

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

Time Line	Unit Description /Topic	Standards	Essential Questions	Knowledge: What will students know?	Skills: What will students be able to do?	Resources
Q1	Ratios and Unit Rates	6.RP.1	How can ratios and proportions be used to solve real world problems? How are percents, decimals, and fractions related to one another?	Understand the concept of a ratio.	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. For example, "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 nearly three votes."	EngageNY
		6.RP.2	How can ratios and proportions be used to solve real world problems? How are percents, decimals, and fractions related to one another?	Understand the concept of unit rate.	Understand the concept of a unit rate a/b associated with a ratio $a:b$ with $b \neq 0$, and use rate language in the context of a ratio relationship. For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is $3/4$ cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."	EngageNY
		6.RP.3	How can ratios and proportions be used to solve real world problems? How are percents, decimals, and fractions related to one another?	Know what a tape diagram and double number line diagram is.	Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

		6.RP.3	How can ratios and proportions be used to solve real world problems? How are percents, decimals, and fractions related to one another?		a. 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.	EngageNY
		6.RP.3	How can ratios and proportions be used to solve real world problems? How are percents, decimals, and fractions related to one another?	Understand unit pricing and constant speed.	b. Solve unit rate problems including those involving unit pricing and constant speed. For example, 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?	EngageNY
		6.RP.3	How can ratios and proportions be used to solve real world problems? How are percents, decimals, and fractions related to one another?	Understand that percent is a quantity of 100	c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent. d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

Q1	Arithmetic Operations Including Dividing by a Fraction	6.NS.1	How can we find and use common factors and multiples? How can we represent and use integers? How can we locate rational numbers and on a number line?	Understand visual fraction models represent problems.	Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For example, create a story context for $(2/3) \div (3/4)$ and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that $(2/3) \div (3/4) = 8/9$ because $3/4$ of $8/9$ is $2/3$. (In general, $(a/b) \div (c/d) = ad/bc$.) How much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $3/4$ -cup servings are in $2/3$ of a cup of yogurt? How wide is a rectangular strip of land with length $3/4$ mi and area $1/2$ square mi?	EngageNY
		6.NS.2		Divide multi-digit numbers	Fluently divide multi-digit numbers using the standard algorithm. ⁷	EngageNY
		6.NS.3		Know the standard algorithm	Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. ⁸	EngageNY
		6.NS.4		Understand common factors and least common multiples.	Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. 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. For example, express $36 + 8$ as $4(9 + 2)$.	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

Q2	Rational Numbers	6.NS.5	<p>How can we find and use common factors and multiples?</p> <p>How can we represent and use intergers?</p> <p>How can we locate rational numbers and on a number line?</p>	Understand the difference between positive and negative numbers.	Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.	EngageNY
		6.NS.6	<p>What is an integer?</p> <p>Why can't the denominator of a rational number be zero?</p> <p>What is a rational number?</p> <p>Why can a number line be useful when using integers?</p> <p>Explain the difference between an opposite number and an absolute value.</p> <p>How do you compare and order rational numbers?</p>	Understand rational numbers as a point on a number line.	Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. a. 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, e.g., $-(-3) = 3$, and that 0 is its own opposite. b. 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. c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

		6.NS.7		<p>Understand ordering and absolute value of rational numbers.</p> <p>Understand the absolute value of a number as the distance from 0.</p>	<p>Understand ordering and absolute value of rational numbers. a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret $-3 > -7$ as a statement that -3 is located to the right of -7 on a number line oriented from left to right. b. Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write $-3^{\circ}\text{C} > -7^{\circ}\text{C}$ to express the fact that -3°C is warmer than -7°C. c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. For example, for an account balance of -30 dollars, write $-30 = 30$ to describe the size of the debt in dollars. d. Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars.</p>	EngageNY
		6.NS.8		<p>Know there are 4 quadrants on a coordinate plane.</p>	<p>Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.</p>	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

Q3	Expressions and Equations	6.EE.1	Within a single problem, does the value of a variable change? What are synonyms for the mathematical operations? What are inverse operations? How are inverse operations used to solve one-step equations? How do you know if your solution is reasonable?		Write and evaluate numerical expressions involving whole-number exponents.	EngageNY
----	---------------------------	--------	--	--	--	----------

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

		6.EE.2	<p>Within a single problem, does the value of a variable change?</p> <p>What are synonyms for the mathematical operations?</p> <p>What are inverse operations?</p> <p>How are inverse operations used to solve one-step equations?</p> <p>How do you know if your solution is reasonable?</p>		<p>Write, read, and evaluate expressions in which letters stand for numbers. a. Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation “Subtract y from 5” as $5 - y$. b. Identify parts of an expression using mathematical terms (sum, term, product, factor quotient, coefficient); view one or more parts of an expression as a single entity. For example, 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. c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = \frac{1}{2}$.</p>	EngageNY
--	--	--------	---	--	--	----------

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

		6.EE.3	<p>Within a single problem, does the value of a variable change?</p> <p>What are synonyms for the mathematical operations?</p> <p>What are inverse operations?</p> <p>How are inverse operations used to solve one-step equations?</p> <p>How do you know if your solution is reasonable?</p>		<p>Apply the properties of operations to generate equivalent expressions. For example, apply the distributive property to the expression $3(2 + x)$ 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 $3y$.</p>	EngageNY
		6.EE.4	<p>Within a single problem, does the value of a variable change?</p> <p>What are synonyms for the mathematical operations?</p> <p>What are inverse operations?</p> <p>How are inverse operations used to solve one-step equations?</p> <p>How do you know if your solution is reasonable?</p>	<p>Understand that expressions can be equivalent.</p>	<p>Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). For example, the expressions $y + y + y$ and $3y$ are equivalent because they name the same number regardless of which number y stands for.</p>	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

		6.EE.5	<p>Within a single problem, does the value of a variable change?</p> <p>What are synonyms for the mathematical operations?</p> <p>What are inverse operations?</p> <p>How are inverse operations used to solve one-step equations?</p> <p>How do you know if your solution is reasonable?</p>	<p>Understand solving an equation or inequality as a process or answering a question</p>	<p>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.</p>	EngageNY
		6.EE.6	<p>Within a single problem, does the value of a variable change?</p> <p>What are synonyms for the mathematical operations?</p> <p>What are inverse operations?</p> <p>How are inverse operations used to solve one-step equations?</p> <p>How do you know if your solution is reasonable?</p>	<p>Variables represent numbers</p>	<p>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.</p>	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

		6.EE.7	<p>Within a single problem, does the value of a variable change?</p> <p>What are synonyms for the mathematical operations?</p> <p>What are inverse operations?</p> <p>How are inverse operations used to solve one-step equations?</p> <p>How do you know if your solution is reasonable?</p>		<p>Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q, and x are all nonnegative rational numbers.</p>	EngageNY
		6.EE.8	<p>Within a single problem, does the value of a variable change?</p> <p>What are synonyms for the mathematical operations?</p> <p>What are inverse operations?</p> <p>How are inverse operations used to solve one-step equations?</p> <p>How do you know if your solution is reasonable?</p>	<p>Understand the number line.</p>	<p>Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or 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.</p>	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

		6.EE.9	<p>Within a single problem, does the value of a variable change?</p> <p>What are synonyms for the mathematical operations?</p> <p>What are inverse operations?</p> <p>How are inverse operations used to solve one-step equations?</p> <p>How do you know if your solution is reasonable?</p>		<p>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. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time.</p>	EngageNY
Q4	Area, Surface Area, and Volume Problems	6.EE.2	<p>What is the shape for each of the faces or surfaces of a three-dimensional shape? How can the area for each face or surface be found?</p>	Knowledge or Order of Operations	<p>Write, read, and evaluate expressions in which letters stand for numbers. c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.</p>	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

		6.EE.5	How can formulas for surface area of right rectangular and triangular prisms help me finding the surface areas?	Understand solving an equation or inequality as a process or answering a question	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.	EngageNY
		6.EE.6	How are the units of measurement for area different from those used for volume?	Variables represent numbers	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.	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

		6.EE.7	<p>How do you find the area of a complex figure?</p> <p>What are the attributes used to identify prisms, cones, cylinders, and pyramids?</p> <p>How can the surface area of three dimensional figures be determined?</p> <p>How do two-dimensional and three-dimensional figures differ?</p> <p>How are nets related?</p>		<p>Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q, and x are all nonnegative rational numbers.</p>	EngageNY
		6.G.1	<p>How are nets related to surface area?</p>		<p>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.</p>	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

		6.G.2	What information is essential in finding volume?	Understand you can find volume by filling an object with unit cubes.	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.	EngageNY
		6.G.3	What information is essential in finding volume?	Understand coordinates on the vertices of a coordinate plane.	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.	EngageNY
		6.G.4	What information is essential in finding volume?		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.	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

Q4	Statistics	6.SP.1	How can the collection, organization, interpretation, and display of data be used to answer questions? How can I use the measure of center and variability to interpret data?		Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, “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.	EngageNY
		6.SP.2	How can the collection, organization, interpretation, and display of data be used to answer questions? How can I use the measure of center and variability to interpret data?		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.	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

		6.SP.3	How can the collection, organization, interpretation, and display of data be used to answer questions? How can I use the measure of center and variability to interpret data?		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.	EngageNY
		6.SP.4	How can the collection, organization, interpretation, and display of data be used to answer questions? How can I use the measure of center and variability to interpret data?		Display numerical data in plots on a number line, including dot plots, histograms, and box plots.	EngageNY

Link Community Charter School
Grade 6 Mathematics Scope and Sequence

		6.SP.5	<p>How can the collection, organization, interpretation, and display of data be used to answer questions?</p> <p>How can I use the measure of center and variability to interpret data?</p>		<p>Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.</p>	EngageNY
--	--	--------	---	--	---	----------