




Grade 7

Domain	Cluster	Standard	Standard Description	 Activities
Geometry	Draw, construct, and describe geometrical figures and describe the relationships between them.	7.G.3	Describe the two-dimensional shapes that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.	Relate Shapes and Solids
Geometry	Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.	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.	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.	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.	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.	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


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Domain	Cluster	Standard	Standard Description	 Activities
Statistics and Probability	Use random sampling to draw inferences about a population.	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.	Teacher directed
Statistics and Probability	Use random sampling to draw inferences about a population.	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.	Teacher directed
Statistics and Probability	Draw informal comparative inferences about two populations.	7.SP.3	Informally assess the degree of visual overlap of two quantitative data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.	Teacher directed
Statistics and Probability	Draw informal comparative inferences about two populations.	7.SP.4	Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.	Mean Median Mode Data Extremes and Range
Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	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.	Chance Dial Probability Scale


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Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	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.	Find the Probability Simple Probability Introductory Probability
Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	7.SP.7	<p>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.</p> <ol style="list-style-type: none"> Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. 	Probability Tables

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Statistics and Probability	Investigate chance processes and develop, use, and evaluate probability models.	7.SP.8	<p>Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.</p> <ol style="list-style-type: none"> 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. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language, identify the outcomes in the sample space which compose the event. Design and use a simulation to generate frequencies for compound events. 	Counting Principle Counting Techniques 1 Dice and Coins Probability – Replacement Probability – No Replacement


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Domain	Cluster	Standard	Standard Description	 Activities
The Number System	Know that there are numbers that are not rational, and approximate them by 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.	<ul style="list-style-type: none"> Recurring Decimals Irrational Numbers Fraction to Terminating Decimal
The Number System	Know that there are numbers that are not rational, and approximate them by rational numbers.	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.	<ul style="list-style-type: none"> Estimating Square Roots
Expressions and Equations	Work with radicals and integer exponents.	8.EE.1	Know and apply the properties of integer exponents to generate equivalent numerical expressions.	<ul style="list-style-type: none"> The Zero Exponent Simplifying with Exponent Laws 1 Multiplication with Exponents Properties of Exponents Exponent Notation and Algebra Exponent Notation Exponent Laws with Brackets Negative Exponents Integer Exponents Exponent Laws and Algebra Exponent Form to Numbers
Expressions and Equations	Work with radicals and integer exponents.	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. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.	<ul style="list-style-type: none"> Square Roots Square Roots 1 Square and Cube Roots
Expressions and Equations	Work with radicals and integer exponents.	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.	<ul style="list-style-type: none"> Scientific Notation Scientific Notation 1 Scientific Notation 2 Scientific notation to decimal Ordering Scientific Notation

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Domain	Cluster	Standard	Standard Description	Activities
Expressions and Equations	Work with radicals and integer exponents.	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. Interpret scientific notation that has been generated by technology.	Teacher directed
Expressions and Equations	Understand the connections between proportional relationships, lines, and linear equations.	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 and Equations	Understand the connections between proportional relationships, lines, and linear equations.	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


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Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.	8.EE.7	<p>Solve linear equations in one variable.</p> <p>a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$ or $a = b$ results (where a and b are different numbers).</p> <p>b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and combining like terms.</p>	<p>Equations with Grouping Symbols</p> <p>Equations with Fractions</p> <p>Equations with Decimals</p> <p>Equations to Solve Problems</p> <p>Equations: Variables, Both Sides</p> <p>Solving More Equations</p>
Expressions and Equations	Analyze and solve linear equations and pairs of simultaneous linear equations.	8.EE.8	<p>Analyze and solve pairs of simultaneous linear equations.</p> <p>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.</p> <p>b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection.</p> <p>c. Solve real-world and mathematical problems leading to two linear equations in two variables.</p>	<p>Solve Systems by Graphing</p> <p>Linear Modelling</p> <p>Simultaneous Equations 1</p> <p>Simultaneous Equations 2</p> <p>Simultaneous Linear Equations</p>
Functions	Define, evaluate, and compare functions.	8.F.1	<p>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.</p>	<p>Function Rules and Tables</p> <p>Vertical Line Test</p>


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Functions	Define, evaluate, and compare functions.	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.	8.F.3	Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.	Find the Function Rule
Functions	Use functions to model relationships between quantities.	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.	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 verbally.	Travel Graphs Line Graphs: Interpretation
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	8.G.1	Verify experimentally the properties of rotations, reflections, and translations: <ol style="list-style-type: none"> Lines are taken to lines, and line segments to line segments of the same length. Angles are taken to angles of the same measure. Parallel lines are taken to parallel lines. 	Flip, Slide, Turn Transformations Transformations: Coordinate Plane Rotations: Coordinate Plane


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Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	8.G.2	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them.	Congruent Figures (Dot Grid) Congruent Figures (Grid)
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	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
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	8.G.4	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	Similar Figures 1
Geometry	Understand congruence and similarity using physical models, transparencies, or geometry software.	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 a Parallel Line 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.	8.G.6	Explain a proof of the Pythagorean Theorem and its converse.	Pythagorean Triads

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Geometry	Understand and apply the Pythagorean Theorem.	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.	8.G.8	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	Distance Between Two Points
Geometry	Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	8.G.9	Know the formulas for the volume of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	Volume: Cylinders Volume: Cones Volume: Spheres Volume: Composite Figures
Statistics and 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 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.	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.	Teacher directed
Statistics and Probability	Investigate patterns of association in bivariate data.	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

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Statistics and Probability	Investigate patterns of association in bivariate data.	8.SP.4	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated from rows or columns to describe possible association between the two variables.	Probability Tables Relative Frequency Two-way Table Frequency

Mathletics



3P Learning

