input of a function when the output is known.

### Unit 13: Sequences

- **SEQUENCES**
  - OH.Math.HSF.BF.1a.i: 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 context. Focus on linear and exponential functions.
  - OH.Math.HSF.IF.3: Interpreting Functions Understand the concept of a function, and use function notation. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.
  - OH.Math.HSF.LE.2: Linear, Quadratic, and Exponential Models Construct and compare linear, quadratic, and exponential models, and solve problems. Construct linear and exponential functions,


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

- **ARITHMETIC AND GEOMETRIC SEQUENCES**
  - OH.Math.HSF.BF.2: Building Functions Build a function that models a relationship between two quantities. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.
  - OH.Math.HSF.BF.1a.i: 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 context. Focus on linear and exponential functions.
  - OH.Math.HSF.IF.3: Interpreting Functions Understand the concept of a function, and use function notation. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.
  - OH.Math.HSF.LE.2: Linear, Quadratic, and Exponential Models Construct and compare linear, quadratic, and exponential models, and solve problems. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

### Unit 14: Points, Lines, and Angles

- **POINTS, RAYS, LINE SEGMENTS, LINES, AND FIGURES**
  - OH.Math.HSG.CO.1: Congruence Experiment with transformations in the plane. Know precise definitions of ray, angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and arc length.
  - OH.Math.HSG.CO.14: Congruence Classify and analyze geometric figures. Classify two-dimensional figures in a hierarchy based on properties.
- **PARALLEL AND PERPENDICULAR LINES**
  - OH.Math.HSG.CO.1: Congruence Experiment with transformations in the plane. Know precise definitions of ray, angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and arc length.
- **PARALLEL LINES AND ANGLE RELATIONSHIPS**
  - OH.Math.HSG.CO.9: Congruence Prove geometric theorems both formally and informally using a variety of methods. Prove and apply theorems about lines and angles.

### Unit 15: Proving and Applying Theorems

- **PERPENDICULAR BISECTOR AND ANGLE BISECTOR THEOREMS**
  - OH.Math.HSG.CO.9: Congruence Prove geometric theorems both formally and informally using a variety of methods. Prove and apply theorems about lines and angles.
- **TRIANGLE ANGLE THEOREMS**


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- OH.Math.HSG.CO.10: Congruence Prove geometric theorems both formally and informally using a variety of methods. Prove and apply theorems about triangles.

- **PARALLELOGRAMS AND RECTANGLES**
  - OH.Math.HSG.CO.11: Congruence Prove geometric theorems both formally and informally using a variety of methods. Prove and apply theorems about parallelograms.

## Unit 16: Coordinate Geometry

- **LENGTH AND THE DISTANCE FORMULA**
  - OH.Math.HSG.GPE.7: Expressing Geometric Properties with Equations Use coordinates to prove simple geometric theorems algebraically and to verify specific geometric statements. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.
- **PERIMETER ON THE COORDINATE PLANE**
  - OH.Math.HSG.GPE.7: Expressing Geometric Properties with Equations Use coordinates to prove simple geometric theorems algebraically and to verify specific geometric statements. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.
- **AREA ON THE COORDINATE PLANE**
  - OH.Math.HSG.GPE.5: Expressing Geometric Properties with Equations Use coordinates to prove simple geometric theorems algebraically and to verify specific geometric statements. Justify the slope criteria for parallel and perpendicular lines, and use them to solve geometric problems, e.g., find the equation of a line parallel or perpendicular to a given line that passes through a given point.
  - OH.Math.HSG.GPE.7: Expressing Geometric Properties with Equations Use coordinates to prove simple geometric theorems algebraically and to verify specific geometric statements. Use coordinates to compute perimeters of polygons and areas of triangles and rectangles, e.g., using the distance formula.
- **CONJECTURES IN COORDINATE GEOMETRY**
  - OH.Math.HSG.CO.9: Congruence Prove geometric theorems both formally and informally using a variety of methods. Prove and apply theorems about lines and angles.
  - OH.Math.HSG.CO.10: Congruence Prove geometric theorems both formally and informally using a variety of methods. Prove and apply theorems about triangles.

## Unit 17: Transformations and Congruence

- **DILATIONS, TRANSLATIONS, ROTATIONS, AND REFLECTIONS**
  - OH.Math.HSG.CO.5: Congruence Experiment with transformations in the plane. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using items such as graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.


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- OH.Math.HSG.CO.2: Congruence Experiment with transformations in the plane. Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not, e.g., translation versus horizontal stretch.
- OH.Math.HSG.CO.4: 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**
  - OH.Math.HSG.CO.5: Congruence Experiment with transformations in the plane. Given a geometric figure and a rotation, reflection, or translation, draw the transformed figure using items such as graph paper, tracing paper, or geometry software. Specify a sequence of transformations that will carry a given figure onto another.
  - OH.Math.HSG.CO.2: Congruence Experiment with transformations in the plane. Represent transformations in the plane using, e.g., transparencies and geometry software; describe transformations as functions that take points in the plane as inputs and give other points as outputs. Compare transformations that preserve distance and angle to those that do not, e.g., translation versus horizontal stretch.
  - OH.Math.HSG.CO.4: 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.
- **TRIANGLES AND CONGRUENCE TRANSFORMATIONS**
  - OH.Math.HSG.CO.6: 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 decide if they are congruent.
  - OH.Math.HSG.CO.7: 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.
  - OH.Math.HSG.CO.8: Congruence Understand congruence in terms of rigid motions. Explain how the criteria for triangle congruence (ASA, SAS, and SSS) follow from the definition of congruence in terms of rigid motions.
- **CONGRUENCE OF OTHER POLYGONS**
  - OH.Math.HSG.CO.3b: Congruence Experiment with transformations in the plane. Identify the symmetries of a figure, which are the rotations and reflections that carry it onto itself. Identify figures that have rotational symmetry; determine the angle of rotation, and use rotational symmetry to analyze properties of shapes.
  - OH.Math.HSG.CO.3a: Congruence Experiment with transformations in the plane. Identify the symmetries of a figure, which are the rotations and reflections that carry it onto itself. Identify figures


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that have line symmetry; draw and use lines of symmetry to analyze properties of shapes.

- OH.Math.HSG.CO.6: 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 decide if they are congruent.

### Unit 18: Circles

- **CIRCLE BASICS**
  - OH.Math.HSG.CO.1: Congruence Experiment with transformations in the plane. Know precise definitions of ray, angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and arc length.
  - OH.Math.HSG.C.2: Circles Understand and apply theorems about circles. Identify and describe relationships among angles, radii, chords, tangents, and arcs and use them to solve problems.
- **CENTRAL ANGLES, INSCRIBED ANGLES, AND CHORDS**
  - OH.Math.HSG.C.2: Circles Understand and apply theorems about circles. Identify and describe relationships among angles, radii, chords, tangents, and arcs and use them to solve problems.

### Unit 19: Constructions

- **CONSTRUCTIONS**
  - OH.Math.HSG.CO.12: Congruence Make geometric constructions. Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.).

### Unit 20: Statistics

- **DATA ANALYSIS**
  - OH.Math.HSS.ID.1: Interpreting Categorical and Quantitative Data Summarize, represent, and interpret data on a single count or measurement variable. Represent data with plots on the real number line (dot plots, histograms, and box plots) in the context of real-world applications using the GAISE model.
  - OH.Math.HSS.ID.2: Interpreting Categorical and Quantitative Data Summarize, represent, and interpret data on a single count or measurement variable. In the context of real-world applications by using the GAISE model, use statistics appropriate to the shape of the data distribution to compare center (median and mean) and spread (mean absolute deviation, interquartile range, and standard deviation) of two or more different data sets.
  - OH.Math.HSS.ID.3: Interpreting Categorical and Quantitative Data Summarize, represent, and interpret data on a single count or measurement variable. In the context of real-world applications by using the GAISE model, interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).
- **FREQUENCY TABLES**


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- OH.Math.HSS.ID.5: Interpreting Categorical and Quantitative Data Summarize, represent, and interpret data on two categorical and quantitative variables. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.

- **SCATTERPLOTS**
  - OH.Math.HSS.ID.7: 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.
  - OH.Math.HSS.ID.6c: 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 scatterplot that suggests a linear association.
- **SCATTERPLOTS AND MODELING**
  - OH.Math.HSS.ID.6c: 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 scatterplot that suggests a linear association.
  - OH.Math.HSS.ID.8: Interpreting Categorical and Quantitative Data Interpret linear models. Compute (using technology) and interpret the correlation coefficient of a linear fit.

### Unit 21: Test-Taking Strategies

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


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