Math Grade 8 Curriculum Map

NextGen Standards	Concept/ Unit Theme	Student Objectives	Vocabulary	Time Length
NY- 8.NS.1 NY - 8. NS.2 NY-8.EE.2 NY-8.G.6 NY-8.G.7 NY-8.G.8	Unit #1 The Number System	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. 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. 3. Use square root and cube root symbols to represent solutions to equations of the form x2 = p and x3 = 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. 4. Understand a proof of the Pythagorean Theorem and its converse 5. Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and	Rational numbers, repeating decimal, terminating decimal, irrational numbers, integers, whole numbers, natural numbers, bar notation, place value(tenths, hundredths, thousandths, etc.), square roots, cube roots, legs, hypotenuse, Pythagorean Theorem	18 days

		mathematical problems in two and three dimensions. 6. Apply the Pythagorean Theorem to find the distance between two points in a coordinate system		
N.Y.-8.EE.1	Unit #2 Integer Exponents	1. Know and apply the properties of integer exponents to generate equivalent numerical expressions.	Power, base, exponent, monomial	10 days
N.Y.-8.EE.7 N.Y.-8.EE.7a N.Y.-8.EE.7b	Unit #3 Expressions and Equations	1. Solve linear equations in one variable. 2. 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. 3. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and combining like terms.	Multiplicative inverse, coefficient, properties, two-step equation, equivalence, null set, empty set, infinitely many solutions, no solutions	12 days
N.Y.-8.EE.5 N.Y.-8.EE.6	Unit #4 Proportional relationships, lines, and linear equations	4. Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. e.g., Compare a distance-time graph to a distance-time equation to determine	Linear relationship, constant rate of change, slope, rise, run, direct variation, constant of variation, constant of	12 days

		which of two moving objects has greater speed. 5. Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y=mx for a line through the origin and the equation y=mx+b for a line intercepting the vertical axis at b.	proportionality, y-intercept, slope-intercept formLinear relationship, constant rate of change, slope, rise, run, direct variation, constant of variation, constant of proportionality, y-intercept, slope-intercept form	
N.Y.-8.F.1 N.Y.-8.F.2 N.Y.-8.F.3 N.Y.-8.F.4 N.Y.-8.F.5	Unit #5 Functions	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. Notes: Function notation is not required in Grade 8. The terms domain and range may be introduced at this level; however, these terms are formally introduced in Algebra I (AI-F.IF.1). 2. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). 3. Interpret the equation y = mx + b as defining a linear function, whose	dependent variable, function, function table, independent variable, linear equation, linear function, nonlinear function, quadratic function, qualitative graphs, relation	17 days

		graph is a straight line. Recognize examples of functions that are linear and non-linear. 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. 5. Describe qualitatively the functional relationship between two quantities by analyzing a graph. Sketch a graph that exhibits the qualitative features of a function that has been described in a real-world context.		
NY-8.G.1a NY-8.G.1b NY-8.G.1c NY-8.G.5	Unit #6 Angles and Lines	1. Verify experimentally lines are mapped to lines, and line segments to line segments of the same length. 2. Verify experimentally angles are mapped to angles of the same measure. 3. Verify experimentally parallel lines are mapped to parallel lines. 4. Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the	Perpendicular lines, parallel lines, transversal, interior angles, exterior angles, alternate interior angles, alternate exterior angles, vertical angles, corresponding angles, triangle,	10 days

		angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.	remote interior angles	
NY-8.G.1 NY-8.G.2 NY-8.G.3 NY-8.G.4	Unit #7 Transformations	1. Verify experimentally the properties of rotations, reflections, and translations. 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 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 a coordinate plane. 3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. 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, congruent, dilation, image, line of reflection, preimage, reflection, rotation, rotational symmetry, transformation, translation, orientation of figure, orientation of vertices	16 days

		similar two-dimensional figures, describe a sequence that maps the similarity between them on the coordinate plane.		
NY-8.G.9	Unit #8 Volume	1. Given the formulas for the volume of cones, cylinders, and spheres, solve mathematical and real-world problems.	Composite solids, cone, cylinder, hemisphere, sphere, volume	8 days
NY-8.SP.1 NY-8.SP.2 NY-8.SP.3	Unit #9 Scatter Plots and Data Analysis	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. 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. 3. Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.	Bivariate data, distribution, five-number summary, lines of best fit, mean absolute deviation, qualitative data, quantitative data, scatter plot, symmetric	12 days
NY-8.EE.8a NY-8.EE.8b NY-8.EE.8c	Unit #10 System of Equations	1. Understand that solutions to a system of two linear equations in two variables correspond to points of	system of equations, substitution,	14-16 days

		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. 2. Solve systems of two linear equations in two variables with integer coefficients: graphically, numerically using a table, and algebraically. Solve simple cases by inspection. 3. Solve real-world and mathematical problems involving systems of two linear equations in two variables with integer coefficients.	elimination	