**Georgetown County School District**

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2016-2017 7th Grade Mathematics Pacing Guide

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| **South Carolina College- and Career-Ready****Mathematical Process Standards** | 1. **Make sense of problems and persevere in solving them.**
	1. Relate a problem to prior knowledge.
	2. Recognize there may be multiple entry points to a problem and more than one path to a solution.
	3. 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.
	4. Evaluate the success of an approach to solve a problem and refine it if necessary.
 | 1. **Reason both contextually and abstractly.**
	1. Make sense of quantities and their relationships in mathematical and real-world situations.
	2. Describe a given situation using multiple mathematical representations.
	3. Translate among multiple mathematical representations and compare the meanings each representation conveys about the situation.
	4. Connect the meaning of mathematical operations to the context of a given situation.
 | 1. **Use critical thinking skills to justify mathematical reasoning and critique the reasoning of others.**
2. Construct and justify a solution to a problem.
3. Compare and discuss the validity of various reasoning strategies.
4. Make conjectures and explore their validity.
5. Reflect on and provide thoughtful responses to the reasoning of others.
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| 1. **Connect mathematical ideas and real-world situations through modeling.**
2. Identify relevant quantities and develop a model to describe their relationships.
3. Interpret mathematical models in the context of the situation.
4. Make assumptions and estimates to simplify complicated situations.
5. Evaluate the reasonableness of a model and refine if necessary.
 | 1. **Use a variety of mathematical tools effectively and strategically.**
2. Select and use appropriate tools when solving a mathematical problem.
3. Use technological tools and other external mathematical resources to explore and deepen understanding of concepts.
 | 1. **Communicate mathematically and approach mathematical situations with precision.**
	1. Express numerical answers with the degree of precision appropriate for the context of a situation.
	2. Represent numbers in an appropriate form according to the context of the situation.
	3. Use appropriate and precise mathematical language.
	4. Use appropriate units, scales, and labels.
 | 1. **Identify and utilize structure and patterns.**
2. Recognize complex mathematical objects as being composed of more than one simple object.
3. Recognize mathematical repetition in order to make generalizations.
4. Look for structures to interpret meaning and develop solution strategies.
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**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.

| **Unit Title** | **Pacing** | **South Carolina College and Career Ready (SCCCR) Standards** | **Digits****Lessons** | **Engage****NY** | **FALs** | **3-ACT** | **Other** |
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| **Rational Numbers (Adding/Subtracting)** | **4 Weeks** | 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. | 6-5 |  | [Translating FD&P](http://map.mathshell.org/lessons.php?unit=6120&collection=8) |  | [Practice between Fractions, Decimals, and Percents](http://www.mathplayground.com/Decention/Decention.html)[activity](http://www.mathplayground.com/Decention/Decention.html)[USA Testprep Percent, Decimals and Fractions](http://www.usatestprep.com/movies/339/1811/80)[Unit Vocabulary list](http://www.usatestprep.com/modules/vocab/flash_cards.php?testid=339&strand=1811) |
| 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.* 1. Understand that the additive inverse of a number is its opposite and their sum is equal to zero.
	2. 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*.
	3. Translate between the subtraction of rational numbers and addition using the additive inverse, $p-q=p+(-q)$.
	4. Demonstrate that the distance between two rational numbers on the number line is the absolute value of their difference.
	5. Apply mathematical properties (e.g., commutative, associative, distributive, or the properties of identity and inverse elements) to add and subtract rational numbers.
 | 4-1, 4-2,And 4-4, 4-5 | [Adding and Subtracting Integers](https://www.engageny.org/resource/grade-7-mathematics-module-2-topic-lesson-1)[Addition of Integers](https://www.google.com/?gws_rd=ssl)[Subtracting Integers](https://www.engageny.org/resource/grade-7-mathematics-module-2-topic-lesson-6)[Add/Subtract Integers](https://www.engageny.org/resource/grade-7-mathematics-module-2-topic-lesson-8)[Distributing Negative sign](https://www.engageny.org/resource/grade-7-mathematics-module-2-topic-lesson-9) | [Using Pos and Neg Numbers in Context](http://map.mathshell.org/download.php?fileid=1625)[Adding and Subtracting Directed Numbers](http://map.mathshell.org/lessons.php?unit=6125&collection=8) |  | [Hot Air Balloon Problem](http://www.supermathunits.com/files/hot_air_ballon_unit.pdf) |
| 7.NS.3 – Apply (***Addition and Subtraction)*** the concepts of all four operations with rational numbers to solve real-world and mathematical problems.  | 4-3, 4-6, and 4-7 |  |  |  |  |
| **Rational Numbers (Multiplication/Division)** | **3 Weeks** | 7.NS.2 - Extend prior knowledge of operations with positive rational numbers to multiply and to divide all rational numbers. * 1. Understand that the multiplicative inverse of a number is its reciprocal and their product is equal to one.
	2. Understand sign rules for multiplying rational numbers.
	3. Understand sign rules for dividing rational numbers and that a quotient of integers (with a non-zero divisor) is a rational number.
	4. Apply mathematical properties (e.g., commutative, associative, distributive, or the properties of identity and inverse elements) to multiply and divide rational numbers.
	5. 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.
 | 5-1, 5-2, 5-3, and 5-4  | [Mutiplying Integers](https://www.engageny.org/resource/grade-7-mathematics-module-2-topic-b-lesson-11)[Dividing Integers](https://www.engageny.org/resource/grade-7-mathematics-module-2-topic-b-lesson-12) |  |  | [Station Work](http://moodle.wbrschools.net/pluginfile.php/3830/mod_resource/content/1/Set%202%20Multiplying%20and%20Dividing%20Rational%20Numbers.pdf) |
| 7.NS.3 - Apply ***(Multiplication and Division)*** the concepts of all four operations with rational numbers to solve real-world and mathematical problems.  | 5-5 and 5-6 |  |  |  | [Jeopardy](https://livegcsdk12sc-my.sharepoint.com/personal/jjohnson_gcsd_k12_sc_us/_layouts/15/onedrive.aspx?id=%2Fpersonal%2Fjjohnson%5Fgcsd%5Fk12%5Fsc%5Fus%2FDocuments%2FGCSD%20Math%20Resources%2F16%2D17%20Math%20Pacing%20Guides&FolderCTID=0x0120009ADF9BDD62CF8545BBE15DDC8D9CE3BE&AjaxDelta=1&isStartPlt1=1470923105624) |
| 7.NS.4 - Understand and apply the concepts of comparing and ordering to rational numbers. 1. 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.
2. Use concepts of equality and inequality to write and explain real-world and mathematical situations.
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| **Algebraic Reasoning** | **5 Weeks** | 7.EEI.1 - Apply mathematical properties (e.g., commutative, associative, distributive) to simplify and to factor linear algebraic expressions with rational coefficients. | 7-1, 7-2 |  |  |  | [Expressions and Equations/Vocab. list](http://www.usatestprep.com/modules/vocab/flash_cards.php?testid=339&strand=1812) |
| 7.EEI.2 - Recognize that algebraic expressions may have a variety of equivalent forms and determine an appropriate form for a given real-world situation. | 7-1, 7-2 |  |  |  | [Laws of Exponents](http://www.mathsisfun.com/algebra/exponent-laws.html)[Balance Expressions](http://illuminations.nctm.org/Lesson.aspx?id=2747) |
| 7.EEI.5 - Understand and apply the laws of exponents (i.e., product rule, quotient rule, power to a power, product to a power, quotient to a power, zero power property) to simplify numerical expressions that include whole-number exponents. | 8th Grade 3-3, 3-4 |  |  |  |  |
| 7.EEI.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.EEI.4 - Apply the concepts of linear equations and inequalities in one variable to real-world and mathematical situations. * 1. Write and fluently solve linear equations of the form $ax+b=c$ and $a\left(x+b\right)=c$ where $a$, $b$, and $c$ are rational numbers.
	2. 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.
	3. Write and solve two-step linear inequalities. Graph the solution set on a number line and interpret its meaning.
	4. Identify and justify the steps for solving multi-step linear equations and two-step linear inequalities.
 | 7-3, 7-4, 7-5; 8-1, 8-2, 8-3, 8-4, 9-1, 9-2, 9-3, and 9-4 |  | [Solving Linear Equations](http://map.mathshell.org/materials/lessons.php?taskid=431&subpage=concept) |  | [Balancing Equations](http://illuminations.nctm.org/Lesson.aspx?id=2881) |
| **Proportional Relationships** | **5 Weeks** | 7.RP.1 - Compute unit rates, including those involving complex fractions, with like or different units. | 1-1, 1-2, 1-3, 1-4  |  | [Classifying Proportional & Non-proportional](http://map.mathshell.org/lessons.php?unit=7215&collection=8); [Comparing Strategies for Proportion Problems](http://map.mathshell.org/lessons.php?unit=7210&collection=8); [Inc. and Dec. Quantities by a Percent](http://map.mathshell.org/lessons.php?unit=7100&collection=8); [Road Race](http://map.mathshell.org/lessons.php?unit=7200&collection=8) |  | Sandra Goff Desmos – Tile Pile (Intro |
| 7.RP.2 - Identify and model proportional relationships given multiple representations, including tables, graphs, equations, diagrams, verbal descriptions, and real-world situations. * 1. Determine when two quantities are in a proportional relationship.
	2. Recognize or compute the constant of proportionality.
	3. Understand that the constant of proportionality is the unit rate.
	4. Use equations to model proportional relationships.
	5. 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.
 | 2-1, 2-2, 2-3, 2-4  | [Proportions](https://www.engageny.org/resource/grade-7-mathematics-module-1-topic-overview)[Constant of Proportionality](https://www.engageny.org/resource/grade-7-mathematics-module-1-topic-b-overview) |  |  |
| 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). | 3-1,3-2, 3-5, 3-7  |  | [Dueling Discounts](http://threeacts.mrmeyer.com/duelingdiscounts/) |  |
| 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.  | 2-5, 2-6 | [Scale Measures](https://www.engageny.org/resource/grade-7-mathematics-module-1-topic-d-overview) |  | [Geometry/Vocab. list](http://www.usatestprep.com/modules/vocab/flash_cards.php?testid=339&strand=1813) |
| **Geometry** | **5 Weeks** | 7.GM.2 - Construct triangles and special quadrilaterals using a variety of tools (e.g., freehand, ruler and protractor, technology). * 1. Construct triangles given all measurements of either angles or sides.
	2. Decide if the measurements determine a unique triangle, more than one triangle, or no triangle.
	3. Construct special quadrilaterals (i.e., kite, trapezoid, isosceles trapezoid, rhombus, parallelogram, rectangle) given specific parameters about angles or sides.
 | 12-1, 12-2 |  | [Describing and Defining Triangles](http://map.mathshell.org/lessons.php?unit=7330&collection=8); [Describing and Defining Quadrilaterals](http://map.mathshell.org/lessons.php?unit=7325&collection=8) |  |  |
| 7.GM.3 - Describe two-dimensional cross-sections of three-dimensional figures, specifically right rectangular prisms and right rectangular pyramids. | 12-4,12-5, 12-6  |  |  |  | [USA testprep/Cross Section 3D](http://www.usatestprep.com/states/states.php?testid=339) |
| 7.GM.4 - Investigate the concept of circles. * 1. Demonstrate an understanding of the proportional relationships between diameter, radius, and circumference of a circle.
	2. Understand that the constant of proportionality between the circumference and diameter is equivalent to *π*.
	3. Explore the relationship between circumference and area using a visual model.
	4. Use the formulas for circumference and area of circles appropriately to solve real-world and mathematical problems.
 | 11-2, 11-3, 11-4, 11-5 |  | [Finding Areas of Circles](http://map.mathshell.org/lessons.php?unit=7335&collection=8) |  |  |
| 7.GM.5 - Write equations to solve problems involving the relationships between angles formed by two intersecting lines, including supplementary, complementary, vertical, and adjacent. | 10-2,10-3, 10-4, 10-5 | [Angles](https://www.engageny.org/resource/grade-7-mathematics-module-6-topic-lesson-1) |  |  |  |
| 7.GM.6 - Apply the concepts of two- and three-dimensional figures to real-world and mathematical situations. 1. Understand that the concept of area is applied to two-dimensional figures such as triangles, quadrilaterals, and polygons.
2. 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.
3. Decompose cubes, right rectangular prisms, and right triangular prisms into rectangles and triangles to derive the formulas for volume and surface area.
4. Use the formulas for area, volume, and surface area appropriately.
 | 13-1,13-2, 13-3, 13-4 |  | [Designing a Sports Bag](http://map.mathshell.org/lessons.php?unit=7305&collection=8); [Drawing A Garden](http://map.mathshell.org/lessons.php?unit=7310&collection=8); [Estimating Volume](http://map.mathshell.org/lessons.php?unit=7315&collection=8); [Maximizing Area](http://map.mathshell.org/lessons.php?unit=7300&collection=8) |  |  |
| Statistics | 2 Weeks | 7.DSP.1 - Investigate concepts of random sampling. * 1. Understand that a sample is a subset of a population and both possess the same characteristics.
	2. Differentiate between random and non-random sampling.
	3. Understand that generalizations from a sample are valid only if the sample is representative of the population.
	4. Understand that random sampling is used to gather a representative sample and supports valid inferences about the population.
 | 14-1, 14-2,14-5 |  | [Sampling: Counting Trees](http://map.mathshell.org/lessons.php?unit=7400&collection=8) |  | [Statistics & Prob./Vocab. list](http://www.usatestprep.com/modules/vocab/flash_cards.php?testid=339&strand=1814) |
| 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. | 14-2 |  |  |  |  |
| 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. | 15-2, 15-3, 15-5 |  |  |  |  |
| 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.  | 15-2, 15-3, 15-4, 15-5 |  | [Compare Data](http://map.mathshell.org/download.php?fileid=1658) |  |  |
| **Probability** | **3 Weeks** | 7.DSP.5 - Investigate the concept of probability of chance events. * 1. Determine probabilities of simple events.
	2. Understand that probability measures likelihood of a chance event occurring.
	3. Understand that the probability of a chance event is a number between 0 and 1.
	4. Understand that a probability closer to 1 indicates a likely chance event.
	5. Understand that a probability close to $\frac{1}{2}$ indicates that a chance event is neither likely nor unlikely.
	6. Understand that a probability closer to 0 indicates an unlikely chance event.
 | 16-1 |  |  [Evaluating Statements About Probability](http://map.mathshell.org/lessons.php?unit=7415&collection=8); [Analyzing Games of Chance](http://map.mathshell.org/lessons.php?unit=7420&collection=8); [Designing: A Game of Chance](http://map.mathshell.org/lessons.php?unit=7405&collection=8) |  |  |
| 7.DSP.6 - Investigate the relationship between theoretical and experimental probabilities for simple events. 1. Determine approximate outcomes using theoretical probability.
2. Perform experiments that model theoretical probability.
3. Compare theoretical and experimental probabilities.
 | 16-1, 16-3 |  |  |  |
| 7.DSP.7 - Apply the concepts of theoretical and experimental probabilities for simple events. 1. Differentiate between uniform and non-uniform probability models (distributions).
2. Develop both uniform and non-uniform probability models.
3. Perform experiments to test the validity of probability models.
 | 16-2,16-4, 16-5, 16-6 |  |  |  |
| 7.DSP.8 - Extend the concepts of simple events to investigate compound events. 1. Understand that the probability of a compound event is between 0 and 1.
2. Identify the outcomes in a sample space using organized lists, tables, and tree diagrams.
3. Determine probabilities of compound events using organized lists, tables, and tree diagrams.
4. Design and use simulations to collect data and determine probabilities.
5. Compare theoretical and experimental probabilities for compound events.
 | 17-1, 17-2, 17-3, 17-4 |  |  |  |