CURRICULUM MAP

Subject: Math 5 Next Generation Standards **Grade Level: 5th** **Updated July/ 2024**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
Understand the place value system NY-5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. NY-5.NBT.2 Explain patterns in the number of zeroes of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole number exponents to denote powers of 10. NY-5.NBT.3 Read, write, and compare decimals to thousandths. NY-5.NBT.4 Use place value understanding to round decimals to any place. Perform operations with multi-digit whole numbers and with decimals to hundredths. NY-5.NBT.5 Fluently multiply multi-digit whole numbers using a standard algorithm. NY-5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. NY-5.NBT.7 Using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between operations: add, subtract, multiply, and divide decimals to hundredths. Relate the strategy to a written method and explain the reasoning used. Convert like measurement units within a given measurement system. NY-5.MD.1 Convert among different-sized standard measurement units within a given measurement system and use	**Use equivalent fractions as a strategy to add and subtract fractions.** NY-5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. NY-5.NF.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including case of unlike denominators. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. **Apply and extend previous understandings of multiplication and division to multiply and divide fractions.** NY-5.NF.3 Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers. NY-5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. NY-5.NF.4a Interpret the product $a\ b \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b. e.g., Use a visual fraction model to show 2/3 × 4 = 8/3 , and create a story context for this equation. Do the same with 2/3 × 4/5 = 8/15 NY-5.NF.4b Find the area of a rectangle with fractional side lengths by tiling it with rectangles of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products	**Apply and extend previous understandings of multiplication and division to multiply and divide fractions.** NY-5.NF.5 Interpret multiplication as scaling (resizing). NY-5.NF.5a Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. e.g., In the case of 10 x **1**/**2** = 5, 5 is half of 10 and 5 is 10 times larger than **1**/ . NY-5.NF.5b Explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case). Explain why multiplying a given number by a fraction less than 1 results in a product smaller than the given number. NY-5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers. e.g., using visual fraction models or equations to represent the problem. NY-5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Convert like measurement units within a given measurement system. NY-5.NF.7a Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. e.g., Create a story context for 1/3 ÷ 4 and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 1/3 ÷ 4 = 1/12 because 1/12 × 4 = 1/3 . NY-5.NF.7b Interpret division of a whole number by a unit fraction, and compute such quotients. e.g., Create a story context for 4 ÷ 1/5 and use a visual fraction model to show the quotient. Use the relationship	**Analyze patterns and relationships.** NY-5.OA.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. **Graph points on the coordinate plane to solve real-world and mathematical problems.** NY-5.G.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond. NY-5.G.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

these conversions in solving multi-step, real world problems. Write and interpret numerical expressions. NY-5.OA.1 Apply the order of operations to evaluate numerical expressions. NY-5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.	as rectangular areas.	between multiplication and division to explain that $4 \div 1/5 = 20$ because $20 \times 1/5 = 4$. NY-5.NF.7c Solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions. e.g., using visual fraction models and equations to represent the problem. e.g., How much chocolate will each person get if 3 people share 1/2 lb. of chocolate equally? How many 1/3 -cup servings are in 2 cups of raisins? Note: Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement until **grade 6 (NY-6. NS.1)** NY-5.MD.1 Convert among different-sized standard measurement units within a given measurement system when the conversion factor is given. Use these conversions in solving multi-step, real world problems. Represent and interpret data. NY-5.MD.2 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. **Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.** NY-5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement. NY-5.MD.3a Recognize that a cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume. NY-5.MD.3b Recognize that a solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units NY-5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in., cubic ft., and improvised units.	

		NY-5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. NY-5.MD.5a Find the volume of a right rectangular prism with whole number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. NY-5.MD.5b. Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems. NY-5.MD.5c Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems. **Classify two-dimensional figures into categories based on their properties.** NY-5.G.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. e.g., All rectangles have four right angles and squares are rectangles, so all squares have four right angles. Note: The inclusive definition of a trapezoid will be utilized, which defines a trapezoid as "A quadrilateral with at least one pair of parallel sides."	

CURRICULUM MAP

Subject: Math 6 Next Generation Learning Standards **Grade Level: 6th** **updated July/2024**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
Ratio and Proportional Relationships NY-6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. e.g., "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received three votes." NY-6.RP.2 Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0 (b not equal to zero), and use rate language in the context of a ratio relationship. e.g., "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there are ¾ cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger." Note: Expectations for unit rates in this grade are limited to non-complex fractions. NY-6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems. Note: Strategies may include but are not limited to the following: tables of equivalent ratios, tape diagrams, double number lines, and equations. NY-6.RP.3a Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios. NY-6.RP.3b Solve unit rate problems. e.g., If it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed? What is the unit rate?	**The Number System, LCM and Multiplying fractions** NY-6.NS.1 Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions. Note: Strategies may include but are not limited to the following: using visual fraction models, a standard algorithm, and equations to represent the problem. e.g., Create a story context for and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that. NY-6.NS.2 Fluently divide multi-digit numbers using a standard algorithm. NY-6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using a standard algorithm for each operation. NY-6.NS.4 Find the greatest common factor of two whole numbers less than or equal to 100. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor other than 1. Find the least common multiple of two whole numbers less than or equal to 12. e.g., Express 36 + 8 as 4 (9 + 2). NY-6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values. Use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	Expressions and Equations NY-6.EE.1 Write and evaluate numerical expressions involving whole-number exponents. NY-6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers. NY-6.EE.2a Write expressions that record operations with numbers and with letters standing for numbers. e.g., Express the calculation "Subtract y from 5" as 5 – y. NY-6.EE.2b Identify parts of an expression using mathematical terms (term, coefficient, sum, difference, product, factor, and quotient); view one or more parts of an expression as a single entity. e.g., Describe the expression 2(8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms NY-6.EE.2c Evaluate expressions given specific values for their variables. Include expressions that arise from formulas in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order (Order of Operations). e.g., Use the formulas V = s ^3 and SA = 6s ^2 to find the volume and surface area of a cube with sides of length s = ½. Note: Expressions may or may not include parentheses. Nested grouping symbols are not included. NY-6.EE.3 Apply the properties of operations to generate equivalent expressions. e.g., Apply the distributive property to the expression	**Statistics and Probability** NY-6. SP.1a Recognize that a statistical question is one that anticipates variability in the data related to the question and accounts for it in the answers. e.g., "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages. NY-6. SP.1b Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Note: Students need to understand that data are generated with respect to particular contexts or situations and can be used to answer questions about those contexts or situations. NY-6. SP.1a Recognize that a statistical question is one that anticipates variability in the data related to the question and accounts for it in the answers. e.g., "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages. NY-6. SP.1b Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Note: Students need to understand that data are generated with respect to particular contexts or situations and can be used to answer questions about those

Note: Problems may include unit pricing and constant speed. NY-6.RP.3c Find a percent of a quantity as a rate per 100. Solve problems that involve finding the whole given a part and the percent, and finding a part of a whole given the percent. e.g., 30% of a quantity means $\frac{30}{100}$ times the quantity. NY-6.RP.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. Note: Conversion of units occur within a given measurement system, not across different measurement systems.	e.g., temperature above/below zero, elevation above/below sea level, debits/credits, positive/negative electric charge. NY-6.NS.6 Understand a rational number as a point on the number line. Use number lines and coordinate axes to represent points on a number line and in the coordinate plane with negative number coordinates. NY-6.NS.6a Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line. Recognize that the opposite of the opposite of a number is the number itself, and that 0 is its own opposite. e.g., With the number 3, $-(-3) = 3$ NY-6.NS.6b Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane. Recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. NY-6.NS.6c Find and position integers and other rational numbers on a horizontal or vertical number line. Find and position pairs of integers and other rational numbers on a coordinate plane. NY-6.NS.7 Understand ordering and absolute value of rational numbers. NY-6.NS.7a Interpret statements of inequality as statements about the relative position of two numbers on a number line. e.g., Interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right. NY-6.NS.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts. e.g., Write $-3°C > -7°C$ to express the fact that $-3°C$ is warmer than $-7°C$. NY-6.NS.7c Understand the absolute value of a rational number as its	$3(2 + x)$ to produce the equivalent expression $6 + 3x$; apply the distributive property to the expression $24x + 18y$ to produce the equivalent expression $6 (4x + 3y)$; apply properties of operations to $y + y + y$ to produce the equivalent expression $3y$. NY-6.EE.4 Identify when two expressions are equivalent. e.g., The expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y represents. NY-6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. NY-6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem. Understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. NY-6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$; $x - p = q$; $px = q$; and $x/p = q$ for cases in which p, q and x are all nonnegative rational. Note: For the $x/v = q$ case, $p \neq 0$. NY-6.EE.8 Write an inequality of the form $x > c$, $x \geq c$, $x \leq c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of these forms have infinitely many solutions; represent solutions of such inequalities on a number line.	contexts or situations. NY-6. SP.1c Understand that the method and sample size used to collect data for a particular question is intended to reduce the difference between a population and a sample taken from the population so valid inferences can be drawn about the population. Generate multiple samples (or simulated samples) of the same size to recognize the variation in estimates or predictions. Note: Examples of **acceptable** methods to obtain a representative sample from a population include, but are not limited to, a simple random sample for a given population or a systematic random sample for an unknown population. Examples of **unacceptable** methods of sampling include, but are not limited to, online polls and convenience sampling because they introduce bias and are not representative of the population. NY-6. SP.2 Understand that a set of quantitative data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. Notes: • Students need to determine and justify the most appropriate graph to display a given set of data (histogram, dot plot). • Students extend their knowledge of symmetric shapes, to describe data displayed in dot plots and histograms in terms of symmetry. They identify clusters, peaks and gaps, recognizing common shapes and patterns in these displays of data distributions, and ask why a distribution takes on a particular shape for the context of the variable being considered. NY-6. SP.3 Recognize that a measure of center for a quantitative 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. Note: Measures of center are mean, median, and mode. The measure of variation is the range. NY-6. SP.4 Display quantitative data in plots on a number line, including dot plots and histogram

	distance from 0 on the number line. Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. e.g., For an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars. NY-6.NS.7d Distinguish comparisons of absolute value from statements about order. e.g., Someone with a balance of $100 in their bank account has more money than someone with a balance of –$1000, because 100 > –1000. But, the second person's debt balance is much greater than the first person's credit balance because |–1000| > |100|. NY-6.NS.8 Solve real-world and mathematical problems by graphing points on a coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	NY-6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another. Given a verbal context and an equation, identify the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. e.g., In a problem involving motion at constant speed, list and graph ordered pairs of distances and times. e.g., Given the equation d = 65t to represent the relationship between distance and time, identify t as the independent variable and d as the dependent variable. **Geometry** NY-6.G.1 Find area of triangles, trapezoids, and other polygons by composing into rectangles or decomposing into triangles and quadrilaterals. Apply these techniques in the context of solving real-world and mathematical problems. Note: The inclusive definition of a trapezoid will be utilized, which defines a trapezoid as "A quadrilateral with at least one pair of parallel sides." (This definition includes parallelograms.) NY-6.G.2 Find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. NY-6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices. Use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical	NY-6. SP.5 Summarize quantitative data sets in relation to their context. NY-6. SP.5a Report the number of observations. NY-6. SP.5b Describe the nature of the attribute under investigation, including how it was measured and its units of measurement.

		problems. NY-6.G.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. Note: Three-dimensional figures include only right rectangular prisms, right rectangular pyramids, and right triangular prisms. When finding surface areas, all necessary measurements will be given. NY-6.G.5 Use area and volume models to explain perfect squares and perfect cubes.	

		mathematical formulas and decomposing shapes 6.G.2 Find the volume of right rectangular prisms using formulas and rational numbers in order to solve real world and mathematical problems 6.G.3 Draw polygons in the coordinate plane Find the length on the sides Apply them to find area and perimeter in real world problems 6.G.4 Represent three-dimensional figures using nets Use nets to find the surface of 3-D figures composed of rectangles or triangles	

CURRICULUM MAP

Subject: 6 Grade Math Skills/AIS Class Common Core Grade Level: 6th rev 9/14

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
Module 1- Ratios and Unit Rates Foundational Standards: **4.OA.2** Multiply or divide to solve word problems involving multiplicative comparison, distinguishing multiplicative comparison from additive comparison. **5.NF.3** Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers. **5.MD.1** Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. 5.G.1 Define and identify the parts of a coordinate system (x-axis, x-coordinate, y- axis, y-coordinate, coordinate pairs, origin, distance from the origin along each axis, quadrants). 5.G.2 Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. Focus Standards: **6.RP.1** Understand ratios and use the language to describe the relationship between two quantities. **6.RP.2** Understand the concept of a unit rate and use the language to describe the relationship between two quantities. **6.RP.3** Use ratio and rate reasoning to solve real-world problems, including tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. **6.RP.3a** Make tables of equivalent ratios relating quantities with whole number	**Module 2- cont'd** Focus Standards: **6.NS.1** Interpret and compute quotients of fractions. Solve word problems involving division of fractions by fractions, use visual fraction models and equations to represent the problem. **6.NS.2** Fluently divide multi-digit numbers using the standard algorithm. **6.NS.3** Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. **6.NS.4** Find the greatest common factor of two whole numbers less than or equal to 100, and least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two numbers 1-100 with a common factor and multiple, of a sum of two whole numbers with no common factor. **Module 3- Rational Numbers** Foundational standards: **3.NF.A.2** Identify fractions on a number line and count up by fractional parts treating the denominator as a unit (1 fourth, 2 fourths, etc.). **4.G.A.3** Identify line-symmetric figures and draw lines of symmetry. 5.G.A.1 Define and identify the parts of a coordinate system (x-axis, x-coordinate, y- axis, y-coordinate, coordinate pairs, origin, distance from the origin along each axis, quadrants). 5.G.A.2 Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. Focus Standards: **6.NS.C.5** Use positive and negative numbers to represent quantities in real-	**Module 4- cont'd** **6.EE.A.4** Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). **6.EE.B.5** Use substitution to determine whether a given number in a specified set makes an equation or inequality true. **6.EE.B.6** Use variables to represent numbers and write expressions when solving a real-world or mathematical problem. **6.EE.B.7** Solve real-world and mathematical problems by writing and solving equations in the form x+p=q and px=q for cases in which p, q and x are all nonnegative rational numbers. **6.EE.B.8** Write an inequality of the form x>c or x<c to represent a constraint or condition in a real-world mathematical problem. Recognize that inequalities of the form x>c or x<c have infinitely many solutions. Represent solutions of such inequalities on number line diagrams. **6.EE.C.9** Use variables to represent two quantities in a real-world problem that change in relationship to one another. Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. **Module 5- Area, Surface Area, Volume** Foundational Standards: **1.G.A.2** Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter circles) or three-dimensional shapes (cubes, right	**Module 5- cont'd** Focus Standards 6.G.A.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.G.A.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = l\,w\,h$ and $V = b\,h$ to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real- world and mathematical problems. 6.G.A.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems. 6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. **Module 6- Statistics** Foundational Standard: 5. **MD.B.2** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. Focus Standards: 6.**SP.A.1** Recognize a statistical question

measurements, find missing values in tables, and plot the pairs of values on the coordinate plane.
Use tables to compare ratios.

6.RP.3b Solve unit rate problems including those involving unit pricing and constant speed.

6.RP.3c Find a percent of quantity as a rate per 100 and solve problems involving finding the whole given a part and the percent.

6.RP.3d Use ratio reasoning to convert measurement units, manipulate and transform units appropriately when multiplying or dividing quantities

Module 2- Arithmetic Operations Including Dividing by a Fraction

Foundational Standards**:**

4.OA.4 Find all factors for whole numbers between 1 and 100. Determine multiples of factors between 1 and 100. Determine whether a given whole number in the range 1–100 is prime or composite..

5.NBT.2 Explain patterns in the number of zeroes of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.

5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths.

5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by fractions.

world contexts, explaining the meaning of 0 in each situation.

6.NS.C.6 Identify rational numbers on a number line. Identify locations of numbers with opposite signs (+3 and -3). Define 0 as its own opposite. Identify the relationship between the signs of coordinates and the four quadrants of a coordinate plane. Reflect points over the x- and y- axes and identify the relationship between the signs of the coordinates. Find and position pairs of integers and other rational numbers on a coordinate plane.

6.NS.C.7 Define and identify the absolute value of rational numbers. Compare and order rational numbers.

6.NS.C.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Use coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

Module 4- Expressions and Equations

Foundational standards:

1.OA.B.3 Identify and apply the commutative and associative properties of addition.

3.OA.B.5 Identify and apply the commutative and associate properties of multiplication as well as the distributive property.

4.MD.C.5 Identify angles and angle types (acute, obtuse, right)

4.MD.C.6 Measure and sketch angles using a protractor.

4.MD.C.7 Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems.

5.OA.A.2 Write simple expressions that record calculations with numbers. Interpret numerical expressions without evaluating them.

5.OA.B.3 Generate two numerical patterns using two given rules, form ordered pairs using corresponding terms, and identify

rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.

2.G.A.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

3.G.A.2 Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole.

4.MD.A.3 Apply the area and perimeter formulas for rectangles in real-world and mathematical problems, including finding the missing dimension when given the perimeter or area.

4.G.A.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.

5.MD.C.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.

5.MD.C.4 Measure volumes by counting unit cubes, using cubic cm, cubic in., cubic ft., and improvised units.

5.MD.C.5 Relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume.

5.G.B.3 Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.

as one that anticipates variability in the data related to the question and accounts for it in the answers.

6.SP.A.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

6.SP.A.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.SP.B.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots.

6.SP.B.5 Summarize numerical data sets in relation to their context.

6 Grade Math Skills/AIS Class p3	apparent relationships between corresponding terms. <u>Focus Standards:</u> **6.EE.A.1** Write and evaluate numeric expressions involving whole-number exponents. **6.EE.A.2** Write, read, and evaluate expressions in which letters stand for numbers **6.EE.A.3** Apply the properties of operations to generate equivalent expressions..		

CURRICULUM MAP

Subject: Math 7 Next Gen Standards **Grade Level: 7th** **Updated July 2024**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
Ratios & Proportional Relationships – Analyze proportional relationships and use them to solve real-world and mathematical problems. NY-7.RP.1 Compute unit rates associated with ratios of fractions. e.g., If a person walks ½ mile in each 1 /4 hour, compute the rate as the complex fraction ½ ÷ 1/4 miles per hour, equivalently 2 miles per hour with 2 being the unit rate. Note: Problems may include ratios of lengths, areas, and other quantities measured in like or different units, including across measurement systems. NY-7.RP.2 Recognize and represent proportional relationships between quantities. NY-7.RP.2a Decide whether two quantities are in a proportional relationship. Note: Strategies include but are not limited to the following: testing for equivalent ratios in a table and/or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. NY-7.RP.2b Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. NY-7.RP.2c Represent a proportional relationship using an equation. e.g., 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 NY-7.RP.2d 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.	**Expressions & Equations - Use properties of operations to generate equivalent expressions.** NY-7.EE.1 Add, subtract, factor, and expand linear expressions with rational coefficients by applying the properties of operations. NY-7.EE.2 Understand that rewriting an expression in different forms in real-world and mathematical problems can reveal and explain how the quantities are related. e.g., a + 0.05a and 1.05a are equivalent expressions meaning that "increase by 5%" is the same as "multiply by 1.05." NY-7.EE.3 Solve multi-step real-world and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate. Assess the reasonableness of answers using mental computation and estimation strategies. e.g., • If a woman making $25 an hour gets a 10% raise, she will make an additional 1 / 10 of her salary an hour, or $2.50, for a new salary of $27.50. • If you want to place a towel bar 9 3 /4 inches long in the center of a door that is 27 1 /2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.	**Geometry - Draw construct, and describe geometrical figures and describe the relationships between them.** NY -7.G.1 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. Solve real-life and mathematical problems involving angle measure, area, surface area, and volume. NY-7.G.4 Apply the formulas for the area and circumference of a circle to solve problems. Note: Students in grade 7 are not expected to calculate the radius of a circle given its area. Probability - Investigate chance processes and develop, use, and evaluate probability models. NY-7.SP.8 Find probabilities of compound events using organized list, sample space tables, tree diagrams, and simulation. NY-7.SP.8a Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. NY-7.SP.8b Represent sample spaces for compound events using methods such as organized lists, sample space tables, and tree diagrams. For an event described in everyday language, identify the outcomes in the sample space which compose the event. e.g., "rolling double sixes" NY-7.SP.8c Design and use a simulation to generate frequencies for compound events. e.g., Use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the	**Geometry - Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.** NY-7.G.5 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. Note: Students in grade 7 are limited to solving equations that involve linear expressions on one side of the equation. **Draw construct, and describe geometrical figures and describe the relationships between them.** NY-7.G.2 Draw triangles when given measures of angles and/or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle. Note: Create triangles through the use of freehand drawings, materials (scaffolds may include: pipe cleaners, Legos®, and toothpicks), rulers, protractors, and/or technology. **Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.** 7.G.6 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.

The Number System – Apply and extend previous understandings of operations with fractions to add, subtract, multiply, and divide rational numbers. NY-7.NS.1 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. NY-7.NS.1a Describe situations in which opposite quantities combine to make 0. NY-7.NS.1b Understand addition of rational numbers; p + q is 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 NY-7.NS.1c 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. NY-7.NS.1d Apply properties of operations as strategies to add and subtract rational numbers. NY-7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. NY-7.NS.2a 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	NY-7.EE.4 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. 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. 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 **on the number line** and interpret it in the context of the problem. e.g., 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. Note: The words leading to in the standard may require students to simplify or combine like terms on the same side of the equation before it is in the form stated in the standard. **Ratios & Proportional Relationships – Analyze proportional relationships and use them to solve real-world and mathematical problems.** NY- 7.RP.3 Use proportional relationships to solve multistep ratio and percent problems. (Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.)	probability that it will take at least 4 donors to find one with type A blood? of events.ability model (which may not be uniform) by observing frequencies in **Statistics - Use random sampling to draw inferences about a population.** NY-7.SP.1 Construct and interpret box-plots, find the interquartile range, and determine if a data point is an outlier. Note: Students in grade 7 are not expected to construct box-plots that include outliers in the data, but students are expected to interpret box-plots that may contain outliers. **Draw informal comparative inferences about two populations.** NY-7.SP.3 Informally assess the degree of visual overlap of two quantitative data distributions. NY-7.SP.4 Use measures of center and measures of variability for quantitative data from random samples or populations to draw informal comparative inferences about the populations. Note: Measures of center are mean, median, and mode. The measures of variation include range and the interquartile range.	

numbers. Interpret products of rational numbers by describing real-world contexts. NY-7.NS.2b 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. NY-7.NS.2c Apply properties of operations as strategies to multiply and divide rational numbers. NY-7.NS.2d Convert a fraction to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats. NY-7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers. 7. NS.1 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. a. Describe situations in which opposite quantities combine to make 0. b. Understand $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q			

Math 7 Common Core Continued 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. 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. d. Apply properties of operations as strategies to add and subtract rational numbers. 7. NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. 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. 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. c. Apply properties of operations as strategies to multiply and divide rational numbers. d. 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.3 Solve real-world and mathematical problems involving the four operations with rational numbers.	**Ratios & Proportional Relationships – Analyze proportional relationships and use them to solve real-world and mathematical problems.** 7.RP.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.		

CURRICULUM MAP

Subject: Accelerated Math 7/8 Common Core **Grade Level: 7th** **rev 9/14**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
Ratios & Proportional Relationships 7.RP.1 Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. 7.RP.2 Recognize and represent proportional relationships between quantities. 7.RP.3 Use proportional relationships to solve multistep ratio and percent problems. Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. **Expressions & Equations** 7.EE.2 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. 7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. 7.EE.4 Use variables to represent quantities in a real-world or mathematical **Accelerated Math 7/8 Common Core continued p2** problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. 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.	**Expressions & Equations** 7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. 7.EE.2 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. 7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. 7.EE.4 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. **Geometry** 7.G.5 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. **The Number System** 8.NS.1 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. **Expressions & Equations** 8.EE.2 Use square root and cube root symbols to represent solutions to equations of the form and ,	**Ratios & Proportional Relationships** 7.RP.2 Recognize and represent proportional relationships between quantities. **Geometry** 7.G.1 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.4 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.6 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. **Probability** 7.SP.1 Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences. 7.SP.2 Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions. 7.SP.3 Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. 7.SP.4 Use measures of center and measures of variability for numerical data	**Functions** 8.F.1 Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. 8.F.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). 8.F.3 Interpret the equation as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. 8.F.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two values, including reading these from a table or from a graph. 8.F.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally. **Expressions and Equations** 7.EE.3 Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and

8.EE.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. 8.EE.3 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. 8.EE.4 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. **The Number System** 7.NS.1 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. 7.NS.2 Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. **Accelerated Math 7/8 Common Core continued p3** 7.NS.3 Solve real-world and mathematical problems involving the four operations with rational numbers. 8.NS.1 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. 8.NS.2 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.,)	where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that is irrational. 8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. 8.EE.7. Solve linear equations in one variable with fraction and decimal coefficients	from random samples to draw informal comparative inferences about two populations. 7.SP.5 Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event. 7.SP.6 Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability. 7.SP.7 Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. 7.SP.8 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. 8.SP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. 8.SP.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. 8.SP.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.	estimation strategies. 7.EE.4 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. **Geometry** 7.G.5 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. 7.G.6 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.2 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.4 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.

CURRICULUM MAP

Subject: Algebra 1 Accelerated Common Core **Grade Level: 8th** **rev 9/14**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
Module 1 Relationships between quantities and reasoning with equations and their graphs N.Q.1, N.Q.3 Analyzing Graphs of linear, quadratic, piecewise and exponential functions. **Properties of Binary relations** A-SSE.2 Use the structure of an expression to identify ways to rewrite it. A-APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. **Perform arithmetic operations on polynomials** A-APR.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials. **Factoring** A.SSE.1 Polynomials (factoring GCF, Difference of two squares, trinomial, by grouping) Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. *b.* Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret P(1+r)n as the product of P and a factor not depending on P.* **Solving Equations** A-REI.1 Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument.	**Arithmetic and geometric sequences (module 3)** F-LE.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). F-BF.1 Write a function that describes a relationship between two quantities. Determine an explicit expression, a recursive process, or steps for calculation from a context. A-SSE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. c. Use the properties of exponents to transform expressions for exponential functions. **Solving Systems of Equations** A-REI.5 Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. A-REI.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. Solving Systems of equations by substitution, elimination, graphically, including word problems Solving systems of inequalities A-REI.12 Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes	**Quadratics (module 4)** A.APR.3 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial (x and y intercepts) A.SSE.3 Factor quadratic expression to reveal the zeros, Complete the square in a quadratic expression to reveal the max and min value F.IF.4 Graph using key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. F.IF.4 Relate the domain of a function to its graph A.REI.4 Solve quadratic equations by factoring, completing the square and quadratic formula F.IF.6 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. F.IF.7 Parent functions, Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology (linear, quadratic, square root, cube root, piecewise, absolute value) F.IF.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. - Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context. F.BF.3 Build new functions from existing functions. Identify the effect on the graph	**Statistics (Module 2) continued** S.ID.7 & S.ID.8 Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. Compute (using technology) and interpret the correlation coefficient of a linear fit. S.ID.9 Distinguish between correlation and causation. **Model Analysis (Module 5)** F.IF.4 Analyze/Interpret functions that arise in applications in terms of real world context F.BF.1 Build a function that models a real world relationship between two quantities. Tasks are limited to linear, quadratic and exponential functions with domains in the integers. F.LE.1 Distinguish between situations that can be modeled with linear functions and with exponential functions. -Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. -Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. - Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. F.LE.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

Algebra 1 Accelerated continued A-REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. True/False equations. **Solving word problems using let statements** (Consecutive integer, Coin, Age, Motion) A-CED.1 Create equations in one variable and use them to solve problems. **Solving Inequalities** A-REI.12 Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), A-CED.1 Create inequalities in one variable and use them to solve problems. *Include equations arising from linear* A-CED.3 Represent constraints by inequalities, and interpret solutions as viable or non-viable options in a modeling context. Compound inequalities and word problems. (A-CED.1) A-CED.4 **Rearrange formulas** to highlight a quantity of interest, using the same reasoning as in solving equations. *For example, rearrange Ohm's law V = IR to highlight resistance R.* **Solving Quadratic Equations** A-REI.4 Solve quadratic equations in one variable. b. Solve quadratic equations by inspection (e.g., for x*2* = 49), taking square roots, Solving quadratic word problems	**Exponential Growth and Decay** A-SSE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. c. Use the properties of exponents to transform expressions for exponential functions. F-LE.2 Construct…exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). Interpret expressions for functions in terms of the situation they model F-LE.5 Interpret the parameters in a linear or exponential function in terms of a context. Solve word problems dealing with exponential growth and decay **Functions** Definition, domain and range F-IF.1 Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If *f* is a function and *x* is an element of its domain, then *f(x)* denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y = f(x)*. F-IF.2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context.	of replacing $f(x)$ by $f(x) + k$, $k\,f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. **Statistics (Module 2)** S.ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots). S.ID.2 Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (inter-quartile range, standard deviation) of two or more different data sets. S.ID.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). S.ID.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data. S.ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. Fit a function to the data Emphasize linear, quadratic, and exponential models	

CURRICULUM MAP

Subject: Math 8 Next Gen Standards **Grade Level: 8th** **updated 7/24**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
Algebra **Solving Equations –Analyze and solve linear equations and pairs of simultaneous linear equations.** NY-8.EE.7 Solve linear equations in one variable. NY-8.EE.7a Recognize when linear equations in one variable have one solution, infinitely many solutions, or no solutions. Give examples and show which of these possibilities is the case by successively transforming the given equation into simpler forms. NY-8.EE.7b Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and combining like terms. Note: This includes equations that contain variables on both sides of the equation. **Geometry – Understand congruence and similarity using physical models, transparencies, or geometry software.** NY-8.G.1 Verify experimentally the properties of rotations, reflections, and translations. Notes: A translation displaces every point in the plane by the same distance (in the same direction) and can be described using a vector. A rotation requires knowing the center/point of rotation and the measure/direction of the angle of rotation. A line reflection requires a line and the knowledge of perpendicular bisectors. NY-8.G.1a Verify experimentally lines are mapped to lines, and line segments to line segments of the same length. NY-8.G.1b Verify experimentally angles are mapped to angles of the same measure.	**Geometric Relationships continue** NY-8.G.5 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. e.g., Arrange three copies of the same triangle so that the three angles appear to form a line, and give an argument in terms of transversals why this is so. Note: This standard does not include formal geometric proof. Multiple representations may be used to demonstrate understanding. NY-8.G.6 Understand a proof of the Pythagorean Theorem and its converse. NY-8.G.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. NY-8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. NY-8.G.9 Given the formulas for the volume of cones, cylinders, and spheres, solve mathematical and real-world problems. NY-7.G.6 Solve real-world and mathematical problems involving area of two-dimensional objects composed of triangles and trapezoids. Solve surface area problems involving right prisms and right pyramids composed of triangles and trapezoids. Find the volume of right triangular prisms, and solve volume problems involving three-dimensional objects composed of right rectangular prisms. Notes: The inclusive definition of a trapezoid will be utilized, which defines a trapezoid as "A quadrilateral with at least one pair of parallel sides." (This definition includes parallelograms and rectangles.) Right prisms include cubes. **Expressions & Equations –Analyze and solve linear equations and pairs of simultaneous linear equations.**	**Expressions & Equations –Analyze and** **Number System – Know that there are numbers that are not rational, and approximate them by rational numbers.** NY-8.NS.1 Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion eventually repeats. Know that other numbers that are not rational are called irrational. NY-8.NS.2 Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line, and estimate the value of expressions. NY-8.EE.2 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. Know square roots of perfect squares up to 225 and cube roots of perfect cubes up to 125. Know that the square root of a non-perfect square is irrational. e.g., The $\sqrt{2}$ is irrational. **Functions – Define, evaluate, and compare functions. Use functions to model relationships between quantities.** NY-8.F.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). e.g., Given a linear function represented by a table of values and a linear function represented by an algebraic equation, determine which function has the greater rate of change. Note: Function notation is not required in Grade 8. NY-8.F.4 Construct a function to model a linear relationship between	**Scientific Notation** NY-8.EE.3 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. e.g., Estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9 and determine that the world population is more than 20 times larger. NY-8.EE.4 Perform multiplication and division with numbers expressed in scientific notation, including problems where both standard decimal form and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. Interpret scientific notation that has been generated by technology.

NY-8.G.1c Verify experimentally parallel lines are mapped to parallel lines. NY-8.G.2 Know that a two-dimensional figure is congruent to another if the corresponding angles are congruent and the corresponding sides are congruent. Equivalently, two two-dimensional figures are congruent if one is the image of the other after a sequence of rotations, reflections, and translations. Given two congruent figures, describe a sequence that maps the congruence between them on the coordinate plane. NY-8.G.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. Note: Lines of reflection are limited to both axes and lines of the form y=k and x=k, where k is a constant. Rotations are limited to 90 and 180 degrees about the origin. Unless otherwise specified, rotations are assumed to be counterclockwise. NY-8.G.4 Know that a two-dimensional figure is similar to another if the corresponding angles are congruent and the corresponding sides are in proportion. Equivalently, two two-dimensional figures are similar if one is the image of the other after a sequence of rotations, reflections, translations, and dilations. Given two similar two-dimensional figures, describe a sequence that maps the similarity between them on the coordinate plane. Note: With dilation, the center and scale factor must be specified. NY-7.G.5 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. Note: Students in grade 7 are limited to solving equations that involve linear expressions on one side of the equation.	NY-8.EE.8 Analyze and solve pairs of simultaneous linear equations. NY-8.EE.8a Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. Recognize when the system has one solution, no solution, or infinitely many solutions. NY-8.EE.8b Solve systems of two linear equations in two variables with integer coefficients: graphically, numerically using a table, and algebraically. Solve simple cases by inspection. e.g., 3x + y = 5 and 3x + y = 6 have no solution because 3x + y cannot simultaneously be 5 and 6. Notes: Solving systems algebraically will be limited to at least one equation containing at least one variable whose coefficient is 1. Algebraic solution methods include elimination and substitution. This standard is a fluency expectation for grade 8. For more guidance, see Fluency in the Glossary of Verbs Associated with the New York State Next Generation Mathematics Learning Standards. NY-8.EE.8c Solve real-world and mathematical problems involving systems of two linear equations in two variables with integer coefficients. Note: Solving systems algebraically will be limited to at least one equation containing at least one variable whose coefficient is 1. **FUNCTIONS slope and graphing** NY-8.F.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. Note: Function notation is not required in Grade 8. NY-8.EE.5 Graph proportional relationships, interpreting the unit rate as the slope of the	two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. Note: Function notation is not required in Grade 8. NY-8.F.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. Note: Function notation is not required in Grade 8. **Statistics & Probability – Investigate patterns of association in bivariate data.** NY-8.SP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. NY-8.SP.2 Understand that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. NY-8.SP.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. e.g., In a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.	

	graph. Compare two different proportional relationships represented in different ways. e.g., Compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.		

Math 8 Common Core Continued	are cut by a transversal 8.G.5 Similar triangles: Use informal arguments to establish facts about the angle-angle criterion for similarity of triangle 8.G.4 Dilations revisited **Algebra/Functions** 6.EE.9 Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. 8.EE.5 Proportional and non-proportional relationships 8.F.4 Graphing using slope-intercept form: Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, 8.EE.5 Graph proportional and non-proportional relationships interpreting/finding slope (using slope formula) Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. 8.FF.4 Finding slope from a graph and table: Interpret the rate of change.. of a linear function in terms of the situation it models, and in terms of its graph or a table of values. 8.F.4 Writing Equations from charts, tables and graphs: Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. 8.F.2 Comparing rates (slopes)	descriptions). 8.F.4 Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values. 8.F.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally. **Geometry – Solve real-world and mathematical problems involving volume of cylinders, cones and spheres.** 7.G.6 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. 8.G.9 Solve real-world and mathematical problems involving volume of cylinders, cones and spheres. **Geometry - Draw, construct and describe geometrical figures and describe the relationships between them.** 7.G.2 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.3 Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. **Statistics & Probability – Investigate patterns of association in bivariate data.** 8.SP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as	**Geometry – Understand and apply the Pythagorean Theorem.** 8.G.6 Explain a proof of the Pythagorean Theorem and its converse. 8.G.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. 8.G.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.

		clustering, outliers, positive or negative association, linear association, and nonlinear association. 8.SP.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. 8.SP.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.	