8th Grade Math Scope and Sequence Revised August 2018

1st Nine Weeks				
Time	**Cluster**	**Standards**	**Learning Targets**	**Lesson Topics/Resources**
2 weeks		Review of prerequisite skills	I can apply rules of orders of operations to solve problems. I can add, subtract, multiply and divide integers without a calculator. I can evaluate absolute value expressions. I can add, subtract, multiply and divide fractions without a calculator. I can translate verbal phrases into algebraic expression. I can translate algebraic expressions into verbal phrases. I can evaluate expressions. I can find probability of simple events.	*Lesson topics and resources are intended to assist in addressing the standards. However, additional resources may be necessary. Order of Operation Integer Computation Absolute Value Fraction Computation Algebraic Expression **Resources** **www.teacher-toolbox.com** www.engageny.org www.illustrativemathematics.org www.IXL.com www.khanacademy.com yummymath.com
2 weeks	8 NS.A	8.NS.A.1 Know that numbers that are not rational are called irrational. Understand informally that every number has a	I can identify real numbers as either rational or	

		decimal expansion; for rational numbers show that the decimal expansion repeats eventually or terminates, and convert a decimal expansion which repeats eventually or terminates into a rational number. 8.NS.A.2 Use rational approximations of irrational numbers to compare the size of irrational numbers locating them approximately on a number line diagram. Estimate the value of irrational expressions such as π2 . For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations. 8.EE.A.1 Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 3 2 x 3 −5 = 3 −3 = 1 3³ = 127.	irrational and explain the difference between them. I can write decimal expansions for all numbers and identify rational numbers as those that either repeat or terminate. I can convert a repeating decimal into a fraction. I can apply properties of integer exponents to generate equivalent numerical expressions.	
2 weeks	8.EE.A	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. 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	I can evaluate square roots (principal and negative) of small perfect squares and cube roots of small perfect cubes. I can use square root and cube root symbols to represent solutions to equations in equations of the form x 2 = p and x 3 = p. I can identify the √2 as an irrational number.	

		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 x 108 and the population of the world as 7 x 109 , and determine that the world population is more than 20 times larger. 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.	I can use scientific notation to estimate very large or very small quantities. I can solve real-world problems requiring scientific notation. I can perform all operations with numbers expressed in scientific notation. I can use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. I can interpret scientific notation as generated using various calculators or other technology.	
2 weeks	8.EE.C Analyze and solve linear equations and pair of simultaneous linear equations.	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 =	I can solve multi-step linear equations in one variable involving rational number coefficients. I can give an example of a linear equation in one variable with one solution, infinitely many solutions or no solutions.	

		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.	I can use the distributive property and the collection of like terms to simplify and solve multi-step equations. I can solve equations with variables on both sides.	

2nd Nine Weeks				
Time	**Cluster**	**Standards**	**Learning Targets**	**Lesson Topics/Resources**
2 Weeks	8.F.A Define, evaluate, and compare functions 8.F.B Use functions to model relationships between quantities	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. 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 another linear function represented by an algebraic expression, determine which function has the greater rate of change. 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	I can identify the domain and range of a function. I can determine if a set of points represents a function. I can identify a function as a rule that assigns to each input exactly one output. I can identify a function by its rule (equation), set of ordered pairs (table, mapping, or list), or by its graph. I can compare two functions represented in the same way. (algebraically, graphically, numerically in tables, or by verbal description). I can compare two functions represented differently (algebraically, graphically, numerically in tables, or by verbal description).	*Lesson topics and resources are intended to assist in addressing the standards. However, additional resources may be necessary. Function Rules and Understanding Compare Functions Linear Functions Analyze Linear Functions Graphs of Functional Relationships Proportional Relationships

		(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. 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.	I can compare functions represented in different forms to determine which has the greater rate of change (slope). I can write an equation to model a linear function by determining the rate of change and initial value from various representations. I can interpret the rate of change (slope) and initial value (y-intercept) of a linear function in terms of the situation it models and in terms of its graph or table of values. I can describe in qualitative language, the functional relationship between two quantities by analyzing a graph. I can sketch a graph that exhibits the qualitative features of a verbally described function.	Slope-Intercept Equation for a Line Systems of Equations **Resources** **www.teacher-toolbox.com** www.engageny.org www.illustrativemathematics.org www.IXL.com www.khanacademy.com yummymath.com
4 weeks	8.F.A Define, evaluate, and compare functions 8.EE.B Understand the connections between proportional relationships,	8.F.A.3 Know and 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 = s2 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. 8.EE.B.5 Graph proportional relationships, interpreting the unit rate as the slope of	I can interpret the equation y=mx+b as defining a linear function with a graph that is a straight line. I can use equations to categorize functions as linear or non-linear. I can give examples of functions that are non-linear. I can graph proportional relationships, and identify the unit rate as the slope of the graph.	

	lines, and linear equations	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. 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; know and 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.	I can compare two different proportional relationships represented in different ways (i.e. a graph, equation, table, or set of ordered pairs). I can use similar triangles to explain why the slope m is the same between two points on a non-vertical line in the coordinate plane. I can determine the equation of the line from the graph of the line either going through the origin or through the y-axis. I can graph the equation of a line in the form y=mx+b	
3 Weeks	8.EE.C Analyze and solve linear equations and pairs of simultaneous linear equations	8.EE.C.8 Analyze and solve systems of two 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	I can analyze and solve a pair of simultaneous linear equations. I can recognize the solution to a system of linear equations as the point of intersection of their graphs because the point of intersection satisfies both equations. I can solve a system of two linear equations in two variables algebraically. I can estimate the solution to a system of linear equations by graphing the equations. I can solve simple cases of systems of equations by inspection.	

		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	I can choose from a variety of methods to solve real-world problems leading to two linear equations in two variables.	

3rd Nine Weeks				
Time	**Cluster**	**Standards**	**Learning Targets**	**Lesson Topics/Resources**
2.5 Weeks	8.SP.A/B Investigate patterns of association in bivariate data.	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. 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	I can construct scatter plots to investigate patterns in data. I can interpret scatterplots and describe clustering, outliers, positive or negative association, linear association, and nonlinear association I can model the relationship between two quantitative variables with a straight line of best fit.	*Lesson topics and resources are intended to assist in addressing the standards. However, additional resources may be necessary. Scatter Plots Linear Models Transformations Angle Relationships

		judging the closeness of the data points to the line. 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. 8.SP.B.4 Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. 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 (e.g., "rolling double sixes), identify the outcomes in the sample space that compose the event.	I can solve problems involving measurement data using the equation of a linear model by interpreting the slope and intercept. I can find probabilities of compound events using organized lists, tables, tree diagrams, and simulation. I can understand that the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs. I can represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams. I can identify the outcomes in the sample space for events described in everyday language.	Pythagorean Theorem Distance in the Coordinate Plane Volume of Cylinders, Cones, and Spheres **Resources** **www.teacher-toolbox.com** www.engageny.org www.illustrativemathematics.org www.IXL.com www.khanacademy.com yummymath.com
3 Weeks	8.G.A Understand congruence and similarity using physical models,	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.	I can experiment with and verify the properties of rotations, reflections, and translations. I can describe the effects of a dilation on a two-dimensional figure using coordinates.	

	transparencies or geometry software.	b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines. 8.G.A.2 Describe the effect of dilations, translations, rotations and reflections on two-dimensional figures using coordinates. 8.G.A.3 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.	I can describe the effects of a translation on a two- dimensional figure using coordinates. I can describe the effects of a rotation on a two-dimensional figure using coordinates. I can describe the effects of a reflection on a two-dimensional figure using coordinates. I can explain and show how in rotations, reflection and translations that lines are mapped to lines, line segments are mapped to line segments and parallel lines are mapped to parallel lines. I can explore and discover facts about the interior and exterior angles of a triangle. I can explore and discover the relationships between angles created when parallel lines are cut by a transversal. I can use the angles created by parallel lines cut with a transversal to determine similarity of triangles using the angle-angle relationship.	
1.5 Weeks	8.G.B Understand and apply the Pythagorean Theorem.	8.G.B.4 Explain a proof of the Pythagorean Theorem and its converse. 8.G.B.5 Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and	I can explain a proof of the Pythagorean Theorem and its converse. I can apply the Pythagorean Theorem to determine unknown side lengths in right triangles in	

	8.G.C Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	mathematical problems in two and three dimensions 8.G.B.6 Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	real world and mathematical problems. I can apply the Pythagorean Theorem in both two and three-dimensional figures. I can apply the Pythagorean Theorem to find the distance between points in a coordinate system.	
1.5 Weeks	8.G.C Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	8.G.C.7 Know and understand the formulas for the volumes of cones, cylinders, and spheres, and use them to solve real-world and mathematical problems.	I can apply the volume formula of cones to solve real-world and mathematical problems. I can apply the volume formula of cylinders to solve real-world and mathematical problems. I can apply the volume formula of spheres to solve real-world and mathematical problems.	

4th Nine Weeks				
Time	**Cluster**	**Standards**	**Learning Targets**	**Lesson Topics/Resources**
4 weeks	**Review all TN State Standards for 8th grade Math**			
2 weeks	**TNReady Testing**			
2 weeks	Algebra 1 Preview A.APR.A	A1.A.APR.A.1 Understand that polynomials for a system analogous to the integer, namely, they are closed under the operations of addition,	I can learn to classify polynomials by degree and by the number of terms.	www.thatquiz.org Mathalicious www.khanacademy.com

		subtraction, and multiplication; add, subtract, and multiply polynomials.	I can simply polynomials. I can learn to add polynomials. I can subtract polynomials. I can multiply polynomials by binomials. I can multiply binomials using FOIL or a table. I can understand special products of multiplying binomials.	Yummy Math

Highlighting Key:

18-26% of the TNReady assessment

31-38% of the TNReady assessment