Grade 8 Math	
Louisiana Student Standards	**Louisiana Connectors (LC)**
8.NS.A.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.~~,~~ Convert a decimal expansion that repeats eventually into a rational number by analyzing repeating patterns.	**LC.8.NS.A.1a** Identify π as an irrational number. **LC.8.NS.A.1b** Round irrational numbers to the hundredths place.
8.NS.A.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 (e.g., π^2). *For example, by truncating the decimal expansion of √2, show that √2 is between 1and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations to the hundredths place.*	**LC.8.NS.A.2** Use approximations of irrational numbers to locate them on a number line.
8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. *For example,* $3^2 \times 3^{-5} = 3^{-3} = 1/3^3 = 1/27$.	**LC.8.EE.A.1** Use properties of integer exponents to produce equivalent expressions.
8.EE.A.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 √2 is irrational.	**LC.8.EE.A.2** Find the square roots of perfect squares and cube roots of whole numbers less than 100.

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8.EE.A.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. *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.*	**LC.8.EE.A.3** Rewrite very large or very small quantities as a single digit times an integer power of 10.
8.EE.A.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 (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.	**LC.8.EE.A.4a** Convert a number expressed in scientific notation as number in standard form for numbers no greater than 10,000. **LC.8.EE.A.4b** Perform operations with numbers expressed in scientific notation.
8.EE.B.5 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.*	**LC.8.EE.B.5** Represent proportional relationships on a line graph.
8.EE.B.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 equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.	**LC.8.EE.B.6a** Write the equation of a line passing through the origin as $y = mx$. **LC.8.EE.B.6b** Write the equation of a line intercepting the y-axis at b as $y = mx + b$.

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8.EE.C.7 Solve linear equations in one variable. 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). b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.	**LC.8.EE.C.7** Solve linear equations with 1 variable.
8.EE.C.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. b. 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.* c. 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.*	**LC.8.EE.C.8a** Solve systems of two linear equations in two variables and graph the results. **LC.8.EE.C.8b** Solve real world and mathematical problems leading to two linear equations in two variables.
8.F.A.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 notation is not required in this grade level.)	**LC.8.F.A.1** Distinguish between functions and non-functions, using equations, graphs, or tables.

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Louisiana Student Standards	**Louisiana Connectors (LC)**
8.F.A.2 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.*	**LC.8.F.A.2** 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.
8.F.A.3 Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; categorize functions as linear or nonlinear when given equations, graphs, or tables. *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.*	**LC.8.F.A.3** Given two graphs, describe the function as linear and not linear.
8.F.B.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.	**LC.8.F.B.4** Identify the rate of change (slope) and initial value (y-intercept) from graphs.
8.F.B.5 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.	**LC.8.F.B.5a** Given a verbal description of a situation, create or identify a graph to model the situation. **LC.8.F.B.5b** Given a graph of a situation, generate a description of the situation. **LC.8.F.B.5c** Describe or select the relationship between the two quantities Given a line graph of a situation.

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Louisiana Student Standards	**Louisiana Connectors (LC)**
8.G.A.1 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.	**LC.8.G.A.1a** Recognize a rotation, reflection, or translation of a figure. **LC.8.G.A.1b** Recognize that lengths of line segments and measures of angles do not change when rotated, reflected or translated. **LC.8.G.A.1c** Recognize that lines are taken to lines and parallel lines are taken to parallel lines when rotated, reflected or translated.
8.G.A.2 Explain 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. (Rotations are only about the origin and reflections are only over the *y*-axis and *x*-axis in Grade 8.)	**LC.8.G.A.2** Recognize congruent and similar figures.
8.G.A.3 Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. (Rotations are only about the origin, dilations only use the origin as the center of dilation, and reflections are only over the *y*-axis and *x*-axis in Grade 8.)	**LC.8.G.A.3** Identify a rotation, reflection, or translation of a plane figure when given coordinates.
8.G.A.4 Explain 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. (Rotations are only about the origin, dilations only use the origin as the center of dilation, and reflections are only over the *y*-axis and *x*-axis in Grade 8.)	**LC.8.G.A.4a** Recognize congruent and similar figures. **LC.8.G.A.4b** Given two similar two-dimensional figures, show or describe a sequence that exhibits the similarity between them.

Grade 8 Math	
Louisiana Student Standards	**Louisiana Connectors (LC)**
8.G.A.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. *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.*	**LC.8.G.A.5** Use angle relationships to find the value of a missing angle.
8.G.B.6 Explain a proof of the Pythagorean Theorem and its converse using the area of squares.	**LC.8.G.B.6** Create a model of the Pythagorean Theorem using areas of squares with a right triangle whose side lengths are 3, 4 and 5 units.
8.G.B.7 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions.	**LC.8.G.B.7a** Apply the Pythagorean theorem to determine lengths/distances in real-world situations. **LC.8.G.B.7b** Find the hypotenuse of a two-dimensional right triangle (Pythagorean Theorem). **LC.8.G.B.7c** Find the missing side lengths of a two-dimensional right triangle (Pythagorean Theorem).
8.G.B.8 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	**LC.8.G.B.8** Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.
8.G.C.9 Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	**LC.8.G.C.9** Apply the formula to find the volume of 3-dimensional shapes (i.e., cubes, spheres, and cylinders).

Grade 8 Math	
Louisiana Student Standards	**Louisiana Connectors (LC)**
8.SP.A.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.	**LC.8.SP.A.1a** Graph bivariate data using scatter plots and identify possible associations between the variables. **LC.8.SP.A.1b** Using box plots and scatter plots, identify data points that appear to be outliers. **LC.8.SP.A.1c** Analyze displays of bivariate data to develop or select appropriate claims about those data.
8.SP.A.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.	**LC.8.SP.A.2** Distinguish between a linear and non-linear association when analyzing bivariate data on a scatter plot.
8.SP.A.3 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*.	**LC.8.SP.A.3** Interpret the slope and the y-intercept of a line in the context of a problem.
8.SP.A.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 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?*	**LC.8.SP.A.4** Construct a two-way table summarizing data on two categorical variables collected from the same subjects; identify possible association between the two variables.