SOL EOC Tutorials for Virginia are designed specifically for the Virginia Standards of Learning to prepare students for the Standards of Learning tests (SOL). EOC Categories are at the heart of SOL EOC Tutorial structure – bringing category-based learning to the student experience, and category-based performance and progress tracking to the teacher experience.

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

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

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

Unit 1: Fractions

- **EQUIVALENT FRACTIONS**
  - 6.NS.1.c: Represent and determine equivalencies among fractions (proper or improper) and mixed numbers that have denominators that are 12 or less or factors of 100 and percents incorporating the use of number lines, and concrete and pictorial models.
- **MIXED NUMBERS AND IMPROPER FRACTIONS**
  - 6.NS.1.c: Represent and determine equivalencies among fractions (proper or improper) and mixed numbers that have denominators that are 12 or less or factors of 100 and percents incorporating the use of number lines, and concrete and pictorial models.
- **FRACTIONS, DECIMALS, AND PERCENTS**

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- 6.NS.1.a: Estimate and determine the percent represented by a given model (e.g., number line, picture, verbal description), including percents greater than 100 and less than 1.

Unit 2: Operations with Fractions

- **MULTIPLYING FRACTIONS**
  - 6.CE.1.a: Demonstrate/model multiplication and division of fractions (proper or improper) and mixed numbers using multiple representations.
- **DIVIDING FRACTIONS**
  - 6.CE.1.a: Demonstrate/model multiplication and division of fractions (proper or improper) and mixed numbers using multiple representations.
  - 6.CE.1.b: Multiply and divide fractions (proper or improper) and mixed numbers that include denominators of 12 or less. Answers are expressed in simplest form.
- **SOLVING PROBLEMS BY DIVIDING FRACTIONS**
  - 6.CE.1.e: Estimate, determine, and justify the solution to single-step and multistep problems in context that involve multiplication and division with fractions (proper or improper) and mixed numbers that include denominators of 12 or less. Answers are expressed in simplest form.

Unit 3: Ratios

- **RATIOS**
  - 6.PFA.1.a: Represent a relationship between two quantities using ratios.
  - 6.PFA.1.b: Represent a relationship in context that makes a comparison by using the notations a/b, a:b, and a to b.
  - 6.PFA.1.c: Represent different comparisons within the same quantity or between different quantities (e.g., part to part, part to whole, whole to whole).
  - 6.PFA.1.d: Create a relationship in words for a given ratio expressed symbolically.
  - 6.PFA.1.e: Create a table of equivalent ratios to represent a proportional relationship between two quantities, when given a ratio.
  - 6.PFA.1.f: Create a table of equivalent ratios to represent a proportional relationship between two quantities, when given a contextual situation.

Unit 4: Ratios and Percents

- **SOLVING PERCENT PROBLEMS**
  - 6.NS.1.c: Represent and determine equivalencies among fractions (proper or improper) and mixed numbers that have denominators that are 12 or less or factors of 100 and percents incorporating the use of number lines, and concrete and pictorial models.
  - 6.NS.1.a: Estimate and determine the percent represented by a given model (e.g., number line, picture, verbal description), including percents greater than 100 and less than 1.
  - 6.NS.1.b: Represent and determine equivalencies among decimals (through the thousandths place) and percents incorporating the use of number lines, and concrete and pictorial models.

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- 6.NS.1.d: Represent and determine equivalencies among decimals, percents, fractions (proper or improper), and mixed numbers that have denominators that are 12 or less or factors of 100 incorporating the use of number lines, and concrete and pictorial models.

Unit 5: Proportional Relationships

- **IDENTIFYING PROPORTIONAL RELATIONSHIPS**
  - 6.PFA.2.a: Identify the unit rate of a proportional relationship represented by a table of values, a contextual situation, or a graph.
  - 6.PFA.2.c: Determine whether a proportional relationship exists between two quantities, when given a table of values, context, or graph.
- **ANALYZING PROPORTIONAL RELATIONSHIPS**
  - 6.PFA.2.a: Identify the unit rate of a proportional relationship represented by a table of values, a contextual situation, or a graph.

Unit 6: Solving Problems with Proportions

- **REPRESENTING PROPORTIONAL RELATIONSHIPS**
  - 6.PFA.2.c: Determine whether a proportional relationship exists between two quantities, when given a table of values, context, or graph.
  - 6.PFA.2.b: Determine a missing value in a ratio table that represents a proportional relationship between two quantities using a unit rate.
  - 6.PFA.2.d: When given a contextual situation representing a proportional relationship, find the unit rate and create a table of values or a graph.
  - 6.PFA.2.e: Make connections between and among multiple representations of the same proportional relationship using verbal descriptions, ratio tables, and graphs.
- **USING PROPORTIONS TO SOLVE PROBLEMS**
  - 6.PFA.1.c: Represent different comparisons within the same quantity or between different quantities (e.g., part to part, part to whole, whole to whole).

Unit 7: Adding and Subtracting Rational Numbers

- **ADDING RATIONAL NUMBERS**
  - 6.CE.2.a: Demonstrate/model addition, subtraction, multiplication, and division of integers using pictorial representations or concrete manipulatives.
  - 6.CE.2.b: Add, subtract, multiply, and divide two integers.
  - 6.CE.2.d: Estimate, determine, and justify the solution to one and two-step contextual problems, involving addition, subtraction, multiplication, and division with integers.
  - 6.NS.2.d: Identify and describe the absolute value of an integer as the distance from zero on the number line.
- **SUBTRACTING RATIONAL NUMBERS**

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- 6.CE.2.b: Add, subtract, multiply, and divide two integers.
- 6.CE.2.d: Estimate, determine, and justify the solution to one and two-step contextual problems, involving addition, subtraction, multiplication, and division with integers.
- 6.NS.2.d: Identify and describe the absolute value of an integer as the distance from zero on the number line.
- 6.CE.2.c: Simplify an expression that contains absolute value bars and an operation with two integers (e.g., 5 8 or 12/8) and represent the result on a number line.

Unit 8: Using Properties with Rational Numbers 1

- **USING PROPERTIES TO ADD AND SUBTRACT RATIONAL NUMBERS**
  - 6.PFA.3.c: Apply properties of real numbers and properties of equality to solve a one-step equation in one variable. Coefficients are limited to integers and unit fractions. Numeric terms are limited to integers.

Unit 9: Using Properties with Rational Numbers 2

- **USING PROPERTIES TO MULTIPLY AND DIVIDE RATIONAL NUMBERS**
  - 6.CE.1.a: Demonstrate/model multiplication and division of fractions (proper or improper) and mixed numbers using multiple representations.

Unit 10: Signed Numbers

- **SIGNED NUMBERS**
  - 6.NS.2.d: Identify and describe the absolute value of an integer as the distance from zero on the number line.
  - 6.NS.2.a: Represent integers (e.g., number lines, concrete materials, pictorial models), including models derived from contextual situations, and identify an integer represented by a point on a number line.
  - 6.NS.2.c: Compare integers, using mathematical symbols (, , =).
- **INEQUALITIES AND COMPARISON**
  - 6.NS.2.b: Compare and order integers using a number line.
  - 6.NS.2.c: Compare integers, using mathematical symbols (, , =).
- **ABSOLUTE VALUE**
  - 6.NS.2.d: Identify and describe the absolute value of an integer as the distance from zero on the number line.
  - 6.NS.2.a: Represent integers (e.g., number lines, concrete materials, pictorial models), including models derived from contextual situations, and identify an integer represented by a point on a number line.
  - 6.NS.2.b: Compare and order integers using a number line.

Unit 11: The Coordinate Plane

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- **PLOTTING POINTS IN THE COORDINATE PLANE**
  - 6.MG.3.a: Identify and label the axes, origin, and quadrants of a coordinate plane.
  - 6.MG.3.c: Graph ordered pairs in the four quadrants and on the axes of a coordinate plane. Ordered pairs will be limited to coordinates expressed as integers.
- **QUADRANTS AND AXES**
  - 6.MG.3.b: Identify and describe the location (quadrant or the axis) of a point given as an ordered pair. Ordered pairs will be limited to coordinates expressed as integers.
  - 6.MG.3.d: Identify ordered pairs represented by points in the four quadrants and on the axes of the coordinate plane. Ordered pairs will be limited to coordinates expressed as integers.
  - 6.MG.3.e: Relate the coordinates of a point to the distance from each axis and relate the coordinates of a single point to another point on the same horizontal or vertical line. Ordered pairs will be limited to coordinates expressed as integers.

Unit 12: Exponents

- **EXPONENTS**
  - 6.NS.3.a: Recognize and represent patterns with bases and exponents that are whole numbers.
- **POWERS OF 10**
  - 6.NS.3.d: Recognize and represent powers of 10 with whole number exponents by examining patterns in place value.

Unit 13: Numerical and Algebraic Expressions 1

- **UNDERSTANDING PARTS OF EXPRESSIONS**
  - 6.PFA.3.a: Identify and develop examples of the following algebraic vocabulary: equation, variable, expression, term, and coefficient.
- **WRITING EXPRESSIONS**
  - 6.PFA.3.b: Represent and solve one-step linear equations in one variable, using a variety of concrete manipulatives and pictorial representations (e.g., colored chips, algebra tiles, weights on a balance scale).

Unit 14: Numerical and Algebraic Expressions 2

- **SIMPLIFYING AND REWRITING ALGEBRAIC EXPRESSIONS**
  - 6.PFA.3.a: Identify and develop examples of the following algebraic vocabulary: equation, variable, expression, term, and coefficient.
- **EQUIVALENT EXPRESSIONS**
  - 6.PFA.3.c: Apply properties of real numbers and properties of equality to solve a one-step equation in one variable. Coefficients are limited to integers and unit fractions. Numeric terms are limited to integers.
- **EVALUATING EXPRESSIONS**

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- 6.PFA.3.a: Identify and develop examples of the following algebraic vocabulary: equation, variable, expression, term, and coefficient.

Unit 15: Solving Equations

- **SOLVING ADDITION AND SUBTRACTION EQUATIONS**
  - 6.PFA.3.c: Apply properties of real numbers and properties of equality to solve a one-step equation in one variable. Coefficients are limited to integers and unit fractions. Numeric terms are limited to integers.
  - 6.PFA.3.b: Represent and solve one-step linear equations in one variable, using a variety of concrete manipulatives and pictorial representations (e.g., colored chips, algebra tiles, weights on a balance scale).
  - 6.PFA.3.d: Confirm solutions to one-step linear equations in one variable using a variety of concrete manipulatives and pictorial representations (e.g., colored chips, algebra tiles, weights on a balance scale).
  - 6.PFA.3.e: Write a one-step linear equation in one variable to represent a verbal situation, including those in context.
  - 6.PFA.3.f: Create a verbal situation in context given a one-step linear equation in one variable.
- **SOLVING MULTIPLICATION AND DIVISION EQUATIONS**
  - 6.PFA.3.d: Confirm solutions to one-step linear equations in one variable using a variety of concrete manipulatives and pictorial representations (e.g., colored chips, algebra tiles, weights on a balance scale).
  - 6.PFA.3.e: Write a one-step linear equation in one variable to represent a verbal situation, including those in context.

Unit 16: Solving Inequalities

- **SOLVING INEQUALITIES**
  - 6.PFA.4.d: Use substitution or a number line graph to justify whether a given number in a specified set makes a linear inequality in one variable true.
  - 6.PFA.4.e: Identify a numerical value(s) that is part of the solution set of a given inequality in one variable.
  - 6.PFA.4.a: Given the graph of a linear inequality in one variable on a number line, represent the inequality in two equivalent ways (e.g., x 5 or 5 x) using symbols. Symbols include , , less than or equal to, greater than or equal to.
  - 6.PFA.4.b: Write a linear inequality in one variable to represent a given constraint or condition in context or given a graph on a number line.
  - 6.PFA.4.c: Given a linear inequality in one variable, create a corresponding contextual situation or create a number line graph.
- **SOLUTIONS OF EQUATIONS AND INEQUALITIES**

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- 6.PFA.3.d: Confirm solutions to one-step linear equations in one variable using a variety of concrete manipulatives and pictorial representations (e.g., colored chips, algebra tiles, weights on a balance scale).
- 6.PFA.4.d: Use substitution or a number line graph to justify whether a given number in a specified set makes a linear inequality in one variable true.
- 6.PFA.4.e: Identify a numerical value(s) that is part of the solution set of a given inequality in one variable.

Unit 17: Geometry

- **CIRCLES**
  - 6.MG.1.a: Identify and describe chord, diameter, radius, circumference, and area of a circle.
  - 6.MG.1.b: Investigate and describe the relationship between:
  - 6.MG.1.c: Develop an approximation for pi (3.14) by gathering data and comparing the circumference to the diameter of various circles, using concrete manipulatives or technological models.
  - 6.MG.1.d: Develop the formula for circumference using the relationship between diameter, radius, and pi.
  - 6.MG.1.e: Solve problems, including those in context, involving circumference and area of a circle when given the length of the diameter or radius.
- **AREA**
  - 6.MG.2.a: Develop the formula for determining the area of parallelograms and triangles using pictorial representations and concrete manipulatives (e.g., two-dimensional diagrams, grid paper).
  - 6.MG.2.b: Solve problems, including those in context, involving the perimeter and area of triangles and parallelograms.

Unit 18: Transformations

- **BASICS OF TRANSFORMATIONS**
  - 6.MG.4.c: Determine the congruence of segments, angles, and polygons given their properties.
- **TRANSFORMATIONS AND CONGRUENCE**
  - 6.MG.4.c: Determine the congruence of segments, angles, and polygons given their properties.
  - 6.MG.4.d: Determine whether polygons are congruent or noncongruent according to the measures of their sides and angles.

Unit 19: Measures of Center

- **COLLECTING DATA**
  - 6.PS.1.a: Formulate questions that require the collection or acquisition of data with a focus on circle graphs.
  - 6.PS.1.b: Determine the data needed to answer a formulated question and collect the data (or acquire existing data) using various methods (e.g., observations, measurement, surveys, experiments).

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- 6.PS.1.c: Determine the factors that will ensure that the data collected is a sample that is representative of a larger population.

- **DOT PLOTS AND HISTOGRAMS**
  - 6.PS.2.a: Represent the mean of a set of data graphically as the balance point represented in a line plot (dot plot).

Unit 20: Summarizing Data Sets

- **MEASURES OF CENTER AND VARIABILITY**
  - 6.PS.2.b: Determine the effect on measures of center when a single value of a data set is added, removed, or changed.
- **SUMMARIZING DATA USING MEASURES OF CENTER AND VARIABILITY**
  - 6.PS.2.c: Observe patterns in data to identify outliers and determine their effect on mean, median, mode, or range.
- **CHOOSING APPROPRIATE MEASURES TO SUMMARIZE DATA SETS**
  - 6.PS.2.c: Observe patterns in data to identify outliers and determine their effect on mean, median, mode, or range.

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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