# Brookhaven School District
# Pacing Guide 2017-18
# Seventh Grade Compacted Math

| 1st NINE WEEKS | | | |
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| **Timeline** | **Concepts and Skills for the Time Period** | **Standards** | **Resources (textbooks, links, etc.)** |
| 8 days Aug. 6-15 | Add/subtract rational numbers, absolute values, additive inverses, real world problems, rational and irrational numbers, number lines, properties<br><br>Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.<br>a. Describe situations in which opposite quantities combine to make 0. *For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged*.<br>b. Understand $p + q$ as the number located a distance $\|q\|$ from $p$, in the positive or negative direction depending on whether $q$ is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.<br>c. Understand subtraction of rational numbers as adding the additive inverse, $p – q = p + (–q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts.<br><br>Solve real-world and mathematical problems involving the four operations with rational numbers.[1]<br><br>Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. | 7.NS.1<br><br>7.NS.1a<br><br>7.NS.1b<br><br>7.NS.1c<br><br>7.NS. 3<br><br>8.NS. 1 | Big Ideas Math<br>ELS Teacher Made Resources<br>Classworks<br>https://www.**engageny**.org/<br>**math**bits.com/<br>https://www.bigideas**math**.com/**teachers**<br>www.**commoncore**sheets.com<br>www.helpingwithmath.com<br>http://www.insidemathematics.org<br>https://www.illustrativemathematics.org/<br>Sharemylesson.com<br>watchknowlearn.org<br>https://www.kutasoftware.com<br>https://www.mathplanet.com<br>http://mathshell.org/<br>https://www.desmos.com/<br>https://www.mathworksheets4kids.com |
| 3 days Aug. 16-17; 20 | Multiplication and division of integers<br>Evaluate expressions<br><br>Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.<br>a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(–1)(–1) = 1$ and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.<br>b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If $p$ and $q$ are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts. | 7.NS.2<br><br>7.NS.2a<br><br>7.NS.2b | |
| 5 days Aug. 21-24; 27 | Exponents, perfect squares& cubes, non-perfect squares& cubes, Estimation roots<br><br>Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.<br><br>Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the* | 8.EE.1<br><br>8.EE.3 | |

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| | *population of the United States as $3 \times 10^8$ and the population of the world as $7 \times 10^9$, and determine that the world population is more than 20 times larger.*<br><br>Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where $p$ is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that '12 is irrational.<br><br>Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., $rr^2$). *For example, by truncating the decimal expansion of ..2, show that ..2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.* | 8.EE.2<br><br>8NS.2 | |
| 7 days Aug. 28-31; Sept.4-5; 7 | Scientific notation<br>Operations with Scientific notation<br><br>Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. *For example, estimate the population of the United States as $3 \times 10^8$ and the population of the world as $7 \times 10^9$, and determine that the world population is more than 20 times larger.*<br><br>Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology. | 8.EE.3<br><br>8.EE.4 | |
| **1 day Sept. 6** | **4.5 week test** | | |
| 4 days Sept. 10-13 | Properties of Operations-writing properties from statements, use properties to simplify properties<br><br>Apply properties of operations as strategies to add and subtract rational numbers.<br><br>Apply properties of operations as strategies to multiply and divide rational numbers. | 7.NS.1d<br><br>7.NS.2c | |
| 4 days Sept. 14; 17-19 | Conversion of rational numbers<br>Real Life Problems<br><br>Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats. | 7.NS.2d | |
| 10 days Sept. 20- Oct. 3 | Generate equivalent expressions, inequalities rewrite expressions to be equivalent, Write algebraic expressions as phrases Graphing Inequalities<br><br>Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.<br><br>Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*<br><br>Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.<br>a. Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each | 7.EE.1<br><br>7.EE.2<br><br>7.EE.4<br><br>7.EE.4a | |

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| | approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?<br>b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where $p$, $q$, and $r$ are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.*<br><br>Solve linear equations in one variable.<br>a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where $a$ and $b$ are different numbers).<br>b. Solve linear equations and inequalities with rational number coefficients, including those whose solutions require expanding expressions using the distributive property and collecting like terms. | 7.EE.4b<br><br>8.EE.7<br>8.EE.7a<br><br>8.EE.7b | |
| **5 days Oct. 1-5** | **Nine Weeks test** | | |
| | 2nd NINE WEEKS | | |
| **Timeline** | **Concepts and Skills for the Time Period** | Standards | **Resources (textbooks, links, etc.)** |
| 8 days Oct. 8-18<br><br>Oct. 9 Report Card Pick-Up | Solve real life problems with equations and Inequalities<br><br>Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.<br>a. Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?<br>b. Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where $p$, $q$, and $r$ are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem. *For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions.*<br><br>Solve linear equations in one variable.<br>a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where $a$ and $b$ are different numbers).<br>b. Solve linear equations and inequalities with rational number coefficients, including those whose solutions require expanding expressions using the distributive property and collecting like terms. | 7.EE.4<br><br>7.EE.4a<br><br>7.EE.4b<br><br>8.EE.7<br>8.EE.7a<br><br>8.EE.7b | Big Ideas Math ELS Teacher Made Resources Classworks<br>https://www.**engageny**.org/<br>**math**bits.com/<br>https://www.bigideas**math**.com/**teachers**<br>www.**commoncore**sheets.com<br>www.helpingwithmath.com<br>http://www.insidemathematics.org<br>https://www.illustrativemathematics.org/<br>Sharemylesson.com watchknowlearn.org<br>https://www.kutasoftware.com<br>https://www.mathplanet.com<br>http://mathshell.org/<br>https://www.desmos.com/<br>https://www.mathworksheets4kids.com |
| 7 days Oct. 19; 22-26; 31 | Proportions, , Proportions and Graphs Proportional Relationships, Constant Proportionality<br><br>Recognize and represent proportional relationships between quantities.<br>a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.<br>c. Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.*<br>d. Explain what a point $(x, y)$ on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, $r$) where $r$ is the unit rate. | 7.RP.2<br>7.RP.2a<br><br>7.RP.2c<br><br>7.RP.2d | |

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| 4 days Feb. [illegible] | Scale drawings-corresponding sides, use different scales<br><br>Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. | 7.G.1 | |
| **1 day Feb. 7** | **4.5 week test**<br><br>Scale drawings-corresponding sides, use different scales | | |
| Feb. 8 | Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale. | 7.G.1 | |
| 3 days Feb. [illegible] 3 | Use a protractor, Constructor a triangle: three given angle measures, side measures<br><br>Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. | 7.G.2 | |
| 2 days Feb. 14-15 | Cross Sectionals of 3-D shapes<br><br>Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. | 7.G.3 | |
| 4 days Feb. 1[illegible] 2 | Circles circumference and area. Reverses formula and solve for d or r<br><br>Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. | 7.G.4 | |
| 3 days Feb. 2[illegible] 7 | Complementary and Supplementary Angles<br>Transversals<br><br>Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.<br><br>Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.* | 7.G.5<br><br>8.G.5 | |
| 3 days Feb. 28[illegible] Mar. [illegible] | Review/Reinforce skills | | |
| **5 days Mar. 4-8** | **Nine Weeks Tests** and any needed review and reinforcement of skills | | |

| **4th NINE WEEKS** | | | |
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| **Timeline** | **Concepts and Skills for the Time Period** | **Standards** | **Resources (textbooks, links, etc.)** |
| 13 days Mar.19-23; Mar.26-29; Apr.3-6 | Perimeter, Area, Surface Area and Volume 2-D shapes, Irregular shapes and<br>3-D shapes, Learn formulas for shapes,<br>Composite Figures<br><br>Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms. | 7.G.6 | Big Ideas Math<br>ELS Teacher Made Resources<br>Classworks<br>https://www.**engageny**.org/<br>**math**bits.com/<br>https://www.bigideas**math**.com/**teachers**<br>www.**commoncore**sheets.com<br>www.helpingwithmath.com<br>http://www.insidemathematics.org<br>https://www.illustrativemathematics.org/ |
| Between April 3 and May 11 | **NWEA MAP (Spring)** | | |

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| AFTER STATE TESTING-**dates will be dependent upon state testing dates between Apr. 16-May 18** | Know the formulas for the volumes of cones, cylinders, & spheres<br><br>Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real- world and mathematical problems. | 8.G.9 | Sharemylesson.com<br>watchknowlearn.org<br>https://www.kutasoftware.com<br>https://www.mathplanet.com<br>http://mathshell.org/<br>https://www.desmos.com/<br>https://www.mathworksheets4kids.com |
| | Transformations<br><br>Verify experimentally the properties of rotations, reflections, and translations<br>a. Lines are taken to lines, and line segments to line segments of the same length.<br>b. Angles are taken to angles of the same measure.<br>c. Parallel lines are taken to parallel lines.<br><br>Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.<br><br>Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.<br><br>Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. | 8.6.1<br>8.G.1a<br>8.G.1b<br>8.G.1c<br><br>8.G.2<br><br>8.G.3<br><br>8.G.4 | |
| **5 days May 18-24** | **Nine Weeks Tests** | | |
| WRITING-Math Vocabulary, Students are required to write; justifying their reasoning using math vocabulary and strategies explaining how they arrived at their answers or outcomes. | | | |