West Deptford Middle School Curriculum Map
Advanced Math - Grade 7

Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 1: Foundations for Algebra 4 Weeks	• What is additive inverse? • What is the difference between a numerical expression and an algebraic expression? • What is the difference between a rational and irrational number? • What is the difference between a variable and a constant? • When using PEMDAS to simplify an expression, must multiplication occur prior to	• algebraic expressions can be evaluated • commutative, associative, and distributive properties can be used to simplify expressions • expressions containing exponents can be solved using multiple steps • like terms must be combined before an expression is simplified • numbers can be classified within the real number system • order of operations can be	• Describe situations in which opposite quantities combine to make 0. • Understand $p + q$ as the number located a distance $\|q\|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.	• classwork practice page • cooperative learning tasks • exit ticket • games • homework • manipulatives • notebook activities • quiz • self assessment • slate practice • teacher observation • unit assessment • Written Questions / Exercises with	**MA.7.CCSS.Math.Content. 7.NS.A.1a** **MA.7.CCSS.Math.Content. 7.NS.A.1b** **MA.7.CCSS.Math.Content. 7.NS.A.1c** **MA.7.CCSS.Math.Content. 7.NS.A.2a** **MA.7.CCSS.Math.Content. 7.NS.A.2b** **MA.7.CCSS.Math.Content. 7.NS.A.2c** **MA.7.CCSS.Math.Content. 7.EE.A.1** **MA.8.CCSS.Math.Content. 8.NS.A** **MA.8.CCSS.Math.Content. 8.NS.A.1** **MA.8.CCSS.Math.Content. 8.NS.A.2** **MA.8.CCSS.Math.Content. 8.EE.A.1** **MA.8.CCSS.Math.Content. 8.EE.A.2** • **MA.8.CCSS.Math.Con**

	division? • Why is it critical to put parenthesis around the base if the base is negative?	used to simplify expressions • ordered pairs are graphed on a coordinate plane • real numbers can be added, subtracted, multiplied, and divided • words can be translated into algebra	• Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. • Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as $(-1)(-1) = 1$	Short, Extended or Multiple-choice Answers	**tent.8.F.A.1**

			and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts. • Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then $-(p/q) = (-p)/q = p/(-q)$. Interpret quotients of rational numbers by describing real-world contexts. • Apply properties of operations as strategies to multiply and		

			divide rational numbers. • Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients. • Know that there are numbers that are not rational, and approximate them by rational numbers. • 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. • 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). • Know and apply the properties of integer exponents to generate equivalent numerical expressions. • 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. • 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.		

West Deptford Middle School Curriculum Map
Advanced Math - Grade 7

Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 2: Equations 5 Weeks	• How do you decide the order in which you solve an equation that requires several steps? • How do you decide which inverse operation to use first when solving a two-step equation? • In what situations would it be necessary to solve an equation for a given variable?	• an equation can be solved for one variables when multiple variables exist • equations containing absolute value expressions can result in more than one answer • equations with more than one step can be solving with using more than one operation • formulas can be solved for a given variable • inverse operations must be used when solving equations with variables on	• Analyze proportional relationships and use them to solve real-world and mathematical problems. • Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. • Recognize and represent proportional relationships between quantities. • Decide whether two quantities are in a proportional	• Cooperative learning tasks • Games • Homework • Manipulatives • Notebook Activities • Quiz • Slate Practice • Teacher observation • Unit assessment	**MA.7.CCSS.Math.Content.7.RP.A** **MA.7.CCSS.Math.Content.7.RP.A.1** **MA.7.CCSS.Math.Content.7.RP.A.2** **MA.7.CCSS.Math.Content.7.RP.A.2a** **MA.7.CCSS.Math.Content.7.RP.A.2c** **MA.7.CCSS.Math.Content.7.RP.A.3** **MA.7.CCSS.Math.Content.7.EE.A** **MA.7.CCSS.Math.Content.7.EE.A.1** **MA.7.CCSS.Math.Content.7.EE.B.3** **MA.7.CCSS.Math.Content.7.EE.B.4** • **MA.7.CCSS.Math.Content.7.EE.B.4a**

		both sides • one-step equations can be solving using addition, subtraction, multiplication, and division • percent decrease describes an amount that has been reduced • percent increase describes an amount that has grown • percents are used to solve problems and estimate • proportions and similar figures are used to measure objects indirectly • proportions are used to solve problems involving	relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin. • Represent proportional relationships by equations. • Use proportional relationships to solve multistep ratio and percent problems. • Use properties of operations to generate equivalent expressions. • Apply properties of operations as strategies to add, subtract, factor,		

		geometric figures • when comparing two numbers, they can written as ratios, rates and unit rates	and expand linear expressions with rational coefficients. • Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. • Use variables to		

			represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. • Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.		

West Deptford Middle School Curriculum Map
Advanced Math - Grade 7

Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 3: Inequalities 4 Weeks	• How do you change from the variable being on the right side of the inequality to the left side of the inequality without changing the meaning of the inequality? • How do you decide whether a compound inequality represents an intersection or a union? • How do you determine whether an absolute value inequality should be written as an intersection or a union? • How is the	• an inequality is a statement that two quantities are not equal • inequalities that contain more than one operation require more than one step to solve • inequalities with one variable can be solved using addition, subtraction, multiplication, or division • the solution of an inequality is any value that makes the inequality true • when an inequality contains variables on both	• Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. • Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. • Use variables to	• Classwork practice page • Cooperative Learning Tasks • Games • Homework • Manipulatives • Notebook Activities • Quiz • Slate Practice • Teacher Observations • Unit Assessment	• **MA.7.CCSS.Math.Content.7.EE.B.3** • **MA.7.CCSS.Math.Content.7.EE.B.4** • **MA.7.CCSS.Math.Content.7.EE.B.4b**

	approach for solving an inequality different from solving an equation?	sides, you can use the properties of inequality to "collect" all the variable terms on one side • when two simple inequalities are combined into one statement by the words AND or OR, the result is called a compound inequality	represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities. • Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.		

West Deptford Middle School Curriculum Map
Advanced Math - Grade 7

Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 4: Functions 4 Weeks	• How do you determine whether a relation is a function and how to you determine both its domain and range? • How does a graph represent real world situations? • What can you look for in a graph to determine if it's a function?	• a function is a special type of relation that pairs each domain with exactly one range • a scatter plot is a graph with points plotted to show a possible relationship between two sets of data • a sequence is a list of numbers that often forms a pattern • an arithmetic sequence is when the terms in a sequence differ by the same nonzero number • domain is the x-values and range is the y-values • each number in a	• Define, evaluate, and compare functions. • 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. • Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). • Use functions to	• Assessment • Classwork practice page • Cooperative learning tasks • Games • Homework • Manipulatives • Notebook Activities • Quiz • Slate practice • Teacher observation	• **MA.8.CCSS.Math.Content.8.F.A** • **MA.8.CCSS.Math.Content.8.F.A.1** • **MA.8.CCSS.Math.Content.8.F.A.2** • **MA.8.CCSS.Math.Content.8.F.B** • **MA.8.CCSS.Math.Content.8.F.B.5**

		sequence is called a term • graphs can be used to illustrate many different real-world situations • graphs that are connected lines or curved lines are called continuous graphs • graphs that have distinct points are called discrete graphs • relationships can be represented by a set of ordered pairs called a relation • the input of a function is called the independent variable • the output of a function is called	model relationships between quantities. • 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.		

		the dependent variable • there are three types of correlations: positive, negative, and no correlation • trend lines can be used to make predictions			

Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 5: Linear Functions 5 Weeks	• How would you graph a linear equation by finding both the x and y intercepts as opposed to plotting selected points? • What is the relationship between the slopes of perpendicular	• A direct variation is a special type of linear relationship that can be written in the form y = kx, where k is a nonzero constant called the constant of variation • A family of functions is a set	• Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. • Use similar	• Classwork practice page • Cooperative Learning Tasks • Games • Homework • Manipulatives • Notebook	• **MA.8.CCSS.Math.Content.8.EE.B.5** • **MA.8.CCSS.Math.Content.8.EE.B.6** • **MA.8.CCSS.Math.Content.8.EE.C.8a** • **MA.8.CCSS.Math.Content.8.EE.C.8b** • **MA.8.CCSS.Math.Content.8.F.A** • **MA.8.CCSS.Math.Content.8.F.A.1** • **MA.8.CCSS.Math.Content.8.F.A.2** • **MA.8.CCSS.Math.Content.8.F.A.3** • **MA.8.CCSS.Math.Content.8.F.B** • **MA.8.CCSS.Math.Con**

West Deptford Middle School Curriculum Map
Advanced Math - Grade 7

	and parallel lines? • What is the slope of a given line and how do you find it both graphically and algebraically? • When would you use each of the various form of a linear equation?	of functions whose graphs have basic characteristics in common • a graph whose function forms a straight line is called a linear function • a linear equation is any equation that can be written in standard form • a parent function is the most basic function in a family • a rate of change is a ratio that compares the amount of change in a dependent variable to the amount of change in an independent	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. • 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. • Solve systems of	Activities • Quiz • Slate Practice • Teacher Observations • Unit Assessment	**tent.8.F.B.4** • **MA.8.CCSS.Math.Content.8.F.B.5**

		variable • a reflection is a transformation across a line that produces a mirror image • a rotation is a transformation about a point • a transformation is change in position or size of a figure • a translation is a type of transformation that moves every point the same distance in the same direction • •An absolute-value function is a function whose rule contains an absolute-value expression • •Parallel lines are lines in the same	two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. • Define, evaluate, and compare functions. • 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. • Compare properties of two functions each represented in a		

		plane that have no points in common • •Perpendicular lines are lines that intersect to form right angles • •The axis of symmetry is the line that divides the graph into two congruent halves • •The rise is the difference in the y-values of two points on a line • •The run is the difference in the x-values of two points on a line • •The slope of a line is the ratio of rise to run for any two points on the line • •The vertex is the "corner" point on	different way (algebraically, graphically, numerically in tables, or by verbal descriptions). • 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. • Use functions to model relationships between quantities. • Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value		

		the graph • •The x-intercept is the x-coordinate of the point where the graph intersects the x-axis • •The y-intercept is the y-coordinate of the point where the graph intersects the y-axis	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. • 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.		