

West Deptford Middle School Curriculum Map
Math - Grade 7

Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 1: The Number System 5 Weeks	<ul style="list-style-type: none"> • How can we use rational numbers to solve real world application problems? • How do operations affect rational numbers? 	<ul style="list-style-type: none"> • a divisor cannot be zero and why division of integers results in a rational number. • conversion of a rational number to a decimal using long division, explaining in oral or written language why the decimal is either a terminating or repeating decimal. • adding the opposite when subtracting is applying the additive inverse property. • the distance between two 	<ul style="list-style-type: none"> • Represent addition and subtraction on a horizontal or vertical number line diagram. • 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 	<ul style="list-style-type: none"> • 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 	<ul style="list-style-type: none"> • MA.7.CCSS.Math.Content.7.NS.A.1 • 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.1d • MA.7.CCSS.Math.Content.7.NS.A.2 • 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.NS.A.2d • MA.7.CCSS.Math.Content.7.NS.A.3

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		<p>points is the absolute value of the difference between their coordinates</p> <ul style="list-style-type: none"> • mathematical and real-world problem solutions using addition, subtraction, multiplication, and division of rational numbers. • multiplication and division of signed numbers using real-world contexts, such as taking multiple steps backwards. • real-world situations in which rational numbers are combined can be described and modeled on a horizontal and vertical number 	<p>sum of 0 (are additive inverses).</p> <ul style="list-style-type: none"> • Interpret sums of rational numbers by describing real-world contexts. • 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. • Apply properties of operations as strategies to add and subtract rational numbers. 	<p>Short, Extended or Multiple-choice Answers</p>	
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		<p>line.</p> <ul style="list-style-type: none">to add, subtract, multiply, and divide rational numbers one must apply properties of operations as strategies.	<ul style="list-style-type: none">Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.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 $(-1)(-1) = 1$ and the rules for multiplying signed numbers.Interpret products of rational numbers by		
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			<p>describing real-world contexts.</p> <ul style="list-style-type: none">• 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.• Convert a rational number to a decimal using		
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			<p>long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.</p> <ul style="list-style-type: none"> Solve real-world and mathematical problems involving the four operations with rational numbers. 		
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Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 2: Expressions And Equations 5 Weeks	<ul style="list-style-type: none"> How are equations solved? How are percents used to help solve real world application problems? 	<ul style="list-style-type: none"> expressions and equations fluently solving equations and inequalities and graphing the solution set of the inequality will allow them to 	<ul style="list-style-type: none"> Use properties of operations to generate equivalent expressions. Apply properties of operations as strategies to add, subtract, factor, 	<ul style="list-style-type: none"> Cooperative learning tasks Games Homework Manipulatives Notebook 	<ul style="list-style-type: none"> MA.7.CCSS.Math.Content.7.EE MA.7.CCSS.Math.Content.7.EE.A MA.7.CCSS.Math.Content.7.EE.A.1 MA.7.CCSS.Math.Content.7.EE.A.2 MA.7.CCSS.Math.Content.7.EE.B MA.7.CCSS.Math.Content.7.EE.B.3 MA.7.CCSS.Math.Content.7.EE.B.4

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	<ul style="list-style-type: none"> • What are different properties of equations and how can they help solve them? • What are the different ways percent problems are represented? • What happens when two sides of an equation are not equal? 	<p>interpret the solutions in the context of the problem</p> <ul style="list-style-type: none"> • it is necessary to apply the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients (including additive and multiplicative inverse, distributive, commutative, and associative properties) • percent problems can be solved using proportional relationships including simple interest, tax, markups and markdowns, gratuities and 	<p>and expand linear expressions with rational coefficients.</p> <ul style="list-style-type: none"> • Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related. • Solve real-life and mathematical problems using numerical and algebraic expressions and equations. • Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, 	<p>Activities</p> <ul style="list-style-type: none"> • Quiz • Slate Practice • Teacher observation • Unit assessment 	<ul style="list-style-type: none"> • MA.7.CCSS.Math.Content.7.EE.B.4a • MA.7.CCSS.Math.Content.7.EE.B.4b
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		<p>commissions, and fees</p> <ul style="list-style-type: none"> • the use of variables to represent quantities in a real-world or mathematical problem will allow them to construct simple equations and inequalities to represent the problems • to add, subtract, factor, and expand linear expressions with rational coefficients, strategies of properties of operations must be applied • to demonstrate the relationship between quantities and determine simpler solutions to a 	<p>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.</p> <ul style="list-style-type: none"> • 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 		
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		<p>problem that they will use equivalent expressions, such as $a + 0.05a = 1.05a$ means that "increase by 5%" is the same as "multiply by 1.05"</p> <ul style="list-style-type: none"> to solve multi-step real life and mathematical problems with rational numbers in any form one must apply properties of operations and convert rational numbers between forms as needed, and then be able to assess the reasonableness of results using mental computation and estimation strategies 	<p>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.</p> <ul style="list-style-type: none"> 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 		
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			problem.		
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Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 3: Ratios and Proportions 6 Weeks	<ul style="list-style-type: none"> • How do you apply proportions? • How do you recognize and represent proportional relationships between quantities? 	<ul style="list-style-type: none"> • multi-step ratio problems can be solved using proportional relationships, including scale drawings of geometric figures • real world problems with proportions can be represented on a graph and be able to describe how the graph can be used to explain the values of any point (x,y) on the graph including the points (0,0) and (1,r), recognizing that r 	<ul style="list-style-type: none"> • 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 relationship, e.g., by testing for equivalent ratios 	<ul style="list-style-type: none"> • Classwork practice page • Cooperative Learning Tasks • Games • Homework • Manipulatives • Notebook Activities • Quiz • Slate Practice • Teacher Observations • Unit Assessment 	<ul style="list-style-type: none"> • 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.2b • MA.7.CCSS.Math.Content.7.RP.A.2c • MA.7.CCSS.Math.Content.7.RP.A.2d • MA.7.CCSS.Math.Content.7.RP.A.3 • MA.7.CCSS.Math.Content.7.G.A.1 • MA.7.CCSS.Math.Content.7.G.A.2

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		<p>is the unit rate</p> <ul style="list-style-type: none"> • various ways to determine if a proportional relationship exists between two quantities, for example by testing for equivalent ratios in a table, or graph on the coordinate plane and observing whether the graph is a straight line through the origin • identifying the constant of proportionality (unit rate) from tables, graphs, equations, diagrams and verbal descriptions • using real world examples such as speed and unit 	<p>in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.</p> <ul style="list-style-type: none"> • Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. • Represent proportional relationships by equations. • Explain what a point (x, y) on the graph of a proportional relationship means in terms of the situation, with 		
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		<p>price to calculate and interpret unit rates of various quantities involving ratios of fractions that contain like and different units</p> <ul style="list-style-type: none">• to model proportional relationships in real world problems they can write equations	<p>special attention to the points $(0, 0)$ and $(1, r)$ where r is the unit rate.</p> <ul style="list-style-type: none">• Use proportional relationships to solve multistep ratio and percent problems.• Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.• Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing		
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			triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.		
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Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 4: Probability and Statistics 5 Weeks	<ul style="list-style-type: none"> How are different events classified and what can I use to solve them? How do permutations and combinations fit into word problems? How does probability relate to real world application 	<ul style="list-style-type: none"> determining if the sample is representative of the subgroups within the population will distinguish between valid and invalid samples from a population graphical representations and statistical calculations are 	<ul style="list-style-type: none"> Use proportional relationships to solve multistep ratio and percent problems. Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a 	<ul style="list-style-type: none"> Assessment Classwork practice page Cooperative learning tasks Games Homework Manipulatives Notebook 	<ul style="list-style-type: none"> MA.7.CCSS.Math.Content.7.RP.A.3 MA.7.CCSS.Math.Content.7.SP.A.1 MA.7.CCSS.Math.Content.7.SP.A.2 MA.7.CCSS.Math.Content.7.SP.B.3 MA.7.CCSS.Math.Content.7.SP.B.4 MA.7.CCSS.Math.Content.7.SP.C.5 MA.7.CCSS.Math.Content.7.SP.C.6 MA.7.CCSS.Math.Content.7.SP.C.7 MA.7.CCSS.Math.Content.7.SP.C.7a MA.7.CCSS.Math.Content.7.SP.C.7b MA.7.CCSS.Math.Content.7.SP.C.8

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	<p>problems?</p>	<p>used to visually and numerically compare the means and variations of two distinct populations to draw informal comparative inferences about measures of center and variability</p> <ul style="list-style-type: none"> • proportional relationships can be used to solve multi-step ratio and percent problems • random sampling can be used to produce a representative sample, to develop valid inferences about a population with an unknown characteristic of interest, and compare the 	<p>population from a sample are valid only if the sample is representative of that population.</p> <ul style="list-style-type: none"> • Understand that random sampling tends to produce representative samples and support valid inferences. • 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. 	<p>Activities</p> <ul style="list-style-type: none"> • Quiz • Slate practice • Teacher observation 	<ul style="list-style-type: none"> • MA.7.CCSS.Math.Content.7.SP.C.8a • MA.7.CCSS.Math.Content.7.SP.C.8b • MA.7.CCSS.Math.Content.7.SP.C.8c
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		<p>variation in estimates using multiple samples of the same and different size</p> <ul style="list-style-type: none"> • the probability of an unlikely event happening is near 0, a likely event is near 1, and $1/2$ is neither likely or unlikely, and can use this information to interpret and express the likelihood of a change event as a number between 0 and 1 • to determine the sample space of a designed simulation of a compound probability event they will use organized lists, tables, and tree diagrams, and that they can 	<ul style="list-style-type: none"> • Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability. • Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations. • Understand that the probability of a chance event is a number between 0 and 1 		
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		<p>calculate the fractional probabilities for each outcome in the sample space, and conduct the simulation using the data collected to determine the frequencies of the outcomes in the sample space</p> <ul style="list-style-type: none"> • to develop uniform and non-uniform theoretical probability models the probabilities of all possible outcomes in an event must be listed. • to make predictions for the approximate relative frequency of chance events, experimental probability events 	<p>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.</p> <ul style="list-style-type: none"> • 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 		
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		that are both uniform and non-uniform must be conducted to collect and analyze the data	probability. <ul style="list-style-type: none">• 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.• 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		
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			<p>observing frequencies in data generated from a chance process.</p> <ul style="list-style-type: none">• 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,		
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			<p>tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.</p> <ul style="list-style-type: none"> • Design and use a simulation to generate frequencies for compound events. 		
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Unit/ Duration	Essential Questions	Content	Skills	Assessment	Standards
Unit 5: Geometry 4 Weeks	<ul style="list-style-type: none"> • Can we determine if three side lengths would create a triangle? • How are 3-D figures different 	<ul style="list-style-type: none"> • 3-D figures can be sliced from multiple angles to create 2-D figures • formulas to find area and circumference of a circle can be 	<ul style="list-style-type: none"> • Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, 	<ul style="list-style-type: none"> • Classwork practice page • Cooperative Learning Tasks • Games 	<ul style="list-style-type: none"> • 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 • MA.7.CCSS.Math.Content.7.EE.B.4b • MA.7.CCSS.Math.Content.7.G.A.3 • MA.7.CCSS.Math.Content.7.G.B

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	<p>from 2-D figures?</p> <ul style="list-style-type: none"> • How are surface area and volume found for a 3-D figure ? • What is a cross section of a figure and how will that help compute properties of the figure? • What is the difference between area and perimeter? 	<p>used to help solve real-world or mathematical problems</p> <ul style="list-style-type: none"> • formulas used to find surface area and volume of 3-D shapes can be used to help solve real world and mathematical problems • simple algebraic equations can be written and solved for multi-step problems involving supplementary, complementary, vertical, adjacent, or unknown angle measures • the use of variables to represent quantities in a real-world or mathematical problem will allow 	<p>fractions, and decimals), using tools strategically.</p> <ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • Homework • Manipulatives • Notebook Activities • Quiz • Slate Practice • Teacher Observations • Unit Assessment 	<ul style="list-style-type: none"> • MA.7.CCSS.Math.Content.7.G.B.4 • MA.7.CCSS.Math.Content.7.G.B.5 • MA.7.CCSS.Math.Content.7.G.B.6
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		<p>them to construct simple equations and inequalities to represent the problems</p> <ul style="list-style-type: none">• to solve multi-step real life and mathematical problems with rational numbers in any form one must apply properties of operations and convert rational numbers between forms as needed, and then be able to assess the reasonableness of results using mental computation and estimation strategies	<ul style="list-style-type: none">• 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.• 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		
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			<p>interpret it in the context of the problem.</p> <ul style="list-style-type: none">• Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids.• Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.• Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the		
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			<p>relationship between the circumference and area of a circle.</p> <ul style="list-style-type: none">• 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.• 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.		
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