Grade 7

Domain	Cluster	Standard	Standard Description	Activities
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.	Scale Factor Scale Measurement Floor Plans Perimeter, Area, Dimension Change
Geometry	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.	Teacher directed
Geometry	Draw, construct, and describe geometrical figures and describe the relationships between them.	NY-7.G.3	Describe the two-dimensional shapes that result from slicing three-dimensional solids parallel or perpendicular to the base.	Relate Shapes and Solids
Geometry	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.	Calculate Circumference of Circles Area: Circles 1 Area: Circles 2 Area: Annulus
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.	Equal, Complement, or Supplement? Vertically Opposite: Value of x
Geometry	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	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.	Area: Squares and Rectangles Area: Compound Figures Area: Triangles Area: Composite Shapes Area: Parallelograms Area: Quadrilaterals Nets Surface Area: Cuboids Surface Area: Rectangular Prisms Surface Area: Triangular Prisms 1 Volume of Rectangular Prisms 1 Volume of Triangular Prisms Volume: Prisms

Grade 7

Domain	Cluster	Standard	Standard Description	Activities
Statistics and Probability	Draw informal comparative inferences about two populations.	NY-7.SP.1	Construct and interpret box-plots, find the interquartile range and determine if a data point is an outlier.	Box-and-Whisker Plots 1 Box-and-Whisker Plots 2 Understanding Box-and-Whisker Plots Calculating Interquartile Range Data Extremes and Range Median
Statistics and Probability	Draw informal comparative inferences about two populations.	NY-7.SP.3	Informally assess the degree of visual overlap of two quantitative data distributions.	Teacher directed
Statistics and Probability	Draw informal comparative inferences about two populations.	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.	Teacher directed
Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	NY-7.SP.8	Find probabilities of compound events using organized lists, sample space tables, tree diagrams, and simulation. a. 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. b. 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. c. Design and use a simulation to generate frequencies for compound events.	Counting Principle Counting Techniques 1 Dice and Coins Probability-Replacement Probability-No Replacement

Grade 8

Domain	Cluster	Standard	Standard Description	Activities
The 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.	Recurring Decimals Fraction to Terminating Decimal Irrational Numbers
The Number System	Know that there are numbers that are not rational, and approximate them by rational numbers.	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.	Estimating Square Roots
Expressions, Equations, and Inequalities	Work with radicals and integer exponents.	NY-8.EE.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.	Exponent Notation Exponent Laws with Brackets The Zero Exponent Negative Exponents Integer Exponents Simplifying with Exponential Laws 1 Multiplication with Exponents Properties of Exponents Exponent Notation and Algebra Exponent Laws and Algebra Exponent Form to Numbers
Expressions, Equations, and Inequalities	Work with radicals and integer exponents.	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.	Square Roots Square Roots 1 Square and Cube Roots
Expressions, Equations, and Inequalities	Work with radicals and integer exponents.	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.	Scientific Notation Scientific Notation 1 Scientific Notation 2 Scientific notation to decimal Ordering Scientific Notation

Grade 8

Domain	Cluster	Standard	Standard Description	Activities
Expressions, Equations, and Inequalities	Work with radicals and integer exponents.	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.	Teacher directed
Expressions, Equations, and Inequalities	Understand the connections between proportional relationships, lines, and linear equations.	NY-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.	y=ax
Expressions, Equations, and Inequalities	Understand the connections between proportional relationships, lines, and linear equations.	NY-8.EE.6	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 equations $y = mx$ for a line through the origin and the equations $y = mx + b$ for a line intercepting the vertical axis at b.	Determining a Rule for a Line Gradient Slope of a Line Equation of a Line 1 Which Straight Line? Equation from Point and Gradient Modeling Linear Relationships

Grade 8

Domain	Cluster	Standard	Standard Description	Activities
Expressions, Equations, and Inequalities	Analyze and solve linear equations and pairs of simultaneous linear equations.	NY-8.EE.7	Solve linear equations in one variable. a. 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. b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and combining like terms.	Equations with Grouping Symbols Equations with Fractions Equations with Decimals Equations to Solve Problems Equations: Variable Both Sides Solving More Equations
Expressions, Equations, and Inequalities	Analyze and solve linear equations and pairs of simultaneous linear equations.	NY-8.EE.8	Analyze and solve pairs of simultaneous linear equations. a. 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. b. Solve systems of two linear equations in two variables with integer coefficients: graphically, numerically using a table, and algebraically. Solve simple cases by inspection. c. Solve real-world and mathematical problems involving systems of two linear equations in two variables with integer coefficients.	Solve Systems by Graphing Linear Modelling Simultaneous Equations 1 Simultaneous Equations 2 Simultaneous Linear Equations

Grade 8

Domain	Cluster	Standard	Standard Description	Activities
Functions	**Define, evaluate, and compare functions.**	**NY-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.**	**Function Rules and Tables** **Vertical Line Test**
Function	**Define, evaluate, and compare functions.**	**NY-8.F.2**	**Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).**	**Teacher directed**
Functions	**Define, evaluate, and compare functions.**	**NY-8.F.3**	**Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line. Recognize examples of functions that are linear and non-linear.**	**Find the Function Rule**
Functions	**Use functions to model relationships between quantities.**	**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.**	**Teacher directed**
Functions	**Use functions to model relationships between quantities.**	**NY-8.F.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.**	**Travel Graphs** **Line Graphs: Interpretation**

Grade 8

Domain	Cluster	Standard	Standard Description	Activities
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. a. Verify experimentally lines are mapped to lines, and line segments to line segments of the same length. b. Verify experimentally angles are mapped to angles of the same measure. c. Verify experimentally parallel lines are mapped to parallel lines.	Flip, Slide, Turn Transformations Transformations: Coordinate Plane Rotations: Coordinate Plane
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	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.	Congruent Figures (Dot Grid) Congruent Figures (Grid)
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	NY-8.G.3	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	Flip, Slide, Turn Transformations Transformations: Coordinate Plane Rotations: Coordinate Plane Scale Factor

Grade 8

Domain	Cluster	Standard	Standard Description	Activities
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	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.	Similar Figures 1
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	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.	Angles and Parallel Lines Angles on Parallel Lines Introduction to Angles on Parallel Lines 1 Introduction to Angles on Parallel Lines 3 Parallel Lines Vertically Opposite Angles: Unknown Values Vertically Opposite: Value of x Using Similar Triangles Similar Triangles Angle Measures in a Triangle Angle Sum of a Triangle Exterior Angles of a Triangle
Geometry	Understand and apply the Pythagorean Theorem.	NY-8.G.6	Understand a proof of the Pythagorean Theorem and its converse.	Pythagorean Triads
Geometry	Understand and apply the Pythagorean Theorem.	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.	Pythagorean Theorem Pythagoras: Find a Short Side (decimal values) Pythagoras: Find a Short Side (integers only) Pythagoras: Find a Short Side (rounding needed) Pythagoras' Theorem Find Slant Height
Geometry	Understand and apply the Pythagorean Theorem.	NY-8.G.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	Distance Between Two Points

Grade 8

Domain	Cluster	Standard	Standard Description	Activities
Geometry	**Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.**	**NY-8.G.9**	**Given the formulas for the volume of cones, cylinders, and spheres, solve mathematical and real-world problems.**	**Volume: Cylinders** **Volume: Cones** **Volume: Spheres** **Volume: Composite Figures**
Statistics and 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.**	**Data Analysis: Scatter Plots** **Scatter Plots**
Statistics and Probability	**Investigate patterns of association in bivariate data.**	**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.**	**Teacher directed**
Statistics and Probability	**Investigate patterns of association in bivariate data.**	**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.**	**Teacher directed**

Mathletics

3P Learning