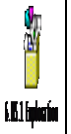
Georgetown County School District

2018-2019 6th Grade Mathematics Pacing Guide

Description and Purpose of the Pacing Guide: A pacing guide is an interval centered description of what teachers teach in various grade levels or courses; the order in which it should be taught, and the allotted time designated to teach the content area. Its purpose is to guarantee that all of the standards are addressed during the academic year. Pacing is flexible based on student need. Bold lines indicate approximate breaks for each quarter. (6th Grade GT standards are marked in red. Pacing will need to be adjusted to accommodate additional 7th grade level standards)

South Carolina College- and Career-Ready Mathematical Process Standards	**1. Make sense of problems and persevere in solving them.** a. Relate a problem to prior knowledge. b. Recognize there may be multiple entry points to a problem and more than one path to a solution. c. Analyze what is given, what is not given, what is being asked, and what strategies are needed, and make an initial attempt to solve a problem. d. Evaluate the success of an approach to solve a problem and refine it if necessary.	**2. Reason both contextually and abstractly.** a. Make sense of quantities and their relationships in mathematical and real-world situations. b. Describe a given situation using multiple mathematical representations. c. Translate among multiple mathematical representations and compare the meanings each representation conveys about the situation. d. Connect the meaning of mathematical operations to the context of a given situation.	**3. Use critical thinking skills to justify mathematical reasoning and critique the reasoning of others.** a. Construct and justify a solution to a problem. b. Compare and discuss the validity of various reasoning strategies. c. Make conjectures and explore their validity. d. Reflect on and provide thoughtful responses to the reasoning of others.
4. Connect mathematical ideas and real-world situations through modeling. a. Identify relevant quantities and develop a model to describe their relationships. b. Interpret mathematical models in the context of the situation. c. Make assumptions and estimates to simplify complicated situations. d. Evaluate the reasonableness of a model and refine if necessary.	**5. Use a variety of mathematical tools effectively and strategically.** a. Select and use appropriate tools when solving a mathematical problem. b. Use technological tools and other external mathematical resources to explore and deepen understanding of concepts.	**6. Communicate mathematically and approach mathematical situations with precision.** a. Express numerical answers with the degree of precision appropriate for the context of a situation. b. Represent numbers in an appropriate form according to the context of the situation. c. Use appropriate and precise mathematical language. d. Use appropriate units, scales, and labels.	**7. Identify and utilize structure and patterns.** a. Recognize complex mathematical objects as being composed of more than one simple object. b. Recognize mathematical repetition in order to make generalizations. c. Look for structures to interpret meaning and develop solution strategies.

Unit Title	Pacing	South Carolina College and Career Ready (SCCCR) Standards	Digits Lessons	Engage NY	FALs	3-ACT	Other
Number System Part 1	2 weeks	6.NS.5 - Understand that the positive and negative representations of a number are opposites in direction and value. Use integers to represent quantities in real-world situations and explain the meaning of zero in each situation. 6.NS.6 - Extend the understanding of the number line to include all rational numbers and apply this concept to the coordinate plane. a. Understand the concept of opposite numbers, including zero, and their relative locations on the number line. b. Understand that the signs of the coordinates in ordered pairs indicate their location on an axis or in a quadrant on the coordinate plane. c. Recognize when ordered pairs are reflections of each other on the coordinate plane across one axis, both axes, or the origin. d. Plot rational numbers on number lines and ordered pairs on coordinate planes 6.NS.7 - Understand and apply the concepts of comparing, ordering, and finding absolute value to rational numbers. (Use only integers at this point for comparing and ordering) a. Interpret statements using equal to (=) and not equal to (≠). b. Interpret statements using less than (<), greater than (>), and equal to (=) as relative locations on the number line. c. Use concepts of equality and inequality to write and to explain real-world and mathematical situations. d. Understand that absolute value represents a number's distance from zero on the number line and use the absolute value of a rational number to represent real-world situations. e. Recognize the difference between comparing absolute values and ordering rational numbers. For negative rational numbers, understand that as the absolute value increases, the value of the negative number decreases. 6.NS.8 - Extend knowledge of the coordinate plane to solve real-world and mathematical problems involving rational numbers. a. Plot points in all four quadrants to represent the problem. b. Find the distance between two points when ordered pairs have the same x-coordinates or same y-coordinates. c. Relate finding the distance between two points in a coordinate plane to absolute value using a number line.		Intro to Integers	Using Coordinates to Interpret and Represent Data		

Number System Part 2	6weeks	6.NS.2 - Fluently divide multi-digit whole numbers using a standard algorithmic approach. 6.NS.3 - Fluently add, subtract, multiply and divide multi-digit decimal numbers using a standard algorithmic approach. 6.NS.4 - Find common factors and multiples using two whole numbers. a. Compute the greatest common factor (GCF) of two numbers both less than or equal to 100. b. Compute the least common multiple (LCM) of two numbers both less than or equal to 12. c. Express sums of two whole numbers, each less than or equal to 100, using the distributive property to factor out a common factor of the original addends. 6.NS.1 - Compute and represent quotients of positive fractions using a variety of procedures (e.g., visual models, equations, and real-world situations) 6.NS.9 - Investigate and translate among multiple representations of rational numbers (fractions, decimal numbers, percentages). Fractions should be limited to those with denominators of 2, 3, 4, 5, 8, 10, and 100. 6.NS.7 - Understand and apply the concepts of comparing, ordering, and finding absolute value to rational numbers. (reteach using all rational numbers) 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.NS.1 - Extend prior knowledge of operations with positive rational numbers to add and to subtract all rational numbers and represent the sum or difference on a number line. a. Understand that the additive inverse of a number is its opposite and their sum is equal to zero. 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. c. Translate between the subtraction of rational numbers and addition using the additive inverse, $p - q = p + (-q)$. d. Demonstrate that the distance between two rational numbers on the number line is the absolute value of their difference. 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 - Extend prior knowledge of operations with positive rational numbers to multiply and to divide all rational numbers. a. Understand that the multiplicative inverse of a number is its reciprocal and their product is equal to one. b. Understand sign rules for multiplying rational numbers. c. Understand sign rules for dividing rational numbers and that a quotient of integers (with a non-zero divisor) is a rational number. d. Apply mathematical properties (e.g., commutative, associative, distributive, or the properties of identity and inverse elements) to multiply and divide rational numbers.			Using Standard Algorithms for Number Operations; Finding Factors and Multiples; Interpreting Multiplication and Division; Translating between Fractions, Decimals, and Percents		

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		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.4 - Understand and apply the concepts of comparing and ordering to rational numbers. a. Interpret statements using less than (<), greater than (>), less than or equal to (≤), greater than or equal to (≥), and equal to (=) as relative locations on the number line. b. Use concepts of equality and inequality to write and explain real-world and mathematical situations.					
Expressions and Equations Part 1	3 weeks	6.EEI.1 - Write and evaluate numerical expressions involving whole-number exponents and positive rational number bases using the Order of Operations. 6.EEI.2 - Extend the concepts of numerical expressions to algebraic expressions involving positive rational numbers. a. Translate between algebraic expressions and verbal phrases that include variables. b. Investigate and identify parts of algebraic expressions using mathematical terminology, including term, coefficient, constant, and factor. c. Evaluate real-world and algebraic expressions for specific values using the Order of Operations. Grouping symbols should be limited to parentheses, braces, and brackets. Exponents should be limited to whole-numbers. 6.EEI.3 - Apply mathematical properties (e.g., commutative, associative, distributive) to generate equivalent expressions. 6.EEI.4 - Apply mathematical properties (e.g., commutative, associative, distributive) to justify that two expressions are equivalent.			Laws of Arithmetic; Interpreting Equations		

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Expressions and Equations Part 2	5 weeks	6.EEI.5 - Understand that if any solutions exist, the solution set for an equation or inequality consists of values that make the equation or inequality true. 6.EEI.6 - Write expressions using variables to represent quantities in real-world and mathematical situations. Understand the meaning of the variable in the context of the situation. 6.EEI.7 - Write and solve one-step linear equations in one variable involving nonnegative rational numbers for real-world and mathematical situations. 6.EEI.8 - Extend knowledge of inequalities used to compare numerical expressions to include algebraic expressions in real-world and mathematical situations. a. Write an inequality of the form $x > c$ or $x < c$ and graph the solution set on a number line. b. Recognize that inequalities have infinitely many solutions. 6.EEI.9 - Investigate multiple representations of relationships in real-world and mathematical situations. a. Write an equation that models a relationship between independent and dependent variables. b. Analyze the relationship between independent and dependent variables using graphs and tables. c. Translate among graphs, tables, and equations. 7.EEI.4 - Apply the concepts of linear equations and inequalities in one variable to real-world and mathematical situations. 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. 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. c. Write and solve two-step linear inequalities. Graph the solution set on a number line and interpret its meaning. d. Identify and justify the steps for solving multi-step linear equations and two-step linear inequalities.			Evaluating Statements: Consecutive Sums; Interpreting Equations; Evaluating Statements About Number Operations; Modeling: Car Skid Marks		

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Ratios and Proportions	4 weeks	6.RP.1 - Interpret the concept of a ratio as the relationship between two quantities, including part to part and part to whole. 6.RP.2 - Investigate relationships between ratios and rates. a. Translate between multiple representations of ratios (i.e., a / b, a: b, a to b, visual models). b. Recognize that a rate is a type of ratio involving two different units. c. Convert from rates to unit rates. 6.RP.3 - Apply the concepts of ratios and rates to solve real-world and mathematical problems. a. Create a table consisting of equivalent ratios and plot the results on the coordinate plane. b. Use multiple representations, including tape diagrams, tables, double number lines, and equations, to find missing values of equivalent ratios. c. Use two tables to compare related ratios. d. Apply concepts of unit rate to solve problems, including unit pricing and constant speed. e. Understand that a percentage is a rate per 100 and use this to solve problems involving wholes, parts, and percentages. f. Solve one-step problems involving ratios and unit rates (e.g., dimensional analysis). 7.RP.1 - Compute unit rates, including those involving complex fractions, with like or different units. 7.RP.2 - Identify and model proportional relationships given multiple representations, including tables, graphs, equations, diagrams, verbal descriptions, and real-world situations. a. Determine when two quantities are in a proportional relationship. b. Recognize or compute the constant of proportionality. c. Understand that the constant of proportionality is the unit rate. d. Use equations to model proportional relationships. 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.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.			Sharing Costs Equitably: Traveling to School:; Using Proportional Reasoning: Maximizing Profit: Selling Soup	Super Bear, Speed of Light	New-Tritional Info Lesson

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Geometry	4 weeks	6.GM.1 - Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. 6.GM.2 - Use visual models (e.g., model by packing) to discover that the formulas for the volume of a right rectangular prism ($V = lwh$, $V = Bh$) are the same for whole or fractional edge lengths. Apply these formulas to solve real-world and mathematical problems. 6.GM.3 - Apply the concepts of polygons and the coordinate plane to real-world and mathematical situations. a. Given coordinates of the vertices, draw a polygon in the coordinate plane. b. Find the length of an edge if the vertices have the same x-coordinates or same y-coordinates. 6.GM.4 - Unfold three-dimensional figures into two-dimensional rectangles and triangles (nets) to find the surface area and to solve real-world and mathematical problems. 7.GM.2 - Construct triangles and special quadrilaterals using a variety of tools (e.g., freehand, ruler and protractor, technology). a. Construct triangles given all measurements of either angles or sides. b. Decide if the measurements determine a unique triangle, more than one triangle, or no triangle. c. Construct special quadrilaterals (i.e., kite, trapezoid, isosceles trapezoid, rhombus, parallelogram, rectangle) given specific parameters about angles or sides. 7.GM.3 - Describe two-dimensional cross-sections of three-dimensional figures, specifically right rectangular prisms and right rectangular pyramids.			Designing Candy Cartons; Packing a Truck Efficiently; Optimizing Coverage: Security Cameras	Dandy Candies	Volume of Rect Prism - Learnzillion

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Statistics and Probability	4 weeks	6.DS.1 - Differentiate between statistical and non-statistical questions. 6.DS.2 - Use center (mean, median, mode), spread (range, interquartile range, mean absolute value), and shape (symmetrical, skewed left, skewed right) to describe the distribution of a set of data collected to answer a statistical question. 6.DS.3 - Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. 6.DS.4 - Select and create an appropriate display for numerical data, including dot plots, histograms, and box plots. 6.DS.5 - Describe numerical data sets in relation to their real-world context. a. State the sample size. b. Describe the qualitative aspects of the data (e.g., how it was measured, units of measurement). c. Give measures of center (median, mean). d. Find measures of variability (interquartile range, mean absolute deviation) using a number line. e. Describe the overall pattern (shape) of the distribution. f. Justify the choices for measure of center and measure of variability based on the shape of the distribution. g. Describe the impact that inserting or deleting a data point has on the measures of center (median, mean) for a data set.			Mean, Median, Mode, and Range; Frequency Graphs and Box Plots		

After each unit – one week for review testing and modification of units