Link Community Charter School
Grade 5 Math Scope and Sequence

Timeline	Unit Description/ Topic	Standards: Content	Essential Questions	Knowledge: What will students know?	Knowledge: What will students know? Skills: What will students be able to do?	Resources
Q1	**Place Value and Decimal Fractions**	5.NBT.1	Why is place value so important?	Recognize a multi-digit number.	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 Engage
		5.NBT.2	How do I express a patern to show a relationship?	Understand patterns in mathemetics.	5.NBT.2 Explain patterns in the number of zeros 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 Engage
		5.NBT.3	How can comparisons help us understand numbers?		Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000). b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	NY Engage
		5.NBT.4			Use place value understanding to round decimals to any place.	NY Engage
		5.NBT.7	Why do I need order of operations? How do they relate to one another?	Know the properties of operations and order of operations.	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	NY Engage
		5.MD.1	Why do I need standardized units of measure?	Understand standard measurement units.	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.	NY Engage

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Q2	**Problem Solving with the Coordinate Plane**	5.OA.1	How do I know where to begin when solving a problem?	Use parentheses, brackets, and braces.	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	NY Engage
		5.OA.2	How does explaining my process help me understand a problem's solution?		Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.	NY Engage
		5.NBT.1	How does explaining my process help me understand a problem's solution?	Understanda that a digit in one place represents 10 times as much as it represents in the place to its right.	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 Engage
		5.NBT.2	What is a pattern and how do I describe a pattern?	Understand exponents denote powers of 10.	Explain patterns in the number of zeros 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 Engage
		5.NBT.5	Why do I need mathematical operations?	Understand the use of standard algorithm.	Fluently multiply multi-digit whole numbers using the standard algorithm.	NY Engage

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		5.NBT.6	Why do I need order of operations? How do they	Know the properties of operations and order of operations.	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	NY Engage
		5.NBT.7	How can patterns be used to make predictions?	Understand concrete models and drawings and relation to abstract math.	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	NY Engage
		5.MD.1	How does what I measure influence how we measure?	Know standard measurement units.	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.	NY Engage
Q2	**Multi-Digit Whole Number and Decimal Fraction Operations**	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. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)	NY Engage
		5.NF.2		Understand benchmark fractions and number sense	5.NF.2 Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess	NY Engage

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Q3	**Addition and Subtraction of Fractions**	5.OA.1	When and why do I use proportional comparisons?		Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions withthese symbols.	NY Engage
		5.OA.2			Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.	NY Engage
		5.NBT.7		Understand concrete models and drawings and relation to abstract math.	Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	NY Engage
		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, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?	NY Engage

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		5.NF.4		Understand the sequence of operations (order of operations).	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. a. Interpret the product (a/b) × 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. For example, 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. (In general, (a/b) × (c/d) = ac/bd.)	NY Engage
		5.NF.5			Interpret multiplication as scaling (resizing), by: a. Comparing 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. b. Explaining 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); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (n × a)/(n × b) to the effect of multiplying a/b by 1.\	NY Engage
		5.NF.6		Understand visual fraction models or equations to represent problems.	Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	NY Engage

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		5.NF.7		Know that visual fractio models can represent quotients.	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (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 at this grade.) a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, 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. b. Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.	NY Engage
		5.MD.1		Understand measurement conversions.	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.	NY Engage
		5.MD.2	Why does the perception of volume change based on the schape of the container?		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. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.	NY Engage

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Q3	**Multiplication of Fraction and Decimals**	5.NF.4	How do I know where to begin when solving a problem?	Know formula for area of a rectangle	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares 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 as rectangular areas.	NY Engage
		5.MD.3	How do I decide whant strategy will work best in a given problem/	Recognize volume as an attriute of solid figures.	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. a. 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. b. 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 Engage
		5.MD.4		Count unit cubes, cubic cm, and cubic ft.	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	NY Engage

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		5.MD.5	How are geometric chapes and pbjects characterized? How do geometric models describ spatial relationships?	Recognize volume as aadditive.	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. a. 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. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. b. Apply the formulas V = l × w × h and V = b × 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. c. 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.	NY Engage
		5.G.3	How do geometric models describ spatial relationships?	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.	NY Engage
		5.G.4		Know the hierarchy of 2 dimensional figures.	Classify two-dimensional figures in a hierarchy based on properties.	NY Engage

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Q4	**Addition and Multiplication with Volume and Area**	5.OA.2	How does what I measure influence how we measure?		Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.	NY Engage
		5.OA.3	How does compraing quatities describe the relationship between them?	Know relationships between corresponding terms.	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. For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.	NY Engage

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		5.G.1	How is thinking algebraically different from thinking arithemetically?	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.	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 (e.g., x-axis and x-coordinate, y-axis and y-coordinate).	NY Engage
		5.G.2	How do I use algebraic expressions to analyze or solve problems?		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.	NY Engage