

Grade 7 Math	Unit 1: Decimal, Algebra, and Statistics		Suggested Length: 5 weeks
Essential Questions	<i>Program of Studies</i> and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u>
	<p><u>Program of Studies</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> <i>NC-1 extend number sense for percents and integers.</i> <input type="checkbox"/> <i>NC-2 extend understanding of operations (=, -, x, ÷) to include integers.</i> <input type="checkbox"/> <i>NC-5 use whole number exponents.</i> <input type="checkbox"/> <i>NC-12 explain and apply properties (e.g., commutative, associative, distributive, inverse, identity).</i> <input type="checkbox"/> <i>PS-1 collect, organize, analyze, and interpret data in a variety of graphical methods, including circle graphs, multiple line graphs, double bar graphs, and double stem and leaf plots.</i> <input type="checkbox"/> <i>PS-2 make predictions, draw conclusions, and verify results from statistical data and probability experiments.</i> <input type="checkbox"/> <i>PS-3 select an appropriate graph to represent given data and justify its use.</i> <input type="checkbox"/> <i>PS-4 compare data from various types of graphs.</i> <input type="checkbox"/> <i>PS-7 determine and apply the most appropriate measures of central tendency (e.g., mean, median, mode) and/or dispersion (e.g., range).</i> <input type="checkbox"/> <i>A-1 recognize, create, and continue patterns and generalize the pattern by giving the rule for any term.</i> <input type="checkbox"/> <i>A-4 simplify numeric and algebraic expressions.</i> <input type="checkbox"/> <i>A-7 organize data into tables and plot points onto all four quadrants of a coordinate (Cartesian) system/grid and interpret resulting patterns or trends.</i> <p><u>Core Content</u></p>	<ul style="list-style-type: none"> <input type="checkbox"/> Integers <input type="checkbox"/> Fractions <input type="checkbox"/> Decimals <input type="checkbox"/> Percents <input type="checkbox"/> Pi <input type="checkbox"/> Order of operations <input type="checkbox"/> Exponents <input type="checkbox"/> Commutative property <input type="checkbox"/> Associative property <input type="checkbox"/> Identity property <input type="checkbox"/> Distributive property <input type="checkbox"/> Line plot <input type="checkbox"/> Line graph <input type="checkbox"/> Bar graph <input type="checkbox"/> Histogram <input type="checkbox"/> Venn diagram <input type="checkbox"/> Stem-and-leaf plot <input type="checkbox"/> Scatter plot <input type="checkbox"/> Box-and-whisker plot <input type="checkbox"/> Mean <input type="checkbox"/> Median <input type="checkbox"/> Mode <input type="checkbox"/> Range <input type="checkbox"/> Clusters <input type="checkbox"/> Gaps <input type="checkbox"/> Outliers <input type="checkbox"/> Equations <input type="checkbox"/> Variables <input type="checkbox"/> Algebraic expressions <input type="checkbox"/> Two-step equation <input type="checkbox"/> Inequalities 	<p>Student will:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Students are given algebraic expressions to solve one at a time with their team. They are given 3 that involve different combinations of operations and are all of different difficulty. They may not move onto the second without approval from the teacher. The first group finished is the winner. 5.2.1 DOK 2 <input type="checkbox"/> Play “Remember that Expression.” Students have to play a memory game to match the algebraic expression with its meaning in words. 5.2.1 DOK 2 <input type="checkbox"/> Research baseball salaries, compute their averages, compare each salary to the average, rank 10 players by salary and then by average on a graph. Describe your results on a poster and in writing. DOK 2 <input type="checkbox"/> Construct a frequency table showing the most popular music among seventh graders. 1.1.1. <input type="checkbox"/> Construct frequency table, line graph and a histogram using M&M’s (individual and class results) comparing color. Determine the mode, and mean in each pack. 4.1.1 DOK 3 <input type="checkbox"/> Design a week-long program of fitness, determine what activities burn the least calories per hour, calculate the number of calories consumed on a weekly average, (construct a spreadsheet of food and drinks consumed), formulate equations to find how many hours you would have to do certain activities to burn 2400 calories, write expressions showing total calories burned for activities. 5.2.1 DOK 2 <input type="checkbox"/> Resource Web Quest, Projects & Interdisciplinary investigations McGraw Hill msmath2.net. <input type="checkbox"/> Complete Tower of Hanoi activity. Students make predictions on how to move 1,2,3,4, and 5 disks from one spike to another according to a few rules. Then they must find the algebraic expression for n number of disks. 5.2.1 DOK 2 <input type="checkbox"/> Play “Sequence Scramble”. Students are spit into groups of 4 and are to be dealt 6 cards each. They then must figure out which cards form a sequence. The group that

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	<ul style="list-style-type: none"> <input type="checkbox"/> MA-07-1.1.1 Students will provide examples of and identify integers, fractions, decimals, percents, and π. DOK 1 <input type="checkbox"/> MA-07-1.1.2 Students will describe and provide examples of representations of numbers (whole numbers, fractions, decimals, percents, integers, square roots, and π) and operations in a variety of equivalent forms using models, diagrams and symbols (e.g., number lines, 10 by 10 grids, rectangular arrays, number sentences) based on real-world and mathematical problems. <input type="checkbox"/> MA-07-1.2.1 Students will estimate to solve real-world and mathematical problems with fractions, decimals and percents, checking for reasonable and appropriate computational results. DOK 2 <input type="checkbox"/> MA-07-1.3.1 Students will add, subtract, multiply and divide whole numbers, fractions and decimals to solve real-world problems and apply order of operations (including positive whole number exponents) to simplify numerical expressions. DOK 2 <input type="checkbox"/> MA-07-1.5.2 Students will identify the use of properties (commutative properties of addition and multiplication, the associative properties of addition and multiplication, and the identity properties for addition and multiplication) to justify a given step in solving problems. DOK 1 <input type="checkbox"/> MA-07-2.2.1 Students will convert units within the same measurement system and use these units to solve real-world problems. <input type="checkbox"/> MA-07-4.1.1 Students will analyze and make inferences from data displays (drawings, tables/charts, pictographs, bar graphs, circle graphs, line plots, Venn diagrams, line graphs, stem-and-leaf plots, 		<p>Student will:</p> <ul style="list-style-type: none"> puts all 24 cards in their sequences first is the winner. 1.3.1 DOK 2 <input type="checkbox"/> <u>Test: Decimal Patterns and Algebra</u> <input type="checkbox"/> <u>Open Response: Movie Tickets</u> <input type="checkbox"/> Measure size of students feet, collect and analyze data, design a method to display the results, calculate the mean, median, mode and range of foot length for boys, for girls, and for boys and girls together. Display results graphically and write a concluding statement that describes the data. 5.2.1 DOK 2 <input type="checkbox"/> Extension – Research the contribution Jan Earnst Matzelter made to the industry. Include statistics that tell the economic effect of his invention. 5.2.1 DOK 2 <input type="checkbox"/> Measure student’s height with a partner and then line up from shortest to tallest. As the class discusses what is typical, review each of the central tendency measures. Create a box-and-whisker plot from this, and also a stem-and-leaf plot. 4.1.1 DOK 3 <input type="checkbox"/> Play “Median Spin” in teams of 4. A spinner is spun to determine how many cards a student draws. The student then finds the median of the numbers on the cards. Points are given for the correct answer. 4.2.1 DOK 2 <input type="checkbox"/> Extension – Students may also be given points for finding the median and mode in the given time period. 4.2.1 DOK 2 <input type="checkbox"/> Skittle Investigation. Using a large bag of skittles and a smaller bag, predict (after counting the smaller bag) how many of each color are in the larger bag. Develop a plan for determining this without dumping out the bag, show data, and justify how you came up with the data. 4.1.2 DOK 2 <input type="checkbox"/> Construct a histogram of the class quiz scores. Use the histogram to answer questions about the scores. 4.1.1 DOK 3 <input type="checkbox"/> Analyze some Kentucky Quick Facts comparing neighboring counties and create graphs to show interpretation of them. 4.1.2 DOK 2 <input type="checkbox"/> <u>Test: Statistics: Analyzing Data</u> <input type="checkbox"/> <u>Open Response: Allowances</u>

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	<p>scatter plots). DOK 3</p> <ul style="list-style-type: none"> <input type="checkbox"/> MA-07-4.1.2 Students will explain how different representations of data (e.g., tables, graphs, diagrams, plots) are related. <input type="checkbox"/> MA-07-4.1.3 Students will read/interpret, analyze and make inferences from box and whisker of data and make predictions and draw conclusions from the data. <input type="checkbox"/> MA-07-4.1.4 Students will determine and construct appropriate data displays (bar graphs, line plots, Venn diagrams, tables, line graphs, stem-and-leaf plots) and will explain why the type of display is appropriate for the data. DOK 2 <input type="checkbox"/> MA-07-4.1.5 Students will make decisions about how misleading representations affect interpretations and conclusions about data (e.g. changing the scale on a graph). <input type="checkbox"/> MA-07-4.2.1 Students will determine the mean, median, mode and range of a set of data and will identify clusters, gaps and outliers within the data. DOK 2 <input type="checkbox"/> MA-07-4.4.1 Students will apply counting techniques to determine the size of a sample space for a real-world or mathematical situation. DOK 2 <input type="checkbox"/> MA-07-4.4.2 Students will: <ul style="list-style-type: none"> <input type="checkbox"/> determine theoretical probabilities of simple events; <input type="checkbox"/> determine probabilities based on the results of an experiment and <input type="checkbox"/> make inferences from probability data. <input type="checkbox"/> DOK 3 <input type="checkbox"/> MA-07-5.1.1 Students will extend, describe rules for patterns and find a missing term in a pattern from real-world and mathematical problems. DOK 3 <input type="checkbox"/> MA-07-5.1.3 Students will explain how tables, graphs, patterns, verbal rules and 		

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	<p>equations relate to each other.</p> <ul style="list-style-type: none"> <input type="checkbox"/> MA-07-5.1.5 Students will explain how the change in one quantity affects the change in another quantity (e.g., in tables or graphs). DOK 2 <input type="checkbox"/> MA-07-5.2.1 Students will substitute values for variables (up to three different variables) and evaluate algebraic expressions. DOK 2 <input type="checkbox"/> MA-07-5.2.2 Students will describe, define and provide examples of variables and expressions with a missing value based on real-world and mathematical problems. <input type="checkbox"/> MA-07-5.3.1 Students will model and solve real-world and mathematical problems with one- or two-step single variables, first degree equations or inequalities (e.g., $2x+1=9$, $3x+3<9$). (Statements and solutions use only non-negative numbers.) DOK 2 		

Grade 7 Math	Unit 2: Integers and Algebra		Suggested Length: 5 weeks
Essential Questions	<i>Program of Studies</i> and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u> Student will:
<p>1. How do you relate integers to whole numbers, rational numbers, and irrational numbers?</p> <p>2. How do you display solutions to</p>	<p><u>Program of Studies</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> <i>NC-1 extend number sense for percents and integers.</i> <input type="checkbox"/> <i>NC-2 extend understanding of operations ($=$, $-$, x, \div) to include integers.</i> <input type="checkbox"/> <i>A-2 represent, interpret, and describe functional relationships through tables, graphs, and verbal rules (input/output).</i> <input type="checkbox"/> <i>A-3 understand the concept of equations and inequalities using variables as they relate to everyday situations.</i> <input type="checkbox"/> <i>A-4 simplify numeric and algebraic</i> 	<ul style="list-style-type: none"> <input type="checkbox"/> Ordered pair <input type="checkbox"/> Coordinate plane <input type="checkbox"/> Origin <input type="checkbox"/> Axes 	<ul style="list-style-type: none"> <input type="checkbox"/> Play “Walking the Plank,” which compares walking the plank to walking the number line. 1.1.1 DOK 1 <input type="checkbox"/> Read, write, and compare integers using the number line. 1.1.1 DOK 1 <input type="checkbox"/> Play “Integer War” with a deck of cards. The red cards are negative numbers and the student with the highest cards gets to add those cards to his pile. The player to loose all their cards or the person with the most cards when time is called is the winner. 1.1.1 DOK 1 <input type="checkbox"/> Write integers for real life situations. For example, the average rainfall in Virginia for November was 5 inches

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<p>inequalities?</p> <p>3. How can you use tables and coordinate graphs to organize, describe, compare, and interpret data?</p>	<p><i>expressions.</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> <i>A-5 use a variety of methods and representations to create and solve single-variable equations that may be applied to everyday situations.</i> <input type="checkbox"/> <i>A-7 organize data into tables and plot points onto all four quadrants of a coordinate (Cartesian) system/grid and interpret resulting patterns or trends.</i> <input type="checkbox"/> <i>A-8 interpret relationships between tables, graphs, verbal rules, and equations.</i> <p><u>Core Content</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> MA-07-1.1.1 Students will provide examples of and identify integers, fractions, decimals, percents and π. DOK 1 <input type="checkbox"/> MA-07-1.3.1 Students will add, subtract, multiply and divide whole numbers, fractions and decimals to solve real-world problems and apply order of operations (including positive whole number exponents) to simplify numerical expressions. DOK 2 <input type="checkbox"/> MA-07-1.3.2 Students will explain how operations (addition and subtraction; multiplication and division) are inversely related. <input type="checkbox"/> MA-07-1.3.3 Students will add and subtract integers. <input type="checkbox"/> MA-07-3.3.1 Students will identify and graph ordered pairs on a coordinate system, correctly identifying the origin, axes and ordered pairs; and will apply graphing in the coordinate system to solve real-world and mathematical problems. DOK 2 <input type="checkbox"/> MA-07-5.1.2 Students will represent, 		<p>Student will:</p> <ul style="list-style-type: none"> above normal. 1.1.1 DOK 1 <input type="checkbox"/> Play “Captured Integers” to practice addition and subtraction of positive and negative integers. 1.3.1 DOK 2 <input type="checkbox"/> Add and subtract integers using colored counters. 1.3.1 DOK 2 <input type="checkbox"/> Add and subtract integers using the number line. <input type="checkbox"/> Students use an atlas to locate the longitude and latitude of given countries. <input type="checkbox"/> Play “Guess My Location” to practice locating and graphing places or points using a coordinate plane. 1.3.1 DOK 2 <input type="checkbox"/> Play “Battleship” with a coordinate plane. Students try to determine the location of 3 ships. Students must callout the quadrant and then give the pint at which they think their opponents ship is at. They must also keep track of their hits and misses. The winner is the first person to sink their components 3 ships. 3.3.1 DOK 2 <input type="checkbox"/> Figure out what their first name is worth according to the number line hung on the bulletin board. A = -13...and Z = 12. Students add their numbers to find their worth and display it. They then compare and contrast all the values. 1.3.1 DOK 2 <input type="checkbox"/> Play “Can I Have Your Number” to reinforce addition and subtraction of integers. 1.3.1 DOK 2 <input type="checkbox"/> Play “Subtraction War” to reinforce subtraction of integers. 1.3.1 DOK 2 <input type="checkbox"/> Play “Once Around” practicing addition and subtraction of integers. 1.3.1 DOK <input type="checkbox"/> Multiply and divide integers using counters. 1.3.1 DOK 2 <input type="checkbox"/> Play “Plug It-In” to practice multiplication using expressions. 1.3.1 DOK 2 <input type="checkbox"/> Play “Right From The Start” to reinforce multiplying integers. 1.3.1 DOK 2 <input type="checkbox"/> Research the highest and lowest temperatures for a country. Construct a class table showing these temperatures in both Fahrenheit and Celsius. Use the conversion formula to convert between temperature

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Essential Questions	<i>Program of Studies</i> and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u> Student will:
	<p>analyze and generalize first degree relationship using tables, graphs and words and will apply the relationship to solve real-world and mathematical problems. DOK 2</p> <ul style="list-style-type: none"> <input type="checkbox"/> MA-07-5.2.1 Students will substitute values for variables (up to three different variables) and evaluate algebraic expressions. DOK 2 <input type="checkbox"/> MA-07-5.2.2 Students will describe, define and provide examples of variables and expressions with a missing value based on real-world and mathematical situations. <input type="checkbox"/> MA-07-5.3.1 Students will model and solve real-world problems with one- or two-step single variable, first degree equations or inequalities (e.g., $2x+1=9$, $3x+3<9$). (Statements and solutions use only non-negative numbers.) DOK 2 		<p>scales. 5.1.2 DOK 2</p> <ul style="list-style-type: none"> <input type="checkbox"/> <u>Test: Algebra – Integers</u> <input type="checkbox"/> <u>Open Response: Integers</u> <input type="checkbox"/> Solve equations using cups and colored counters. 5.3.1 DOK 2 <input type="checkbox"/> Write a word problem consisting of an equation for a class member to solve. 5.2.1 DOK 2 <input type="checkbox"/> Create a short infomercial about how to solve a two step-equation. 5.3.1 DOK 2 <input type="checkbox"/> Play “Find that Rule” in groups. 5.2.1 DOK 2 <input type="checkbox"/> <u>Open Response: Popcorn</u> <input type="checkbox"/> <u>Open Response: Jeans</u> <input type="checkbox"/> <u>Open Response: Baseball Cards</u> <input type="checkbox"/> <u>Test: Algebra: Linear Equations and Functions</u>

Grade 7 Math	Unit 3: Fractions		Suggested Length: 4 weeks
Essential Questions	<i>Program of Studies</i> and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u> Student will:
<p>1. How do you add, subtract, multiply, and divide fractions?</p> <p>2. What is the difference between a ratio and a fraction?</p> <p>3. How do you</p>	<p><u>Program of Studies</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> NC-6 extend and apply addition, subtraction, multiplication, and division of integers both concretely and symbolically (mental, pencil and paper, calculators). <input type="checkbox"/> NC-7 extend concepts and application of operations with fractions and decimals to include percents. <input type="checkbox"/> GM-1 find circle measurements (radius, diameter, circumference, area) and the relationships among them. <input type="checkbox"/> GM-3 investigate fixed area with changing perimeter and fixed perimeter with changing 	<ul style="list-style-type: none"> <input type="checkbox"/> Prime numbers <input type="checkbox"/> Composite numbers <input type="checkbox"/> Prime factorization <input type="checkbox"/> Factors <input type="checkbox"/> Multiples <input type="checkbox"/> Divisibility rules <input type="checkbox"/> Lcm <input type="checkbox"/> Gcf <input type="checkbox"/> Irregular polygons <input type="checkbox"/> Regular polygons <input type="checkbox"/> Area <input type="checkbox"/> Perimeter 	<ul style="list-style-type: none"> <input type="checkbox"/> Play “Prime Time.” Students are asked to find all the prime numbers from 1 to 100 in groups. 1.5.1 DOK 2 <input type="checkbox"/> “Play “Factor Mania” to review factors along with prime and composite numbers. Students are split into two groups or partners and compete against one another Team 1 picks a number and gets those points. Team 2 has to find the factors of that number and gains all those points. The object is to pick a number that is prime so the other teams points are limited. (Each number can only be covered once therefore counting towards the points once. 1.5.1 DOK 2 <input type="checkbox"/> Play “Fractions –Decimal – Percent Bingo.” Students

Grade 7 Math

Unit 3: Fractions

Suggested Length: 4 weeks

Essential Questions	<i>Program of Studies</i> and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u> <i>Student will:</i>
<p>convert between different customary units?</p>	<p><i>area.</i></p> <p><u>Core Content</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> MA-07-1.1.1 Students will provide examples of and identify integers, fractions, decimals, percents, and π. DOK 1 <input type="checkbox"/> MA-07-1.1.3 Students will convert among whole numbers, fractions, decimals, percents and π and will compare these numbers. DOK 2 <input type="checkbox"/> MA-07-1.5.1 Students will identify and apply prime numbers, composite numbers, prime factorization, factors, multiples and divisibility to solve real-world and mathematical problems (e.g., prime factorization to determine a least common multiple [LCM] or greatest common factor [GCF]). DOK -2 <input type="checkbox"/> MA-07-2.1.1 Students will measure lengths (to the nearest eighth of an inch or nearest centimeter) and will determine and use in real-world and mathematical problems: <ul style="list-style-type: none"> <input type="checkbox"/> area and perimeter of triangles; <input type="checkbox"/> area and perimeter of quadrilaterals (rectangles, squares, trapezoids) (using the Pythagorean theorem will not be required as a strategy.); <input type="checkbox"/> area and circumference of circles and <input type="checkbox"/> area and perimeter of compound figures composed of triangles, quadrilaterals and circles. DOK 2 <input type="checkbox"/> MA-07-2.1.3 Students will explain how measurements and measurement formulas are related or different (e.g., perimeter and area of rectangles). 	<ul style="list-style-type: none"> <input type="checkbox"/> Circumference <input type="checkbox"/> Ratios 	<p>are to cover equivalent values on the game board with the number called. 1.1.1 DOK 2</p> <ul style="list-style-type: none"> <input type="checkbox"/> Order ratios. They are split into groups and given cards with three different ratios on them. They are to order those ratios and with the teacher’s approval, they can move on to the next card. When they have successfully completed all 5 cards they are the winners. 1.1.1 DOK 2 <input type="checkbox"/> Match seashells with different fractions, decimals, mixed numbers and improper fractions written on them. Students are split in to small groups and are asked to gather as many seashells as they can that are equivalent. 1.1.1 DOK 2 <input type="checkbox"/> Review adding, subtracting, multiplying, and dividing fractions by completing a fraction maze in small groups. The group who is finished first and has the right answer is the winner. 1.1.2 DOK 3 <input type="checkbox"/> Create their own fraction maze. 1.1.2 DOK 3 <input type="checkbox"/> Play “Fraction Speed” to help reinforce their skills with fractions. They are given a fraction with 10 different fractions on it. In the center they write another fraction and an operation that is chosen by the teacher. They then complete the wheel. The first one correctly finished with their wheel chooses the next fraction and operation for the remaining wheels. 1.1.2 DOK 3 <input type="checkbox"/> Calculate the perimeter and area of a door and a window from their house. 2.1.1 DOK 2 <input type="checkbox"/> Explore the room to find circular objects from which they can measure and calculate the circumference of. 2.1.1 DOK 2 <input type="checkbox"/> <u>Test: Applying Fractions</u> <input type="checkbox"/> <u>Open Response: Pool</u> <input type="checkbox"/> <u>Open Response: Height</u>

Grade 7 Math	Unit 4: Proportional Reasoning		Suggested Length: 7 weeks
Essential Questions	<i>Program of Studies</i> and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u> Student will:
<p>1. How are using percent proportion and percent equation alike?</p> <p>2. How is probability used in everyday situations?</p> <p>3. How do you design and conduct probability experiments?</p> <p>4. How are dependent and independent events different?</p>	<p><u>Program of Studies</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> <i>NC-1 extend number sense for percents and integers.</i> <input type="checkbox"/> <i>NC-4 apply meaning of ratio and proportion to problems.</i> <input type="checkbox"/> <i>NC-8 compute percentages of numbers and use percentages in proportional reasoning.</i> <input type="checkbox"/> <i>NC-9 estimate and mentally compute using integers and percents.</i> <input type="checkbox"/> <i>NC-10 solve proportions.</i> <input type="checkbox"/> <i>NC-11 compare, order, and determine equivalent relationships among fractions, decimals, and percents.</i> <input type="checkbox"/> <i>NC-13 develop proportional thinking, rates, scaling, and similarity.</i> <input type="checkbox"/> <i>PS-5 determine appropriate techniques to use when investigating solutions to probability problems (using counting techniques; tree diagrams; area models; and exhaustive, organized lists, charts, and tables).</i> <input type="checkbox"/> <i>PS-6 investigate and explain the role of probability in decision making.</i> <input type="checkbox"/> <i>PS-8 design and conduct probability experiments.</i> <input type="checkbox"/> <i>PS-9 determine theoretical (mathematical) probabilities, compare to experimental results, and explain reasons why there might be differences, (e.g., express probability as a ratio, decimal, or a percent as appropriate for a given situation).</i> <input type="checkbox"/> <i>PS-10 explore concepts of randomness and independent events.</i> <input type="checkbox"/> <i>A-5 use a variety of methods and representations to create and solve single-variable equations that may be applied to everyday situations</i> 	<ul style="list-style-type: none"> <input type="checkbox"/> Proportion <input type="checkbox"/> Experimental probability <input type="checkbox"/> Theoretical probability <input type="checkbox"/> Simple event <input type="checkbox"/> Sample space <input type="checkbox"/> Congruent figures <input type="checkbox"/> Similar figures <input type="checkbox"/> Sales tax <input type="checkbox"/> Discounts <input type="checkbox"/> Rates <input type="checkbox"/> Simple interest 	<ul style="list-style-type: none"> <input type="checkbox"/> Calculate and compare unit costs from local newspapers. 1.4.1 DOK 2 <input type="checkbox"/> Create a booklet of unit prices. 1.4.1 DOK 2 <input type="checkbox"/> Investigate rate of change using square tiles and grid paper. 1.4.1 DOK 2 <input type="checkbox"/> Play “Racing with Proportions.” Students spin a spinner and substitute in x for a proportion and then move their marker x spaces until one of the partners reaches the End square. 1.4.1 DOK 2 <input type="checkbox"/> Create a scale drawing of the classroom. 3.1.4 DOK 2 <input type="checkbox"/> Explore real-life examples of numbers greater than 100% and less than 1%. 1.1.1 DOK 1 <input type="checkbox"/> Write his or her own real-life problem using a given percent. 1.1.1 DOK 1 <input type="checkbox"/> Work with a partner to find a part using the percent model on grid paper. 1.1.1 DOK 1 <input type="checkbox"/> Use the percent proportion to complete Venn Diagrams. 1.4.1 DOK 3 <input type="checkbox"/> <u>Test: Ratios and Proportions</u> <input type="checkbox"/> <u>Open Response: Mr. Thompson’s Living Room</u> <input type="checkbox"/> Compare the percent proportion and the percent equation. 1.4.1 DOK 3 <input type="checkbox"/> Formulate a hypothesis of the study habits of their middle school students; construct a survey, analyze results, and lastly, evaluate their hypothesis. 1.1.2 DOK 2 <input type="checkbox"/> Use a graphic from <i>USA Today</i> to predict how many students in our school do not have restrictions on their television viewing. 1.1.2 DOK 3 <input type="checkbox"/> Play “The Accounting Game” where they roll dice to determine the amount of money they earn before they reduce the tax amount that they have to pay. The winner is the person with the most money when time is called. 4.4.2 DOK 2 <input type="checkbox"/> Choose from a list of items that they can buy from local

Grade 7 Math	Unit 4: Proportional Reasoning		Suggested Length: 7 weeks
Essential Questions	<i>Program of Studies</i> and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u>
	<p><u>Core Content</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> MA-07-1.1.1 Students will provide examples of and identify integers, fractions, decimals, percents, and π. DOK 1 <input type="checkbox"/> MA-07-1.1.3 Students will convert among whole numbers, fractions, decimals, percents, and π, and will compare these numbers. DOK 3 <input type="checkbox"/> MA-07-1.2.1 Students will estimate to solve real-world and mathematical problems with fractions, decimals and percents, checking for reasonable and appropriate computational results. DOK 2 <input type="checkbox"/> MA-07-1.4.1 Students will apply ratios and proportional reasoning to solve real-world problems (e.g., percents, sales tax, discounts, rate). DOK 3 <input type="checkbox"/> MA-07-3.1.4 Students will describe and provide examples of congruent and similar figures and will apply congruent and similar figures to solve real-world and mathematical problems. DOK 2 <input type="checkbox"/> MA-07-4.4.1 Students will apply counting techniques to determine the size of a sample space for a real-world or mathematical situation. DOK 2 <input type="checkbox"/> MA-07-4.4.2 Students will: <ul style="list-style-type: none"> <input type="checkbox"/> determine theoretical probabilities of simple events; <input type="checkbox"/> determine probabilities based on the results of an experiment and <input type="checkbox"/> make inferences from probability data. DOK 3 <input type="checkbox"/> MA-07-4.4.3 Students will tabulate experimental results from simulations and explain how theoretical and experimental 		<p>Student will:</p> <ul style="list-style-type: none"> newspaper sales without going over a given budget. 1.2.1 DOK 3 <input type="checkbox"/> Compare and contrast different banking options for simple interest earned and paid. 1.4.1 DOK 3 <input type="checkbox"/> Choose from a list of items to purchase with a credit card and they must determine the amount they will pay back within a given period of time. 1.1.1 DOK 1 <input type="checkbox"/> <u>Test: Applying Percent</u> <input type="checkbox"/> <u>Open Response: Simple Interest</u> <input type="checkbox"/> Determine the different probabilities using dice, a deck of cards, and a spinner. 4.4.2 DOK 2 <input type="checkbox"/> Analyze different games, like Monopoly, Life, and Uno to determine if they are fair. Students should create a write up of the object of the game, the number of possible players, and a brief description of the rules. Lastly, they should determine the way in which probability is used. 4.4.2 DOK 2 <input type="checkbox"/> Create tree diagrams that correspond to real-life situations (food choices, outfits, coin flipping, etc.). 4.4.1 DOK 2 <input type="checkbox"/> Create a tree diagram that represents the many different orders the class could stand in. This will be done in groups. This diagram will take awhile so after 15 minutes or so they will be introduced to a quicker method of calculating all the possible outcomes, the Fundamental Counting Principle. 4.4.1 DOK 2 <input type="checkbox"/> Explore permutations by choosing 4 classes that they want to take their first semester in high school. They will then determine the many different orders that these classes could be taken (disregarding the fact that they are offered at specific times.) Students must be told that they are using the Fundamental Counting Principle when finding the permutations. 4.4.2 DOK 3 <input type="checkbox"/> Identify some events when order does not matter to begin discussion of combinations. Some examples include pizza toppings, sundae toppings, and choosing to do 6 questions out of 12 on a quiz. (Order does not matter.) 4.4.2 DOK 2 <input type="checkbox"/> Discuss ways to distinguish between permutations and

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	<p>probabilities are related.</p> <p><input type="checkbox"/> MA-07-5.3.1 Students will model and solve real-world and mathematical problems with one- or two-step single variable, first degree equations or inequalities (e.g., $2x+1=9$, $3x+3<9$). (Statements and solutions use only non-negative numbers.) DOK 2</p>		<p>combinations. 4.4.2 DOK 2</p> <p><input type="checkbox"/> Explore independent and dependent events by placing their names in a hat and predicting the probabilities that a boy or girl is chosen. Students should notice how the probabilities change as names are removed from the hat. The second name removed is dependent on the first name removed. 4.4.2 DOK 2</p> <p><input type="checkbox"/> <u>Test: Probability</u></p> <p><input type="checkbox"/> <u>Open Response: Birthday Party</u></p> <p><input type="checkbox"/> <u>Open Response: Tara’s Hobbies</u></p>

Grade 7 Math	Unit 5: Geometry and Measurement		Suggested Length: 5 weeks
Essential Questions	<i>Program of Studies</i> and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u> Student will:
<p>1. What is the relationship of angles to lines that form them?</p> <p>2. How can you compare area to perimeter and vice versa of any two-dimensional shapes?</p> <p>3. What are the results of moving a shape in a plane?</p>	<p><u>Program of Studies</u></p> <p><input type="checkbox"/> <i>NC-3 develop number sense for pi as one example of an irrational number.</i></p> <p><input type="checkbox"/> <i>GM-1 find circle measurements (radius, diameter, circumference, area) and the relationships among them.</i></p> <p><input type="checkbox"/> <i>GM-2 develop and use the formulas for area of triangles, parallelograms, and trapezoid; relate to the formula for area of rectangles ($l \times w$).</i></p> <p><input type="checkbox"/> <i>GM-4 investigate area of polygons and other two-dimensional shapes.</i></p> <p><input type="checkbox"/> <i>GM-5 identify and classify characteristics of two-dimensional shapes, such as regular and irregular quadrilaterals, special triangles, and regular polygons.</i></p> <p><input type="checkbox"/> <i>GM-6 identify characteristics of angles (e.g., adjacent, vertical, corresponding, interior, exterior).</i></p> <p><input type="checkbox"/> <i>GM-7 represent three-dimensional geometric figures with special attention to developing spatial sense (e.g., top view, side view, three-</i></p>	<p><input type="checkbox"/> Metric units</p> <p><input type="checkbox"/> Points</p> <p><input type="checkbox"/> Rays</p> <p><input type="checkbox"/> Lines</p> <p><input type="checkbox"/> Angles</p> <p><input type="checkbox"/> Planes</p> <p><input type="checkbox"/> Sides</p> <p><input type="checkbox"/> Vertices</p> <p><input type="checkbox"/> Congruent parts</p> <p><input type="checkbox"/> Acute</p> <p><input type="checkbox"/> Right</p> <p><input type="checkbox"/> Obtuse</p> <p><input type="checkbox"/> Scalene</p> <p><input type="checkbox"/> Isosceles</p> <p><input type="checkbox"/> Equilateral</p> <p><input type="checkbox"/> Square rectangle</p> <p><input type="checkbox"/> Rhombus</p> <p><input type="checkbox"/> Parallelogram</p> <p><input type="checkbox"/> Trapezoid</p> <p><input type="checkbox"/> Regular polygons</p> <p><input type="checkbox"/> Faces</p> <p><input type="checkbox"/> Edges</p>	<p><input type="checkbox"/> Use an analog clock to classify the different types of angles. (acute, obtuse, right and straight)</p> <p><input type="checkbox"/> Identify other objects in the classroom that portray the different types of angles.</p> <p><input type="checkbox"/> Use protractors to measure angles.</p> <p><input type="checkbox"/> Use a compass to construct and bisect angles.</p> <p><input type="checkbox"/> Create a multiple choice survey question and pass it out to the class. They will then create a circle graph of their results by hand and then with the computer. Students will then report their findings to the class so that other students can interpret their information.</p> <p><input type="checkbox"/> Construct parallel lines and discover angle relationships using a compass, protractor, and coloring pencils.</p> <p><input type="checkbox"/> Construct a triangle of their own by placing three dots anywhere on their paper. They will then connect the dots with a ruler and determine the angle measures. They must understand that any three points on a page can be connected to make a triangle and that the sum of all the angles is always 180°.</p> <p><input type="checkbox"/> Create a Venn diagram that shows how the different types of triangles relate to one another.</p> <p><input type="checkbox"/> Identify and classify quadrilaterals by using shapes.</p>

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	<p><i>dimensional shapes drawn on isometric dot paper).</i></p> <ul style="list-style-type: none"> ❑ <i>GM-8 move shapes in a plane: (e.g., translate (slide), rotate (turn), reflect (flip)).</i> ❑ <i>A-6 solve problems involving formulas.</i> <p><u>Core Content</u></p> <ul style="list-style-type: none"> ❑ MA-07-1.1.1 Students will provide examples of and identify integers, fractions, decimals, percents, and π. DOK 1 ❑ MA-07-2.1.1 Students will measure lengths (to the nearest eighth of an inch or the nearest centimeter) and will determine and use in real-world and mathematical problems; <ul style="list-style-type: none"> ❑ area and perimeter of triangles; ❑ area and perimeter of and quadrilaterals (rectangles, squares, trapezoids) (using the Pythagorean theorem will not be required as a strategy.); ❑ area and circumference of circles and ❑ area and perimeter of compound figures composed of triangles, quadrilaterals and circles. DOK 2 ❑ MA-07-2.1.2 Students will estimate measurements of regular and irregular polygons and circles in standard units. ❑ MA-07-2.1.4 Students will find the measures of angles by estimation and measurement with a protractor or angle ruler. ❑ MA-07-2.2.1 Students will convert units within the same measurement system and use these units to solve real-world problems. ❑ MA-07-3.1.1 Students will describe, provide examples of and identify (using correct notation, label and name) the basic geometric 	<ul style="list-style-type: none"> ❑ Spheres ❑ Cones ❑ Cylinders ❑ Prisms ❑ Pyramids ❑ Similar figures ❑ Translate ❑ Reflect ❑ Rotate 	<p>Student will:</p> <ul style="list-style-type: none"> They are to match the quadrilateral shape with the name. 3.1.2 DOK 2 ❑ Students create a short commercial on how to decipher between the quadrilaterals. 3.1.2 DOK 2 ❑ Play “Pentominoes.” Students are split into groups and are asked to arrange the pentominoes into different size rectangles. 3.1.2 DOK 2 ❑ Identify everyday situations when a smaller or larger model of an object is useful. For example, an atom or a model of a house. ❑ Construct similar figures using geoboards and rubber bands. 3.1.4 DOK 2 ❑ Experiment with different polygons to determine whether they tessellate or not. If so, students create their own tessellation using coloring pencils. 3.1.4 DOK 2 ❑ Work in groups of three with specific roles assigned to each. One person will describe a translation while the other two draw it on graph paper. The students then switch role and someone else describes a new translation. (Students should know that the order of translating a figure does not matter; 6 units up and 3 units left is the same as 3 units left and 6 units up. 3.1.4 DOK 2 ❑ Use a mirror or geomirror to determine if a shape has reflectional symmetry. 3.1.4 DOK 2 ❑ Use the folding method to determine if a shape has reflectional symmetry. 3.1.4 DOK 2 ❑ Identify the letters of the alphabet that have reflectional symmetry. 3.1.4 DOK 2 ❑ Graph rotations of Morris the Cat on a coordinate plane. ❑ <u>Test: Geometry</u> ❑ <u>Open Response: Polygon MATH</u> ❑ Use square tiles to create different rectangles. Using these shapes, students will find squares of numbers and square roots of their perfect squares. 2.1.1 DOK 2 ❑ Draw a number from a bag and explain how to estimate its square root. ❑ Play “Tic-Tac-Root.” ❑ Distinguish between right triangles and other triangles

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	<p>elements (e.g., points, segments, rays, lines, angles, and planes) in real-world and mathematical problems.</p> <ul style="list-style-type: none"> ❑ MA-07-3.1.2 Students will describe and provide examples of the elements (e.g., sides, vertices, angles, congruent parts) of two-dimensional figures (circles, triangles [acute, right, obtuse, scalene, isosceles, equilateral], quadrilaterals [square, rectangle, rhombus, parallelogram, trapezoid], regular polygons) and will apply these elements and figures to solve real-world and mathematical problems. DOK 2 ❑ MA-07-3.1.3 Students will describe, provide examples of and identify elements (e.g., vertices, angles, faces, edges, congruent parts) of common three-dimensional figures (spheres, cones, cylinders, prisms, and pyramids). ❑ MA-07-3.1.4 Students will describe and provide examples of congruent and similar figures and will apply congruent and similar figures to solve real-world and mathematical problems. DOK 2 ❑ MA-07-3.2.2 Students will translate (slide) and reflect (flip) figures in a coordinate plane. 		<p>Student will:</p> <ul style="list-style-type: none"> by the lengths of their sides. ❑ Use grid paper to help them determine the area of parallelograms. 2.1.1 DOK 2 ❑ Use colored grid paper to make a mosaic of triangles and trapezoids. They must find the area of each shape. 2.1.1 DOK 2 ❑ Find the area of cardboard shapes by discovering how the complex figures can be divided into a combination of rectangles, semicircles, triangles, and trapezoids. ❑ <u>Test: Geometry: Measuring Two-Dimensional Figures</u> ❑ <u>Open Response:</u> <ul style="list-style-type: none"> ❑ Construct three-dimensional figures with centimeter cubes discussing the different views they have. ❑ Use isometric dot paper to draw different three-dimensional figures given the top, side and front views. ❑ Use centimeter cubes to determine the volume of rectangular prisms. ❑ Identify everyday items that are cylinders and calculate the volume of a few of them. (soup can, mug, and a cake pan, etc.) ❑ Complete the “Geometry Scavenger Hunt.” Students are split into teams and are asked to locate items within the school, their home and in their community that has specific criteria. This project will take more than one day. ❑ Use centimeter cubes to find the surface area of rectangular prisms. ❑ Find the surface area of cylinders using grid paper. ❑ <u>Test: Geometry: Measuring Three-Dimensional Figures</u> ❑ <u>Open Response:</u>