COMMON CORE RESOURCE FOR GRADE 8

RATIOS AND PROPORTIONAL RELATIONSHIPS

CCSS	Math Concept	Standards and References
8.NS.1.	**Numbers that are not rational are called Irrational. Both types have a decimal expansion.**	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.
1	**Rational verses Irrational Numbers**	
	ǒ Definition of a Rational Number	http://learnzillion.com/lessons/219-understand-and-apply-the-definition-of-rational-numbers
	ǒ Definition of an Irrational number	http://learnzillion.com/lessons/220-understand-and-apply-the-definition-of-irrational-numbers
	ǒ Distinguish between rational and irrational numbers	http://learnzillion.com/lessons/221-distinguish-between-rational-and-irrational-numbers
2	**Decimal Expansion of a number**	
	ǒ Every rational number can be written as a decimal. The decimal portion eventually repeats.	**1 = 1.0000...** Any integer can be turned into a decimal number by adding a decimal point followed by any number of zero's. The repeating zero's makes it a repeating decimal. Since the repeating number is zero every time, the repetition is said to have a period = 1. **1.585000...** A decimal with a finite number of digits follow by repeating zero's is said to terminate before the zeros. Instead of writing "1.585000é ", one can simply write "1.585" . Any number of zeroes can be added if desired - for example to help line up the digits for addition with numbers above and/or below with the same number of digits after the decimal. **1/3 = .333333...** Since the same number repeats every time, the repetition is said to have a period of 1. **5/7 = 0.<u>714285</u>7142857142857...** The underlined portion of the decimal repeats indefinitely every 6 digits (i.e. the repetition rate has a period of 6). **1/9999999 = <u>.0000001</u>00000010000001...** The underlined portion repeats every 7 digits (i.e. a period of 7)
	ǒ Convert a number with a repeating decimal into a fraction (i.e., a rational number).	http://learnzillion.com/lessons/223-convert-repeating-decimals-into-fractions

8.NS.2.	**Create approximations of the size of irrational numbers**	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 (e.g.,´ 2). For example, by truncating the decimal expansion of ã2, show that ã2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations.
	Estimate the square root of non-perfect square number.	
	ð Place non-perfect square roots between 2 integers	http://learnzillion.com/lessons/224-place-nonperfect-square-roots-between-2-integers
	ð Estimate the square root of non-perfect square number to the tenths place.	http://www.virtualnerd.com/algebra-1/algebra-foundations/powers-square-roots/square-roots/square-root-estimation
	ð Estimate the square root of non-perfect square number to the hundredths place.	https://activate.illuminateed.com/playlist/resource-sview/id/5070899eefea65e17c00003b/rid/507095f3efea65e37f000019/bc0/user/bc1/playlist/bc0_id/4fff3767efea650023000698

8.EE. EXPRESSIONS AND EXPANSIONS

8.EE.1.	**Know and apply the properties of integer exponents to generate equivalent numerical expressions.**	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^3 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.Know and apply the properties of integer exponents to generate
1	**Multiply and divide numbers with positive exponents.**	
	ð Multiply numbers with positive exponents	http://learnzillion.com/lessons/1514-multiply-two-or-more-exponential-expressions
	ð Divide numbers with positive exponents	http://learnzillion.com/lessons/1666-divide-exponential-expressions-by-noticing-patterns
	ð Divide exponential expressions when exponent in denominator is greater than exponent in the numerator	http://learnzillion.com/lessons/1670-divide-exponential-expressions-when-exponent-in-denominator-is-greater-than-exponent-in-the-numerator
2	**Using negative exponents**	
	ð Apply a negative exponent using patterns and rules	http://learnzillion.com/lessons/1668-apply-a-negative-exponent-using-patterns-and-rules
3	**Using zero exponents**	
	ð Apply a zero exponent using patterns and rules	http://learnzillion.com/lessons/1667-apply-a-zero-exponent-using-patterns-and-rules
4	**Raise an exponential expression to a power**	
	ð Raise an exponential expression to a power	http://learnzillion.com/lessons/1515-raise-an-exponential-expression-to-a-power
5	**Evaluate expressions with exponents following the order of operations**	
	ð Evaluate expressions with exponents using order of operations	http://learnzillion.com/lessons/1671-evaluate-expressions-with-exponents-using-order-of-operations

8.EE.2.	**Evaluate square roots of perfect squares and cube roots of perfect cubes.**	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 ã2 is irrational.
1	**Square roots**	
	ð Find the square root of a perfect square	http://learnzillion.com/lessons/1810-find-the-square-root-of-a-perfect-square
	ð Solve equations with squares and square roots	http://learnzillion.com/lessons/186-solve-equations-with-squares-and-square-roots
2	**Cube roots**	
	ð Identify perfect cubes and find cube roots	http://learnzillion.com/lessons/188-identify-perfect-cubes-and-find-cube-roots
	ð Solve equations with cubes and cube roots	http://learnzillion.com/lessons/189-solve-equations-with-cubes-and-cube-roots
8.EE.3.	**Show the basis of Scientific Notation**	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. For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9, and determine that the world population is more than 20 times larger.
1	**Large Numbers**	
	ð Write large numbers in scientific notation	http://learnzillion.com/lessons/1177-write-large-numbers-in-scientific-notation
2	**Small Numbers**	
	ð Write small numbers in scientific notation	http://learnzillion.com/lessons/1255-write-small-numbers-in-scientific-notation
8.EE.4.	**Show the uses of Scientific Notation.**	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 (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.
1	**Multiplication and division using Scientific Notation.**	
	ð Multiply numbers in scientific notation	http://learnzillion.com/lessons/1293-multiply-numbers-in-scientific-notation
	ð Divide numbers in scientific notation	http://learnzillion.com/lessons/1313-divide-numbers-in-scientific-notation
2	**Applications of Scientific Notation**	
	ð Use scientific notation to estimate products	http://learnzillion.com/lessons/1302-use-scientific-notation-to-estimate-products
	ð Use scientific notation to estimate quotients	http://learnzillion.com/lessons/1327-use-scientific-notation-to-estimate-quotients
	ð Scientific Notation Real Life Problems	http://www.youtube.com/watch?v=wxzXTRgZWFA

8.EE.5.	**Graph proportional relationships. Interpret the Unit Rate. Compare time-distance equations and graphs.**	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. *For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed.*
	Understanding proportional relationships using equations and graphics	
	ŏ Understand proportional relationships by relating graphs and equations	http://learnzillion.com/student/lessons/1198
	ŏ Compare proportional relationships by comparing their unit rates (i.e.,slopes)	http://learnzillion.com/student/lessons/1199-compare-proportional-relationships
8.EE.6.	**Explain why the slopes of similar triangles are the same.**	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.
1	**The slopes of similar triangles**	
	ŏ Similar triangles have the same slope	http://learnzillion.com/lessons/1414-describe-a-line-with-a-unique-slope
2	**Derive y = mx** and **y = mx + b using similar triangles**	
	ŏ Derive y=mx using similar triangles	http://learnzillion.com/lessons/1472-derive-ymx-using-similar-triangles
	ŏ Derive y=mx+b using similar triangles	http://learnzillion.com/lessons/1473-derive-ymxb-using-similar-triangles
8.EE.7.a.	**Discuss examples of linear equations in one variable with one solution, infinitely many solutions, or no solution.**	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).
	Linear equations with one, none and infinite many solutions	
	ŏ Predict how many solutions a linear equation has	http://learnzillion.com/lessons/1008-predict-how-many-solutions-a-linear-equation-has
	ŏ Understand a linear equation with one solution	http://learnzillion.com/lessons/1005-understand-a-linear-equation-with-one-solution
	ŏ Understand a linear equation with infinite solutions	http://learnzillion.com/lessons/1006-understand-a-linear-equation-with-infinite-solutions
	ŏ Understand a linear equation that has no solutions	http://learnzillion.com/lessons/1007-understand-a-linear-equation-that-has-no-solutions

8.EE.7.b.	**Solve linear equations with rational number coefficients. Collect like terms and use the distributive property as appropriate.**	Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.
	Solving linear equations with rational number coefficients	
	ð Solve linear equations by using the distributive property	http://learnzillion.com/lessons/1010-solve-linear-equations-by-using-the-distributive-property-of-equality
	ð Solving linear equations by choosing from among different strategies	http://learnzillion.com/lessons/1012-solving-linear-equations-by-choosing-from-among-different-strategies
	ð Solving linear equations with a variable on each side	http://learnzillion.com/lessons/1016-solving-linear-equations-with-a-variable-on-each-side
	ð Use inverse operations to solve equations	http://learnzillion.com/lessons/147-use-inverse-operations-to-solve-equations
8.EE.8.a	**Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs.**	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.
	Solutions to two linear equations can be found algebraically and/or graphically.	
	ð Solving simultaneous equation algebraically and graphically	http://www.youtube.com/watch?v=xrhXxxDG8ac
	ð Determine whether two lines intersect	http://learnzillion.com/lessons/164-determine-whether-2-lines-intersect
	ð Solve systems of equations: graphing equations in both slope- intercept and standard forms	http://learnzillion.com/lessons/156-solve-systems-of-equations-graphing-2
8.EE.8.b.	**Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing their equations**	Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6.
1	**Solve systems of 2 equations algebraically**	
	ð Solve systems of linear equations using substitution	http://learnzillion.com/lessons/1362-solve-systems-of-linear-equations-using-substitution
	ð Solve systems of linear equations by the addition/elimination method	http://learnzillion.com/lessons/1369-solve-systems-of-linear-equations-by-the-additionelimination-method
	ð Solve systems of linear equations by using the linear combinations method	http://learnzillion.com/lessons/1370-solve-systems-of-linear-equations-by-using-the-linear-combinations-method
2	**Solve systems of 2 equations graphically**	
	ð Determine if a system of two linear equations in two variables has one solution by graphing	http://learnzillion.com/lessons/1017-determine-if-a-system-of-two-linear-equations-in-two-variables-has-one-solution-by-graphing
	ð Predict the number of solutions a system of two linear equations in two variables has by inspection	http://learnzillion.com/lessons/1020-predict-the-number-of-solutions-a-system-of-two-linear-equations-in-two-variables-has-by-inspection
3	**Solve systems of 2 equations both algebraically and graphically**	
	ð Solving simultaneous equation algebraically and graphically	http://www.youtube.com/watch?v=xrhXxxDG8ac

8.EE.8.c.	**Solve real-world and mathematical problems leading to two linear equations in two variables.**	Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.
	Applied problems	
	ŏ Applied Practice with Systems of Linear Equations	http://www.regentsprep.org/Regents/math/ALGEBRA/AE3/PracWord.htm
	ŏ System-of-Equations Word Problems	http://www.purplemath.com/modules/systprob.htm
	8.F. FUNCTIONS	
8.F.1.	**Define a Function as a rule that assigns exactly one output for each input.**	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.
	Identifying functions	
	ŏ Identify function properties	http://learnzillion.com/lessons/1190-identify-function-properties
	ŏ Identify a function from a graph	http://learnzillion.com/lessons/1191-identify-a-function-from-a-graph
8.F.2.	**Compare properties of two functions algebraically, graphically, numerically in tables, or by verbal descriptions.**	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.
	Comparing functions	
	ŏ Compare two functions by analyzing an equation and a graph	http://learnzillion.com/lessons/1192-compare-two-functions-by-analyzing-an-equation-and-a-graph
	ŏ Compare two functions by analyzing an equation and a table	http://learnzillion.com/lessons/1193-compare-two-functions-by-analyzing-an-equation-and-a-table
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.**	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. For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1),(2,4) and (3,9), which are not on a straight line.
1	**Linear functions**	
	ŏ Determining a linear function by analyzing the rate of change.	http://learnzillion.com/lessons/1317-describe-the-rate-of-change-of-a-linear-function
2	**Non-linear functions**	
	ŏ Determining if a function is linear or non-linear	http://learnzillion.com/lessons/1318-identify-a-linear-function-by-analyzing-characteristics-of-a-linear-function

8.F.4.	**Model a linear relationship between two quantities.**	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.
	Simplify an Expression.	
	ŏ Determine the rate of change	http://learnzillion.com/lessons/1834-determining-the-constant-rate-of-change
	ŏ Determine the initial value	http://learnzillion.com/lessons/1835-determining-the-yintercept
	ŏ Construct a linear function	http://learnzillion.com/lessons/1838-construct-a-linear-function
	ŏ Create a linear equation, table, and graph from a situation	http://learnzillion.com/lessons/1836-create-equation-table-and-graph-from-a-situation
	ŏ Construct linear functions from a graph	http://learnzillion.com/lessons/288-construct-linear-functions-from-a-graph
8.F.5.	**Qualitatively describe the functional relationship between two quantities by analyzing their graphs.**	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.
1	**Analyzing a graph to determine the functional relationship between two quantities**	
	ŏ Describe the rate of change of linear and non-linear functions	http://learnzillion.com/lessons/1840-describe-the-rate-of-change-of-linear-and-nonlinear-functions
2	**Creating a graph from a function described verbally**	
	ŏ Sketch a graph of a linear relation given the function behavior	http://learnzillion.com/lessons/1842-sketch-a-graph-of-a-linear-relation-given-the-function-behavior
8.G. GEOMETRY		
8.G.1.a. 8.G.1.b 8.G.1.c.	**Overview of rotations, reflections and translations**	Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines..
	Definition and interactive manipulation of rotation, reflections and translations	
	ŏ Definition and interactive transformations using rotation, reflection and translation	http://stricklerwms.weebly.com/8g1-properties-of-rotations-reflections-and-translations.html
	ŏ Describe a sequence of transformations	http://learnzillion.com/lessons/1398-describe-a-sequence-of-transformations

8.G.1.a. 8.G.1.b 8.G.1.c.	**Experimentally verify the properties of <u>rotations</u> on line segments, angles and parallel lines of a figure.**	Verify experimentally the properties of rotations: a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines.
	Rotations	
	ŏ General Properties of Rotations	http://www.regentsprep.org/Regents/math/geometry/GT4/Rotate.htm
	ŏ Angles Needed for Rotations	http://www.regentsprep.org/Regents/math/geometry/GT4/Langles.htm
8.G.1.a. 8.G.1.b 8.G.1.c.	**Experimentally verify the properties of <u>reflections</u> on line segments, angles and parallel lines of a figure.**	Verify experimentally the properties of reflections: a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines.
	Reflections	
	ŏ Reflection in a Line	http://www.regentsprep.org/Regents/math/geometry/GT1/reflect.htm
	ŏ Reflection in a Point	http://www.regentsprep.org/Regents/math/geometry/GT1/ptref.htm
	ŏ Line Symmetry and Plane Symmetry	http://www.regentsprep.org/Regents/math/geometry/GT1a/Lsymmet.htm
	ŏ Glide Reflection	http://www.regentsprep.org/Regents/math/geometry/GT6/greflect.htm
8.G.1.a. 8.G.1.b 8.G.1.c.	**Experimentally verify the properties of <u>translations</u> on line segments, angles and parallel lines of a figure.**	Verify experimentally the properties of translations: a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines.
	Translations	
	ŏ General properties of translations	http://www.regentsprep.org/Regents/math/geometry/GT2/Trans.htm
8.G.2.	**Understand when a pair of two-dimensional figures are congruent.**	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.
	Understanding Congruence	
	ŏ Properties needed to establish two objects are congruent	http://www.mathsisfun.com/geometry/congruent.html
	ŏ Definition with interaction - go through all 4 steps	http://www.math.com/school/subject3/lessons/S3U3L1GL.html

8.G.3.	**Describe the effect of dilation on two-dimensional figures using coordinates.**	Describe the effect of dilation on two-dimensional figures using coordinates.
	Dilation	
	ð Properties of Dilation using co-ordinates	http://www.regentsprep.org/Regents/math/geometry/GT3/Ldilate2.htm
	ð Properties of translation, reflection and rotation using co-ordinates.	**See G.1.a.; G.1.b.; or G.1.c. above**
8.G.4.	**Understand when a pair of two-dimensional figures are similar.**	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.
	Prove pairs of figures are similar	
	ð Similar triangles - Interactive	http://www.mathopenref.com/similartriangles.html
	ð Similar polygons	http://www.cliffsnotes.com/study_guide/Similar-Polygons.topicArticleId-18851,articleId-18811.html
	ð Prove two figures are congruent after a series of reflections, rotations or dilations	http://learnzillion.com/lessons/1336-prove-two-figures-are-congruent-after-a-series-of-reflections-rotations-or-dilations
	ð Prove two figures are similar after a dilation	http://learnzillion.com/lessons/1357-prove-two-figures-are-similar-after-a-dilation
8.G.5.	**Describe the facts about the angles of triangles and parallel lines cut by a transversal.**	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. *For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so.*
	Solve Word Problems Leading to Equality Equations of the Form px+q=r and p(x=q)=r.	
	ð Find the measurements of alternate interior and alternate exterior angles	http://learnzillion.com/lessons/1241-find-the-measurements-of-alternate-interior-and-alternate-exterior-angles
	ð Find the measurements of vertical and adjacent angles	http://learnzillion.com/lessons/1241-find-the-measurements-of-alternate-interior-and-alternate-exterior-angles
	ð Find the measurements of corresponding angles	http://learnzillion.com/lessons/1236-find-the-measurements-of-corresponding-angles
	ð Find the measurement of an exterior angle of a triangle	http://learnzillion.com/lessons/1236-find-the-measurements-of-corresponding-angles

8.G.6.	**Explain a proof of the Pythagorean Theorem and its converse.**	Explain a proof of the Pythagorean Theorem and its converse.
1	**Proof of the Pythagorean Theorem**	
	ŏ A straight-forward proof	http://www.mathopenref.com/pythagorasproof.html
	ŏ A visual proof of the Pythagorean Theorem using liquid (very instructive).	https://plus.google.com/113026104107031516488/posts/CbcgaRoaFM5#113026104107031516488/posts/CbcgaRoaFM5
	ŏ One of the simplest among many different proofs **(NOTE: may have to copy address and paste in browser)**	http://www.mathsisfun.com/geometry/pythagorean-theorem-proof.html
2	**Proof of the converse of the Pythagorean Theorem**	
	ŏ Using the theorem to prove the converse	http://www.qc.edu.hk/math/junior%20secondary/converse%20of%20py%20th.htm
	ŏ Use the Pythagorean Theorem to see if a triangle is a right triangle	http://learnzillion.com/lessons/1260-use-the-pythagorean-theorem-to-see-if-a-triangle-is-a-right-triangle
8.G.7.	**Use the Pythagorean Theorem to calculate the side lengths of right triangles in two and three dimensional problems.**	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.
	Calculate the Side lengths of right triangles in two and three dimensional problems.	
	ŏ Find the length of the hypotenuse of a right triangle using the Pythagorean Theorem	http://learnzillion.com/lessons/1262-find-the-length-of-the-hypotenuse-of-a-right-triangle-using-the-pythagorean-theorem
	ŏ Apply the Pythagorean Theorem to three dimensional figures using right triangles	http://learnzillion.com/lessons/1303-apply-the-pythagorean-theorem-to-three-dimensional-figures-using-right-triangles
8.G.8.	**Use the Pythagorean Theorem to find the distance between two points.**	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
	Distance between two points in a coordinate system	
	ŏ Find the length of a line segment on the coordinate plane using the Pythagorean Theorem	http://learnzillion.com/lessons/1309-find-the-length-of-a-line-segment-on-the-coordinate-plane-using-the-pythagorean-theorem

8.G.9.	**Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.**	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.
	Describe the two-dimensional figures that result from slicing three-dimensional figures.	
	ð Solve real world problems by finding volume of cones	http://learnzillion.com/lessons/1664-solve-real-world-problems-by-finding-volume-of-cones
	ð Solve real world problems by finding volume of spheres	http://learnzillion.com/lessons/1665-solve-real-world-problems-by-finding-volume-of-spheres
	ð Solve real world problems by finding volume of cylinders	http://learnzillion.com/lessons/1663-solve-real-world-problems-by-finding-volume-of-cylinders
	8.SP. STATISTICS AND PROBABILITY	
8.SP.1.	**Construct and interpret scatter plots for bivariate measurement data.**	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.
	Interpret Scatter Plots.	
	ð Construct a scatter plot	http://learnzillion.com/lessons/1179-construct-a-scatter-plot
	ð Interpret scatter plots	http://learnzillion.com/lessons/1200-interpret-scatter-plots
	ð Interpret and distinguish linear and non linear scatter plots	http://learnzillion.com/lessons/1201-interpret-and-distinguish-linear-and-non-linear-scatter-plots
	ð Interpret a scatter plot by identifying clusters and outliers	http://learnzillion.com/lessons/1188-interpret-a-scatter-plot-by-identifying-clusters-and-outliers
	ð Interpret scatter plots by calculating the rate of change on a graph	http://learnzillion.com/lessons/1034-interpret-scatter-plots-by-calculating-rate-of-change-on-a-graph
8.SP.2.	**Assess the closeness of fit of a line to set of points in a scatter plot.**	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.
	Assess the closeness of fit	
	ð Draw a line of best fit	http://learnzillion.com/lessons/1203-draw-a-line-of-best-fit
	ð Interactive construction of a scatter plot and line of best fit	http://nlvm.usu.edu/en/nav/frames_asid_144_g_3_t_5.html

8.SP.3.	**Use the equation of a linear model fit to a scatterplot to solve real world problems.**	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.
	ð Fit a linear function to a scatterplot	http://learnzillion.com/lessons/364-fit-a-linear-function-to-a-scatterplot
	ð Calculate unobserved values using line of best fit equation	http://learnzillion.com/lessons/1036-calculate-unobserved-values-using-line-of-best-fit-equation
	ð How Do You Write and Use a Prediction Equation	http://www.virtualnerd.com/pre-algebra/linear-functions-graphing/scatter-plot-best-fit-lines/scatter-plots-predictions/prediction-equation-example
8.SP.4.	**Analyze the strength of the association between two sets frequency data for the same subjects displayed in a two-way table.**	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 for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*
	Analyze the strength of the association using a two-way table.	
	ð Identify bivariate categorical data by reading a two-way table	http://learnzillion.com/lessons/1416-identify-bivariate-categorical-data-by-reading-a-twoway-table
	ð Construct a two-way table from a list	http://learnzillion.com/lessons/1417-construct-a-twoway-table-from-a-list
	ð Displaying and interpreting 2-way tables	www.glencoe.com/sites/pdfs/impact_math/ls3_c3_two_way_tables.pdf