

South Carolina Tutorials are designed specifically for the South Carolina College and Career Readiness Standards and the South Carolina Academic Standards to prepare students for the South Carolina End-of-Course Examination Program (EOCEP), ACT Aspire, and the South Carolina Palmetto Assessment of State Standards (SCPASS).

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.

1. RATE, RATIO, AND PROPORTION

• UNIT RATES

- **7.RP.1** Compute unit rates, including those involving complex fractions, with like or different units.

• IDENTIFYING PROPORTIONAL RELATIONSHIPS

- **7.RP.2.a** Determine when two quantities are in a proportional relationship.
- **7.RP.3** Solve real-world and mathematical problems involving ratios and percentages using proportional reasoning (e.g., multi-step dimensional analysis, percent increase/decrease, tax).

• ANALYZING PROPORTIONAL RELATIONSHIPS

- **7.RP.2.b** Recognize or compute the constant of proportionality.
- **7.RP.2.c** Understand that the constant of proportionality is the unit rate.
- **7.RP.2.e** Investigate the graph of a proportional relationship and explain the meaning of specific points (e.g., origin, unit rate) in the context of the situation.
- **7.RP.1** Compute unit rates, including those involving complex fractions, with like or different units.

• REPRESENTING PROPORTIONAL RELATIONSHIPS

- **7.RP.2.a** Determine when two quantities are in a proportional relationship.
- **7.RP.2.e** Investigate the graph of a proportional relationship and explain the meaning of specific points (e.g., origin, unit rate) in the context of the situation.
- **7.RP.3** Solve real-world and mathematical problems involving ratios and percentages using proportional reasoning (e.g., multi-step dimensional analysis, percent increase/decrease, tax).
- **7.RP.2.d** Use equations to model proportional relationships.

• USING PROPORTIONS TO SOLVE PROBLEMS

- **7.RP.3** Solve real-world and mathematical problems involving ratios and percentages using proportional reasoning (e.g.,

multi-step dimensional analysis, percent increase/decrease, tax).

- **7.RP.2.a** Determine when two quantities are in a proportional relationship.

2. ADDITION AND SUBTRACTION OF RATIONAL NUMBERS

• ADDING RATIONAL NUMBERS

- **7.NS.1.a** Understand that the additive inverse of a number is its opposite and their sum is equal to zero.
- **7.NS.1.b** Understand that the sum of two rational numbers ($p + q$) represents a distance from p on the number line equal to $|q|$ where the direction is indicated by the sign of q .
- **7.NS.3** Apply the concepts of all four operations with rational numbers to solve real-world and mathematical problems.
- **7.NS.1.e** Apply mathematical properties (e.g., commutative, associative, distributive, or the properties of identity and inverse elements) to add and subtract rational numbers.

• SUBTRACTING RATIONAL NUMBERS

- **7.NS.1.a** Understand that the additive inverse of a number is its opposite and their sum is equal to zero.
- **7.NS.1.c** Translate between the subtraction of rational numbers and addition using the additive inverse, $p - q = p + (-q)$.
- **7.NS.1.e** Apply mathematical properties (e.g., commutative, associative, distributive, or the properties of identity and inverse elements) to add and subtract rational numbers.
- **7.NS.1.d** Demonstrate that the distance between two rational numbers on the number line is the absolute value of their difference.
- **7.NS.3** Apply the concepts of all four operations with rational numbers to solve real-world and mathematical problems.

• USING PROPERTIES TO ADD AND SUBTRACT RATIONAL NUMBERS

- **7.NS.1.e** Apply mathematical properties (e.g., commutative, associative, distributive, or the properties of identity and inverse elements) to add and subtract rational numbers.
- **7.NS.3** Apply the concepts of all four operations with rational numbers to solve real-world and mathematical problems.
- **7.NS.1.c** Translate between the subtraction of rational numbers and addition using the additive inverse, $p - q = p + (-q)$.

3. MULTIPLICATION AND DIVISION OF RATIONAL NUMBERS

• MULTIPLYING RATIONAL NUMBERS

- **7.NS.2.b** Understand sign rules for multiplying rational numbers.
- **7.NS.3** Apply the concepts of all four operations with rational numbers to solve real-world and mathematical problems.

• DIVIDING RATIONAL NUMBERS

- **7.NS.2.c** Understand sign rules for dividing rational numbers and that a quotient of integers (with a non-zero divisor) is a rational number.
- **7.NS.3** Apply the concepts of all four operations with rational numbers to solve real-world and mathematical problems.
- **7.NS.2.d** Apply mathematical properties (e.g., commutative, associative, distributive, or the properties of identity and inverse elements) to multiply and divide rational numbers.

• USING PROPERTIES TO MULTIPLY AND DIVIDE RATIONAL NUMBERS

- **7.NS.2.b** Understand sign rules for multiplying rational numbers.
- **7.NS.2.c** Understand sign rules for dividing rational numbers and that a quotient of integers (with a non-zero divisor) is a rational number.
- **7.NS.2.d** Apply mathematical properties (e.g., commutative, associative, distributive, or the properties of identity and inverse elements) to multiply and divide rational numbers.
- **7.NS.3** Apply the concepts of all four operations with rational numbers to solve real-world and mathematical problems.
- **7.NS.2.a** Understand that the multiplicative inverse of a number is its reciprocal and their product is equal to one.

4. WORKING WITH RATIONAL NUMBERS

• EXPRESSING RATIONAL NUMBERS IN DECIMAL FORM

- **7.NS.2.e** Understand that some rational numbers can be written as integers and all rational numbers can be written as fractions or decimal numbers that terminate or repeat.
- **7.NS.5** Extend prior knowledge to translate among multiple representations of rational numbers (fractions, decimal numbers, percentages). Exclude the conversion of repeating decimal numbers to fractions.

• USING OPERATIONS ON RATIONAL NUMBERS TO SOLVE PROBLEMS

- **7.NS.2.b** Understand sign rules for multiplying rational numbers.
- **7.NS.2.c** Understand sign rules for dividing rational numbers and that a quotient of integers (with a non-zero divisor) is a rational number.
- **7.NS.3** Apply the concepts of all four operations with rational numbers to solve real-world and mathematical problems.

5. ALGEBRAIC EXPRESSIONS, EQUATIONS, AND INEQUALITIES

• SIMPLIFYING AND REWRITING ALGEBRAIC EXPRESSIONS

- **7.EE.1** Apply mathematical properties (e.g., commutative, associative, distributive) to simplify and to factor linear algebraic expressions with rational coefficients.
- **7.EE.2** Recognize that algebraic expressions may have a variety of equivalent forms and determine an appropriate form for a given real-world situation.

• SOLVING MULTI-STEP PROBLEMS WITH RATIONAL NUMBERS

- **7.NS.1.e** Apply mathematical properties (e.g., commutative, associative, distributive, or the properties of identity and inverse elements) to add and subtract rational numbers.
- **7.NS.2.d** Apply mathematical properties (e.g., commutative, associative, distributive, or the properties of identity and inverse elements) to multiply and divide rational numbers.
- **7.NS.2.e** Understand that some rational numbers can be written as integers and all rational numbers can be written as fractions or decimal numbers that terminate or repeat.
- **7.NS.3** Apply the concepts of all four operations with rational numbers to solve real-world and mathematical problems.
- **7.NS.5** Extend prior knowledge to translate among multiple representations of rational numbers (fractions, decimal numbers, percentages). Exclude the conversion of repeating decimal numbers to fractions.
- **7.EE.3** Extend previous understanding of Order of Operations to solve multi-step real-world and mathematical problems involving rational numbers. Include fraction bars as a grouping symbol.
- **7.NS.2.b** Understand sign rules for multiplying rational numbers.
- **7.NS.2.c** Understand sign rules for dividing rational numbers and that a quotient of integers (with a non-zero divisor) is a rational number.

• SOLVING TWO-STEP EQUATIONS

- **7.EE.4.a** Write and fluently solve linear equations of the form $ax + b = c$ and $a(x + b) = c$ where a , b , and c are rational numbers.
- **7.EE.4.b** Write and solve multi-step linear equations that include the use of the distributive property and combining like terms. Exclude equations that contain variables on both sides.
- **7.NS.4.b** Use concepts of equality and inequality to write and explain real-world and mathematical situations.
- **7.EE.4.d** Identify and justify the steps for solving multi-step linear equations and two-step linear inequalities.

• SOLVING LINEAR INEQUALITIES

- **7.NS.4.b** Use concepts of equality and inequality to write and explain real-world and mathematical situations.
- **7.EE.4.c** Write and solve two-step linear inequalities. Graph the solution set on a number line and interpret its meaning.

- **7.EE.4.d** Identify and justify the steps for solving multi-step linear equations and two-step linear inequalities.

6. DRAWING, CONSTRUCTING, AND EXPLORING GEOMETRIC FIGURES

• SCALE DRAWINGS

- **7.GM.1** Determine the scale factor and translate between scale models and actual measurements (e.g., lengths, area) of real-world objects and geometric figures using proportional reasoning.

• GEOMETRIC DRAWINGS

- **7.GM.2.c** Construct special quadrilaterals (i.e., kite, trapezoid, isosceles trapezoid, rhombus, parallelogram, rectangle) given specific parameters about angles or sides.
- **7.GM.2.a** Construct triangles given all measurements of either angles or sides.
- **7.GM.2.b** Decide if the measurements determine a unique triangle, more than one triangle, or no triangle.

• CROSS-SECTIONS OF GEOMETRIC SOLIDS

- **7.GM.3** Describe two-dimensional cross-sections of three-dimensional figures, specifically right rectangular prisms and right rectangular pyramids.

7. GEOMETRY IN TWO AND THREE DIMENSIONS

• CIRCLES

- **7.GM.4.d** Use the formulas for circumference and area of circles appropriately to solve real-world and mathematical problems.
- **7.GM.6.d** Use the formulas for area, volume, and surface area appropriately.
- **7.GM.4.a** Demonstrate an understanding of the proportional relationships between diameter, radius, and circumference of a circle.
- **7.GM.4.b** Understand that the constant of proportionality between the circumference and diameter is equivalent to π .
- **7.GM.4.c** Explore the relationship between circumference and area using a visual model.

• ANGLE RELATIONSHIPS

- **7.GM.5** Write equations to solve problems involving the relationships between angles formed by two intersecting lines, including supplementary, complementary, vertical, and adjacent.

• AREA, VOLUME, AND SURFACE AREA

- **7.GM.6.a** Understand that the concept of area is applied to two-dimensional figures such as triangles, quadrilaterals, and polygons.
- **7.GM.6.b** Understand that the concepts of volume and surface area are applied to three-dimensional figures such as cubes, right rectangular prisms, and right triangular prisms.
- **7.GM.6.c** Decompose cubes, right rectangular prisms, and right triangular prisms into rectangles and triangles to derive the formulas for volume and surface area.

8. STATISTICS AND SAMPLING

• POPULATIONS AND SAMPLES

- **7.DSP.1.a** Understand that a sample is a subset of a population and both possess the same characteristics.
- **7.DSP.2** Draw inferences about a population by collecting multiple random samples of the same size to investigate variability in estimates of the characteristic of interest.
- **7.DSP.1.b** Differentiate between random and non-random sampling.
- **7.DSP.1.c** Understand that generalizations from a sample are valid only if the sample is representative of the population.

- **7.DSP.1.d** Understand that random sampling is used to gather a representative sample and supports valid inferences about the population.
- **7.DSP.4** Compare the numerical measures of center (mean, median, mode) and variability (range, interquartile range, mean absolute deviation) from two random samples to draw inferences about the populations.

- **COMPARING DATA SETS VISUALLY**

- **7.DSP.3** Visually compare the centers, spreads, and overlap of two displays of data (i.e., dot plots, histograms, box plots) that are graphed on the same scale and draw inferences about this data.
- **7.DSP.4** Compare the numerical measures of center (mean, median, mode) and variability (range, interquartile range, mean absolute deviation) from two random samples to draw inferences about the populations.

- **USING STATISTICAL MEASURES TO COMPARE DATA SETS**

- **7.DSP.3** Visually compare the centers, spreads, and overlap of two displays of data (i.e., dot plots, histograms, box plots) that are graphed on the same scale and draw inferences about this data.
- **7.DSP.4** Compare the numerical measures of center (mean, median, mode) and variability (range, interquartile range, mean absolute deviation) from two random samples to draw inferences about the populations.
- **7.DSP.2** Draw inferences about a population by collecting multiple random samples of the same size to investigate variability in estimates of the characteristic of interest.

9. PROBABILITY

- **PROBABILITY**

- **7.DSP.5.b** Understand that probability measures likelihood of a chance event occurring.
- **7.DSP.5.c** Understand that the probability of a chance event is a number between 0 and 1.
- **7.DSP.5.d** Understand that a probability closer to 1 indicates a likely chance event.
- **7.DSP.5.e** Understand that a probability close to $\frac{1}{2}$ indicates that a chance event is neither likely nor unlikely.
- **7.DSP.5.f** Understand that a probability closer to 0 indicates an unlikely chance event.
- **7.DSP.5.a** Determine probabilities of simple events.
- **7.DSP.6.a** Determine approximate outcomes using theoretical probability.
- **7.DSP.1.a** Understand that a sample is a subset of a population and both possess the same characteristics.
- **7.DSP.1.b** Differentiate between random and non-random sampling.
- **7.DSP.1.d** Understand that random sampling is used to gather a representative sample and supports valid inferences about the population.
- **7.DSP.2** Draw inferences about a population by collecting multiple random samples of the same size to investigate variability in estimates of the characteristic of interest.

- **CALCULATING PROBABILITY**

- **7.DSP.5.a** Determine probabilities of simple events.
- **7.DSP.7.a** Differentiate between uniform and non-uniform probability models (distributions).
- **7.DSP.7.b** Develop both uniform and non-uniform probability models.
- **7.DSP.7.c** Perform experiments to test the validity of probability models.

- **PROBABILITY OF COMPOUND EVENTS**

- **7.DSP.8.a** Understand that the probability of a compound event is between 0 and 1.
- **7.DSP.8.b** Identify the outcomes in a sample space using organized lists, tables, and tree diagrams.
- **7.DSP.8.c** Determine probabilities of compound events using organized lists, tables, and tree diagrams.

- **SIMULATIONS**

- **7.DSP.8.d** *Design and use simulations to collect data and determine probabilities.*
- **7.DSP.8.e** *Compare theoretical and experimental probabilities for compound events.*