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.

1. PRECISION AND ACCURACY

- **MONITORING PRECISION AND ACCURACY**
  - **OH.Math.HSN.Q.1** *Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.*
  - **OH.Math.HSN.Q.2** *Define appropriate quantities for the purpose of descriptive modeling.*
  - **OH.Math.HSN.Q.3** *Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.*

2. EXPRESSIONS, EQUATIONS, AND INEQUALITIES

- **ONE-STEP EQUATIONS AND INEQUALITIES**
  - **OH.Math.HSA.REI.3** *Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.*
  - **OH.Math.HSA.REI.1** *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** *Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.*
  - **OH.Math.HSA.REI.1** *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** *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** *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** *Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.*

- **LITERAL EQUATIONS**
  - **OH.Math.HSA.REI.3** *Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.*
  - **OH.Math.HSA.CED.4b** *Focus on formulas in which the variable of interest is linear.*

3. WRITING EQUATIONS AND INEQUALITIES

- **FORMULATING AND SOLVING EQUATIONS FROM WORD PROBLEMS**
  - **OH.Math.HSA.SSE.1a** *Interpret parts of an expression, such as terms, factors, and coefficients.*
  - **OH.Math.HSA.CED.1a** *Focus on applying linear and simple exponential expressions.*
  - **OH.Math.HSA.CED.3a** *While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.*
  - **OH.Math.HSA.REI.3** *Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.*

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  - **OH.Math.HSA.CED.1a** *Focus on applying linear and simple exponential expressions.*
  - **OH.Math.HSA.CED.3a** *While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.*
  - **OH.Math.HSA.REI.3** *Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.*

4. FUNCTIONS

- **FUNCTIONS AND RELATIONS**
  - **OH.Math.HSF.IF.2** *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** *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 $y = f(x)$.*

- **DOMAIN AND RANGE**
  - **OH.Math.HSF.IF.1** *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 $y = f(x)$.*
  - **OH.Math.HSF.IF.5a** *Focus on linear and exponential functions.*

- **EVALUATING FUNCTIONS**
  - **OH.Math.HSF.IF.2** *Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.*

5. GRAPHING LINEAR EQUATIONS

- **GRAPHING AND ANALYZING LINEAR FUNCTIONS**
  - **OH.Math.HSA.REI.10** *Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).*
  - **OH.Math.HSF.LE.5** *Interpret the parameters in a linear or exponential function in terms of a context.*
  - **OH.Math.HSF.IF.7a** *Graph linear functions and indicate intercepts.*

- **OH.Math.HSF.LE.2** *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** *Graph linear functions and indicate intercepts.*

6. LINEAR EQUATIONS

- **SLOPE-INTERCEPT FORM OF A LINEAR EQUATION**
  - **OH.Math.HSF.IF.7a** *Graph linear functions and indicate intercepts.*
  - **OH.Math.HSA.SSE.1a** *Interpret parts of an expression, such as terms, factors, and coefficients.*
  - **OH.Math.HSF.LE.5** *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** *Focus on applying linear and simple exponential expressions.*
  - **OH.Math.HSF.LE.2** *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).*

7. LINEAR SYSTEMS

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: GUESS AND CHECK**
  - **OH.Math.HSA.CED.3a** *While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.*
  - **OH.Math.HSA.REI.6a** *Limit to pairs of linear equations in two variables.*

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: GRAPHING**
  - **OH.Math.HSA.CED.3a** *While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.*
  - **OH.Math.HSA.REI.11** *Explain why the x-coordinates of the points where the graphs of the equation $y = f(x)$ and $y = (x)$ intersect are the solutions of the equation $f(x) = g(x)$; 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** *Limit to pairs of linear equations in two variables.*

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: SUBSTITUTION**
  - **OH.Math.HSA.CED.3a** *While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.*
  - **OH.Math.HSA.CED.4b** *Focus on formulas in which the variable of interest is linear.*
  - **OH.Math.HSA.REI.6a** *Limit to pairs of linear equations in two variables.*

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: ELIMINATION**
  - **OH.Math.HSA.CED.3a** *While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.*
  - **OH.Math.HSA.REI.6a** *Limit to pairs of linear equations in two variables.*
  - **OH.Math.HSA.REI.5** *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.*

8. SOLVING AND GRAPHING LINEAR INEQUALITIES

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

9. LINEAR AND NONLINEAR PARENT FUNCTIONS

- **LINEAR VERSUS NONLINEAR**
  - **OH.Math.HSF.LE.1a** *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** *Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.*
  - **OH.Math.HSF.BF.1a.i** *Focus on linear and exponential functions.*
  - **OH.Math.HSA.REI.10** *Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).*
  - **OH.Math.HSF.IF.4a** *Focus on linear and exponential functions.*

- **LINEAR AND EXPONENTIAL PARENT FUNCTIONS**
  - **OH.Math.HSA.REI.10** *Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).*
  - **OH.Math.HSF.IF.4a** *Focus on linear and exponential functions.*
  - **OH.Math.HSF.IF.5a** *Focus on linear and exponential functions.*

10. EXPONENTIAL FUNCTIONS

- **EXPONENTIAL FUNCTIONS**
  - **OH.Math.HSA.SSE.1a** *Interpret parts of an expression, such as terms, factors, and coefficients.*
  - **OH.Math.HSA.SSE.1b** *Interpret complicated expressions by viewing one or more of their parts as a single entity.*
  - **OH.Math.HSF.LE.5** *Interpret the parameters in a linear or exponential function in terms of a context.*
  - **OH.Math.HSF.IF.7e** *Graph simple exponential functions, indicating intercepts and end behavior.*
  - **OH.Math.HSF.IF.4a** *Focus on linear and exponential functions.*
  - **OH.Math.HSF.LE.1c** *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** *Focus on linear and exponential functions.*

- **EXPONENTIAL GROWTH AND DECAY**
  - **OH.Math.HSA.SSE.1a** *Interpret parts of an expression, such as terms, factors, and coefficients.*
  - **OH.Math.HSA.SSE.1b** *Interpret complicated expressions by viewing one or more of their parts as a single entity.*
  - **OH.Math.HSF.LE.1c** *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** *Focus on linear and exponential functions.*
  - **OH.Math.HSF.LE.1a** *Show that linear functions grow by equal differences over equal intervals and that exponential functions grow by equal factors over equal intervals.*

11. EXPONENTIAL FUNCTIONS AND INEQUALITIES

- **TRANSFORMATIONS OF THE LINEAR AND EXPONENTIAL PARENT FUNCTIONS**
  - **OH.Math.HSA.SSE.3c** *Use the properties of exponents to transform expressions for exponential functions.*

- **SOLVING EXPONENTIAL INEQUALITIES**
  - **OH.Math.HSA.CED.3a** *While functions will often be linear, exponential, or quadratic, the types of problems should draw from more complicated situations.*

12. WORKING WITH FUNCTIONS

- **MULTIPLE REPRESENTATIONS OF FUNCTIONS**
  - **OH.Math.HSF.IF.9a** *Focus on linear and exponential functions.*

- **INVERSE FUNCTIONS**
  - **OH.Math.HSF.BF.4a** *Informally determine the input of a function when the output is known.*

13. SEQUENCES

- **SEQUENCES**
  - **OH.Math.HSF.BF.1a.i** *Focus on linear and exponential functions.*
  - **OH.Math.HSF.IF.3** *Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.*
  - **OH.Math.HSF.LE.2** *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).*

- **ARITHMETIC AND GEOMETRIC SEQUENCES**
  - **OH.Math.HSF.BF.2** *Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.*
  - **OH.Math.HSF.BF.1a.i** *Focus on linear and exponential functions.*
  - **OH.Math.HSF.IF.3** *Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.*
  - **OH.Math.HSF.LE.2** *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).*

14. POINTS, LINES, AND ANGLES

- **POINTS, RAYS, LINE SEGMENTS, LINES, AND FIGURES**
  - **OH.Math.HSG.CO.1** *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** *Classify two-dimensional figures in a hierarchy based on properties.*

- **PARALLEL AND PERPENDICULAR LINES**
  - **OH.Math.HSG.CO.1** *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** *Prove and apply theorems about lines and angles.*

15. PROVING AND APPLYING THEOREMS

- **PERPENDICULAR BISECTOR AND ANGLE BISECTOR THEOREMS**
  - **OH.Math.HSG.CO.9** *Prove and apply theorems about lines and angles.*

- **TRIANGLE ANGLE THEOREMS**
  - **OH.Math.HSG.CO.10** *Prove and apply theorems about triangles.*

- **PARALLELOGRAMS AND RECTANGLES**
  - **OH.Math.HSG.CO.11** *Prove and apply theorems about parallelograms.*

16. COORDINATE GEOMETRY

- **LENGTH AND THE DISTANCE FORMULA**
  - **OH.Math.HSG.GPE.7** *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** *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** *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** *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** *Prove and apply theorems about lines and angles.*
  - **OH.Math.HSG.CO.10** *Prove and apply theorems about triangles.*

17. TRANSFORMATIONS AND CONGRUENCE

- **DILATIONS, TRANSLATIONS, ROTATIONS, AND REFLECTIONS**
  - **OH.Math.HSG.CO.5** *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** *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** *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** *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** *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** *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** *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** *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** *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** *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** *Identify figures that have line symmetry; draw and use lines of symmetry to analyze properties of shapes.*
- **OH.Math.HSG.CO.6** *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.*

18. CIRCLES

- **CIRCLE BASICS**
  - **OH.Math.HSG.CO.1** *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** *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** *Identify and describe relationships among angles, radii, chords, tangents, and arcs and use them to solve problems.*

19. CONSTRUCTIONS

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

20. STATISTICS

- **DATA ANALYSIS**
  - **OH.Math.HSS.ID.1** *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** *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** *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**
  - **OH.Math.HSS.ID.5** *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** *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** *Fit a linear function for a scatterplot that suggests a linear association.*

- **SCATTERPLOTS AND MODELING**
  - **OH.Math.HSS.ID.6c** *Fit a linear function for a scatterplot that suggests a linear association.*
  - **OH.Math.HSS.ID.8** *Compute (using technology) and interpret the correlation coefficient of a linear fit.*

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