Grade 6 Math	Unit 1: Whole Numbers, Algebra, and Statistics		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u> Student will:
1. What are exponents and how are they used? 2. How can you use prime factorization? 3. How are mean, median, and mode related? 4. 4. How do you decide which graph to use to display your data?	**<u>Program of Studies</u>** ❑ *NC-1 continue to develop number sense including fractions, decimals, and percents (including percents greater than 100% and improper fractions).* ❑ *NC-5 explore exponents (e.g., squares, cubes).* ❑ *NC-6 determine prime numbers, composite numbers, factors, multiples, greatest common factors, and least common multiples.* ❑ *NC-11 use prime numbers, composite numbers, factors, multiples, and divisibility to solve problems.* ❑ *PS-1 collect, organize, analyze, and interpret data in a variety of graphical methods, including line plots, line graphs, bar graphs, and stem and leaf plots.* ❑ *PS-2 made predictions, draw conclusions, and verify results from statistical data and probability experiments.* ❑ *PS-3 select an appropriate graph to represent given data.* ❑ *PS-4 compare data from various types of graphs.* ❑ *PS-5 investigate solutions to probability problems, using counting techniques, tree diagrams, charts, and tables.* ❑ *PS-6 recognize the role of probability in decision making.* ❑ *PS-7 apply range and measures of central tendency (mean, median, mode).* ❑ *A-3 write and solve equations with one variable, using concrete and/or informal methods that model everyday situations.* ❑ *A-4 explore the concept of variable, expression, and equation.* ❑ *A-5 solve problems involving simple formulas (i.e., A = 1w, P = 21 + 2w)*	❑ Factor ❑ Prime number ❑ Composite number ❑ Prime factorization ❑ Exponent ❑ Numerical expression ❑ Order of operations ❑ Algebra ❑ Variable ❑ Evaluate ❑ Area ❑ Interval ❑ Graph ❑ Bar graph ❑ Line graph ❑ Circle graph ❑ Stem-and-leaf plot ❑ Measure of central tendency ❑ Mean ❑ Outlier ❑ Median ❑ Mode ❑ Range	❑ Construct & interpret divisibility patterns in order to determine if a given number is divisible by 2,3,5,6,9, or 10. ❑ <u>Divisibility quiz</u> (write divisibility rules for 2,3,5,6,9,10). ❑ Determine prime numbers by examining the factors of a number. ❑ Construct factor trees to break down composite numbers into prime factors. ❑ Express powers & exponents by writing the numbers out as a product and then evaluate. ❑ Evaluate expressions using order of operations by using the Rules (Parentheses, Exponents, Multiply and Divide, and add and subtract) One way to remember this is "Please Excuse My Dear Aunt Sally". 1.3.1 DOK 2 ❑ Evaluating algebraic expressions by substituting a number in for the variable used and using the order of operations once it is substituted. 1.3.1 DOK 2 ❑ Determine area of objects using formula (A= L x W). ❑ Review Number Pattern & Algebra by observing students working out problems on board visually. ❑ <u>Test Number Patterns & Algebra</u> ❑ <u>Open response: Cathy's Number</u> (use divisibility rules & you have to explain, think and explain why Cathy's number is what it is). ❑ Using data collected by a class survey (favorite kind of vehicle), the students will construct a frequency table. 1.1.2 DOK 3 ❑ Student will also collect data and construct own frequency table using data collected. 1.1.2 DOK 3 ❑ Interpret circle graphs by using data given and deciding what data is most popular, least popular, etc. 1.1.2 DOK 3 ❑ Interpret bar and line graphs by taking data and finding the scale and intervals, labeling graph, drawing bars or lines. 4.1.2 DOK 2 ❑ Construct and interpret stem-and-leaf plots by ordering

Grade 6 Math	Unit 1: Whole Numbers, Algebra, and Statistics		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u> Student will:
	❑ *A-6 interpret relationships between tables and graphs.* ❑ *A-7 organize data into tables and plot points onto the first quadrant of a coordinate (Cartesian) system/grid.* **<u>Core Content</u>** ❑ **MA-06-1.1.1 Students will provide examples of and identify fractions, decimals and percents. DOK 1** ❑ MA-06-1.1.2 Students will describe and provide examples of representations of numbers (whole numbers, fractions in simplest form, mixed numbers, decimals, percents) 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/or mathematical situations. ❑ **MA-06-1.1.3 Students will convert between any two of the following numbers: fractions, decimals, and percents (less than or equal to 100%); and will compare and order these numbers. DOK 2** ❑ **MA-06-1.3.1 Students will add, subtract, multiply and divide, whole numbers, fractions and decimals to solve real-world problems and apply order of operations to simplify numerical expressions. DOK 2** ❑ MA-06-1.3.2 Students will explain how operations (addition and subtraction; multiplication and division) are inversely related. ❑ **MA-06-1.5.1 Students will identify and apply prime numbers, composite numbers, prime factorization, factors, multiples and divisibility to solve real-world and**		data from least to greatest, drawing a vertical line and writing the ten's digit from least to greatest on the left of the line, and the unit digits in order to the right of the line with the corresponding stem. 4.1.2 DOK 2 ❑ Find the mean of a set of data by adding the numbers together and dividing by the number of data. Students will also evaluate the data and decide what measure of central tendency best describes the data by remembering that mean is best when outliers are there, mode is best when several numbers are the same, and median is best when there is outliers in the data. 4.2.1 DOK 2 ❑ Find the median of a set of data by ordering the data from least to greatest and finding the number in the middle and finding the range by subtracting the smallest number in the data by the largest. Also, find the mode by observing the data to see if any number is written more than the other data given. 4.2.1 DOK 2 ❑ Review Statistics and Graphs by observing students working problems out on board visually. ❑ <u>Assess Statistics and Graphs by Testing students.</u> ❑ <u>Open Response: Students will take given test scores and make a stem-and-leaf plot and then analyze the data in sentence form. They will also list any outliers and how it affects the mean in sentence form, and finally write several sentences stating what measure of central tendency that best describes the data and why?</u>

Grade 6 Math	Unit 1: Whole Numbers, Algebra, and Statistics		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	mathematical problems (e.g., prime factorization to determine a least common multiple [LCM] or greatest common factor [GCF]). DOK 2 ❑ **MA-06-2.1.1 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:** ❑ **area and perimeter of triangles;** ❑ **area and perimeter of quadrilaterals (rectangles, squares); (using the Pythagorean theorem will not be required as a strategy) and** ❑ **area and perimeter of compound figures composed of triangles and quadrilaterals. DOK 2** ❑ **MA-06-4.1.1 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). DOK 3** ❑ MA-06-4.1.2 Students will explain how different representations of data (e.g., tables, graphs, diagrams, plots) are related. ❑ **MA-06-4.1.4 Students will determine and construct appropriate data displays (bar graphs, line plots, Venn diagrams, tables, line graphs), and will explain why the type of display is appropriate for the data. DOK 2** ❑ **MA-06-4.2.1 Students will determine and apply the mean, median, mode, and range of a set of data. DOK 2** ❑ **MA-06-4.4.2 Students will determine single event probabilities based on the results of an experiment and will make inferences based on the data. DOK 3**		

Grade 6 Math	Unit 1: Whole Numbers, Algebra, and Statistics		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	❑ **MA-06-5.2.1 Students will substitute values for variables (up to two different variables) and evaluate algebraic expressions. DOK 2** ❑ MA-06-5.2.2 Students will describe, define and provide examples of variables and expressions with a missing value based on real-world and mathematical problems. ❑ **MA-06-5.3.1 Students will model and solve real-world and mathematical problems with simple equations and inequalities (e.g., 8x=4, x+2>5). DOK 2**		

Grade 6 Math	Unit 2: Decimals		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
1. What is the difference between standard form, word form, and an expanded form in dealing with decimals? 2. How do you compare and order decimals? 3. How does estimating decimals help with adding and subtracting them?	**Program of Studies** ❑ *NC-1 continue to develop number sense including fractions, decimals, and percents (including percents greater than 100% and improper fractions).-* ❑ *NC-2 extend understanding of operations (+, -, x, ÷) to include fractions and decimals.* ❑ *NC-4 develop place value of large and small numbers (include decimals).* ❑ *NC-7 extend and apply addition, subtraction, multiplication, and division of common fractions and decimals with manipulatives and symbols (e.g., mental, pencil and paper, calculators).* ❑ *NC-9 estimate with large and small quantities of objects.* ❑ *NC-10 estimate and mentally compute using fractions and decimals.* ❑ *NC-12 compare, order, and convert between whole numbers, fractions, and decimals, using concrete materials, drawings or*	❑ Equivalent decimals ❑ Perimeter ❑ Diameter ❑ Circumference ❑ Radius	❑ Represent decimals in word form, standard form and expanded form by using the Place Value chart for help. 1.1.1 DOK 1 ❑ Students will compare and order decimals by placing the correct symbol (<, >, or =) where it belongs and by lining up the decimal before ordering two or more decimals. 1.1.1 DOK 1 ❑ Students will round decimals by first underlining the digit to be rounded, then looking at the number to the right to determine whether it will go up or stay the same. 1.1.1 DOK 1 ❑ Estimate sums and differences of decimals using front-end estimation (adding or subtracting front digits, then rewrite problem, then add or subtract the next digit) or clustering (estimate by rounding a group of close numbers to the same number). 1.1.1 DOK 1 ❑ Evaluating two numbers or more by adding or subtracting decimals making sure the decimal is lined up. 1.1.1 DOK 1 ❑ Review adding and subtracting decimals by observing

Grade 6 Math	Unit 2: Decimals		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u> Student will:
4. When adding and subtracting decimals, what is the first step and the most important step?	*pictures, and mathematical symbols (<, >, =, order on a number line).* ❑ *GM-1 find perimeter of regular and irregular polygons in metric and U.S. customary units.* **<u>Core Content</u>** ❑ **MA-06-1.1.1 Students will provide examples of and identify fractions, decimals and percents. DOK 1** ❑ **MA-06-1.1.3 Students will convert between any two of the following numbers: fractions, decimals and percents (less than or equal to 100%); and will compare and order these numbers. DOK 2** ❑ **MA-06-1.2.1 Students will estimate to solve real-world and mathematical problems with whole numbers, fractions, decimals, and percents, checking for reasonable and appropriate computational results. DOK 2** ❑ **MA-06-1.3.1 Students will add, subtract, multiply and divide, whole numbers, fractions and decimals to solve real-world problems and apply order of operations to simplify numerical expressions. DOK 2**		students working out problems on board visually. ❑ <u>Assess adding and subtracting decimals by testing students.</u> ❑ Students will find the product of decimals and whole numbers (example…students will take a box of bolts that cost .03 a piece and find out the cost if they bought 24). 1.3.1 DOK ❑ Students will find the product of decimals and decimals (example…students will be given a table in which certain meats (in decimal form) costs at Main Street. They will be asked what the cost would be if they had to go in and buy 2.5 pounds of each type). 1.3.1 DOK 2 ❑ Students will divide decimals by whole numbers. To get the lesson started, the students will be given $3.75 in play money and they will separate it so that each has the same amount. Without realizing, they have divided the decimal by 3. 1.2.1 DOK 2 ❑ Draw a garden on a white sheet of paper and construct a fence around it. The garden is rectangular and the sides are 5 meters and 3 meters long. Finding the length of the fence will be the perimeter. 1.2.1 DOK 2 ❑ Using different size shapes of circles let the students measure the distance from one side of the circle through the center and to the other side. By doing this and using π (which is 3.14), the students will find the circumference of their circle. Formula…C=π d. 1.2.1 DOK 2 ❑ Review Multiplying and Dividing Decimals by observing students working problems on board visually. ❑ <u>Assess students on multiplying and dividing decimals by testing students.</u>

Grade 6 Math	Unit 3: Fractions		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u> Student will:
1. How can you use GCF's & LCM's to solve problems? 2. How are whole numbers, fractions, decimals, and percents related to one another? 3. What is the most important rule when adding or subtracting fractions? (common denominator) 4. How does multiplying and dividing fractions relate to one another? 5. What do you look for and try to recognize when extending a sequence? 6.	**<u>Program of Studies</u>** ❑ *NC-1 continue to develop number sense including fractions, decimals, and percents (including percents greater than 100% and improper fractions).* ❑ *NC-6 determine prime numbers, composite numbers, factors, multiples, greatest common factors, and least common multiples.* ❑ *NC-8 simplify fractions with prime factorization (numbers that divide exactly into a given number).* ❑ *NC-10 estimate and mentally compute using fractions and decimals.* ❑ *NC-12 compare, order, and convert between whole numbers, fractions, and decimals, using concrete materials, drawings or pictures, and mathematical symbols (<, >, =, order on a number line).* ❑ *A-1 recognize, create, and continue patterns (give an informal description for the continuance of the pattern and/or generalize patterns through a verbal rule).* **<u>Core Content</u>** ❑ **MA-06-1.1.1 Students will provide examples of and identify fractions, decimals and percents. DOK 1** ❑ **MA-06-1.1.3 Students will convert between any two of the following numbers: fractions, decimals, and percents (less than or equal to 100%; and will compare and order these numbers. DOK 2** ❑ **MA-06-1.3.1 Students will add, subtract, multiply and divide, whole numbers, fractions, and decimals to solve real-world problems and apply order of operations to**	❑ Venn diagram ❑ Greatest common factor ❑ Least common multiple	❑ Use factor tress to discover the GCF of two or more numbers. Also, begin lesson by using a Venn Diagram. to compare the common factors of two numbers. ❑ Continue to use factor tree to find the GCF in order to simplify fractions. 1.5.1 DOK 2 ❑ By using modes, show students how to take a mixed number and change it to an improper fraction and vice versa. 1.1.1 DOK 1 ❑ Find the LCM of two or more numbers by making a list of the multiples or by using the numbers prime factors (factor tree). Begin lesson by noting the high school marching band rehearses with either 6 or 10 members in every line. What is the least number of people that can be in the marching band? 1.5.1 DOK 2 ❑ Ask students if 1/3 of their shoes are black and 2/5 are brown, what color do they have more of? Explain how to find the LCD, then rewrite each fraction having a common denominator and a new numerator and then compare the numerators to tell. 1.5.1 DOK 2 ❑ By recalling the place value chart, each student will have to identify the place value of the last decimal place in order to write the decimal as a fraction using the place value as the denominator, then simplify if needed. 1.3.1 DOK 2 ❑ Using a calculator, each student will determine the fraction as a decimal by dividing the numerator by the denominator. Begin lesson by taking a students homework paper and showing how this can determine the percent average of a fraction showing the number right over the number possible. Inform them they have to move the decimal two places to the right to go from a decimal to a percent. 1.3.1 DOK 2 ❑ Review fractions and decimals by observing students working out problems on board. ❑ <u>Access students understanding of fractions and decimals by testing them.</u> ❑ <u>Open response: students will take 5 different players</u>

Grade 6 Math	Unit 3: Fractions		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	simplify numerical expressions. DOK 2 ❑ **MA-06-1.5.1 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** ❑ MA-06-2.1.2 Students will estimate measurements in standard units including fractions and decimals.		with their averages on free throws (example 17 out of 25, 15 out of 20, etc) and turns them into fractions (in simplest form), names them from least to greatest, decides who they would choose to shoot a technical at the end of a game and why, and takes the fractions to a decimal and a percent. ❑ Begin lesson on adding and subtracting fractions with like denominators with students by separating students into two groups (one who likes swimming and the other who does not). Explain how easy it is to total them when they are already separated. 1.1.2 DOK 2 ❑ Start lesson on adding and subtracting fractions with unlike denominators by writing the following on the board (3 pennies and 2 nickels). Ask students how they can describe the sum of this money using a common name only? (Converting 2 nickels to pennies 10+ 3 = 13). Explain the importance of finding a common denominator (LCD) before adding or subtracting. 1.1.2 DOK 2 ❑ Start lesson on subtracting fractions involving renaming by asking a student what they would do if they had to give someone 10 dollars but didn't have it. They will need to borrow from someone beside them giving them less than what they had. This way they can now pay the ten dollars that was needed. Explain when borrowing with fractions they have to rename the fraction and then subtract. 1.1.2 DOK 2 ❑ Assess students on adding and subtracting fractions by testing them.

Grade 6 Math	Unit 4: Algebra		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
1. How do adding, subtracting, multiplying, and	**Program of Studies** ❑ *NC-1 continue to develop number sense including fractions, decimals, and percents*	❑ Integer ❑ Coordinate system ❑ X-coordinate	❑ Begin lesson on integers by using red (positive) and blue (negative) counters. The counters are used as models to help understand the value of integers and how

Grade 6 Math	Unit 4: Algebra		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u> Student will:
dividing integers related to each other? 2. How would understanding a coordinate system benefit you in everyday life? 3. How do adding, subtracting, multiplying, and dividing equations relate to each other? 4. How can graphing functions better represent information?	*(including percents greater than 100% and improper fractions).* ❑ *NC-13 explore how applications of properties (e.g., commutative, associative, inverse, identity) show relationships among numbers and operations.* ❑ *A-2 represent, interpret, and describe function relationships through tables, graphs, and verbal rules.* ❑ *A-3 write and solve equations with one variable, using concrete and/or informal methods that model everyday situations.* ❑ *A-7 organize data into tables and plot points onto the first quadrant of a coordinate (Cartesian) system/grid.* **<u>Core Content</u>** ❑ **MA-06-1.1.1 Students will provide examples of and identify fractions, decimals and percents. DOK 1** ❑ MA-06-1.1.2 Students will describe and provide examples of representations of numbers (whole numbers, fractions in simplest form, mixed numbers, decimals, percents) 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/or mathematical situations. ❑ **MA-06-1.3.1 Students will add, subtract, multiply and divide, whole numbers, fractions and decimals to solve real-world problems and apply order of operations to simplify numerical expressions. DOK 2** ❑ **MA-06-1.5.2 Students will identify the use of properties (commutative properties of addition and multiplication, the associative**	❑ Y-coordinate ❑ Two-step equation ❑ Function ❑ Function table	to add, subtract, multiply, and divide them. Use overhead to start them off explaining how to work the problems, and then have students work in groups. 1.1.1 DOK 1 ❑ Present students with a map of a street and explain how a coordinate plan is used to help show the location of a particular place. Then explain to students how to use a coordinate system and how to graph an ordered pair. Show the 4 quadrants and how that can also be used to show location. 3.3.1 DOK 2 ❑ Have students use models (using 2 different colors) to find the area, working with a partner, to see how the distributive property works in an equation. 1.5.2 DOK 1 ❑ Explain Adding and Subtracting Equations by letting students use positive and negative models. 5.3.1 DOK 2 ❑ Start off lesson on function rules by discussing a class rule and how it is put into effect if broken (ex. Input being rule broken and output is the result). Then show how a function rule works with math (ex. X + 4…list input numbers and show the output). 5.1.2 DOK 3 ❑ <u>Access students on solving equations and graphing functions by testing them.</u>

Grade 6 Math	Unit 4: Algebra		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	properties of addition and multiplication and the identity properties for addition and multiplication) to simplify numerical expressions. DOK 1 ❑ **MA-06-3.3.1 Students will identify and graph ordered pairs on a positive coordinate system (Quadrant I), 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** ❑ **MA-06-5.1.1 Students will extend, describe rules for patterns and find a missing term in a pattern from real-world and mathematical problems. DOK 3** ❑ **MA-06-5.1.2 Students will create tables for functions and will apply the tables to solve real-world problems. DOK 2** ❑ MA-06-5.1.3 Students will describe, define, provide examples of and apply to real-world and mathematical problems functions using tables, graphs and verbal rules. ❑ MA-06-5.1.4 Students will explain how tables and graphs and patterns relate to each other. ❑ MA-06-5.1.5 Students will explain how the change in one quantity affects change in another quantity (e.g., in tables or graphs, input/output tables). ❑ **MA-06-5.3.1 Students will model and solve real-world and mathematical problems with simple equations and inequalities (e.g., 8x=4, x+2>5). DOK 2**		

Grade 6 Math	Unit 5: Patio and Proportion		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
1. How do ratios, rates, and proportions compare to each other? 2. How are percents expressed as fractions and decimals? 3. What is difference between theoretical and experimental probability?	**Program of Studies** ❑ *NC-1 continue to develop number sense including fractions, decimals, and percents (including percents greater than 100% and improper fractions).* ❑ *NC-3 develop meaning of ratio (describe and compare two sets of data using ratios and appropriate notations: 3:5, 3/5, 3 to 5).* ❑ *NC-9 estimate with large and small quantities of objects.* ❑ *GM-2 read and use measurement tools (e.g., rulers, scales).* ❑ *PS-2 made predictions, draw conclusions, and verify results from statistical data and probability experiments.* ❑ *PS-5 investigate solutions to probability problems, using counting techniques, tree diagrams, charts, and tables.* ❑ *A-3 write and solve equations with one variable, using concrete and/or informal methods that model everyday situations.* **Core Content** ❑ **MA-06-1.1.1 Students will provide examples of and identify fractions, decimals and percents. DOK 1** ❑ **MA-06-1.4.1 Students will describe and apply ratios to solve real-world problems. DOK 2** ❑ **MA-06-4.1.4 Students will determine and construct appropriate data displays (bar graphs, line plots, Venn diagrams, tables, line graphs) and will explain why the type of display is appropriate for the data. DOK 2** ❑ **MA-06-4.4.1 Students will describe or**	❑ Ratio ❑ Theoretical probability ❑ Tree diagram ❑ Survey ❑ Population	❑ Begin lesson by having 4 footballs and 6 tennis balls in front of the room. Ask students to compare the number of footballs to the number of tennis balls by using a fraction. Show the 3 ways to write and say a ratio. 1.4.1 DOK 2 ❑ Give a student 20 jelly beans and ask him/her to sort the jelly beans by color. Then have him/her ***predict*** how many of each color would be in a bag a 200. After the class has predicted, show how to set up the two ratios and how to work the proportion (by cross product). 1.4.1 DOK 2 ❑ To introduce percents, have a grid with one hundred squares. Model how any amount shaded in will be the percent it is (since it is out of 100). 1.1.1 DOK 1 ❑ Have students separate into groups according to the months in which they were born. Then have each group figure out what percent of the class their group represents. Have students express their results in both fraction and percent form. 4.1.2 DOK 2 ❑ Discuss probability by explaining that the probability of winning a basketball game differs from the probability of getting heads or tails when a coin is tossed. Most games are based on skill and the chance of getting a heads or tails is strictly chance and the probability will come closer to matching the theoretical probability of 50% the more trials there are. 4.4.2 DOK 3 ❑ Have a spinner with several different colors on it. Discuss with students the theoretical probability of spinning a certain color and then see what happens by actually spinning (experimental probability). 4.4.2 DOK 3 ❑ Draw on the board a green with a surrounding fairway and a sand trap. Show the square footage of the green and the sand trap with the width and length of the entire model. Ask students the probability of a golfer hitting the green if the shot is equally likely to hit anywhere in the area of the course shown. Then ask the probability

Grade 6 Math	Unit 5: Patio and Proportion		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	determine (e.g., tables, tree diagrams) the sample space of an event for a real-world or mathematical situation. DOK 2 ❑ **MA-06-4.4.2 Students will determine single event probabilities based on the results of an experiment and will make inferences based on the data. DOK 3**		of the ball going into the sand trap. 1.4.1 DOK 2 ❑ Students will use the tree diagram to show the number of outcomes a concession stand has if it serves 4 kinds of pop, 3 different ways to make a hamburger, and 3 different snacks. 4.4.1 DOK 2 ❑ Access students on ratio and proportion by testing them.

Grade 6 Math	Unit 6: Measurement and Geometry		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
1. Why is it important to know how to measure in everyday life & how to convert (change) units of length, capacity, and weight? 2. How is it beneficial to understand how to add and subtract measures of time? 3. What are angles and how can you classify, measure, & draw them?	**Program of Studies** ❑ *GM-2 read and use measurement tools (e.g., rulers, scales).* ❑ *GM-3 find area of plane figures composed of squares and rectangles through subdividing and measuring and use square units appropriately.* ❑ *GM-4 estimate, compare, and convert units of measures for length, weight/mass, and volume/capacity within the U.S. customary system and within the metric system: a) length (e.g., parts of an inch, inches, feet, yards, miles, millimeter, centimeter, kilometer); b) weight/mass (e.g., pounds, tons, grams, kilograms); and c) volume/capacity (e.g., cups, pints, quarts, gallons, milliliters, liters). (The intent of this standard is for students to make ballpark comparisons and not to memorize conversion factors between U.S. and metric units.)* ❑ *GM-5 estimate and find angle measurement and segment measurements.* ❑ *GM-6 formulate the rule that the sum of angle measurements is 180 degrees in a triangle and 360 degrees in a quadrilateral.*	❑ Metric system ❑ Right angle ❑ Acute angle ❑ Obtuse angle ❑ Triangle ❑ Face ❑ Prism ❑ Pyramid ❑ Cone ❑ Cylinder ❑ Sphere	❑ Begin lesson by having students use yardsticks or standard rulers to measure various items in the classroom such as doors, chalk, chalkboards, pencils. Have them determine whether it is best to express each measurement in inches, feet, or yards. 4.4.1 DOK 2 ❑ Do an intrapersonal lesson by having students determine how tall they are in centimeters. Then have them measure the length of their arms, index fingers, and feet in centimeters. 4.4.1 DOK 2 ❑ After discussing key terms (right, acute, and obtuse angles), have students classify various angles they see around the classroom. Since many of the angles that they will see will be right angles, challenge students to find acute and obtuse angles. Then, have them state a range of possible angle measures for each. 4.4.2 DOK 3 ❑ To introduce lines of symmetry, place students in groups of four. For each of the following, have one group use masking tape to represent a line that would cut the object in half: the classroom, the chalkboard, a desk, a bulletin board, a table, and a wastebasket. Ask each group to explain how they came up with their answers. 1.1.1 DOK 1 ❑ Have students list everyday objects shaped like rectangular prisms (sample…many building, shoe box,

Grade 6 Math	Unit 6: Measurement and Geometry		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and <u>Assessment</u> Student will:
4. How can you determine the difference between congruent and similar figures? 5. What is needed to find the area of a parallelogram, triangle, trapezoid, and circle?	❑ *GM-7 identify properties and classify line segments, rays, planes, and points.* ❑ *GM-8 recognize regular polygons; special quadrilaterals including squares, rectangles, rhombuses, trapezoids, and parallelograms; and special triangles including acute, obtuse, scalene, and isosceles.* ❑ *GM-9 identify characteristics of lines (e.g., parallel, perpendicular).* ❑ *GM-10 use lines of symmetry and sketch plane figures with multiple lines of symmetry.* **<u>Core Content</u>** ❑ **MA-06-2.1.1 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:** ❑ **area and perimeter of triangles;** ❑ **area and perimeter of quadrilaterals (rectangles, squares); (using the Pythagorean theorem will not be required as a strategy) and** ❑ **area and perimeter of compound figures composed of triangles and quadrilaterals. DOK 2** ❑ MA-06-2.1.2 Students will estimate measurements in standard units including fractions and decimals. ❑ MA-06-2.1.3 Students will explain how measurements and measurement formulas are related or different (perimeter and area of rectangles). ❑ MA-06-2.2.1 Students will convert units within the same measurement system and use these units to solve real-world problems. ❑ **MA-6-3.1.1 Students will describe and provide examples of the basic geometric**		typical classroom). Ask them why it might be useful to know how much space is contained within an object or how much space an object takes up. 3.1.3 DOK 2 ❑ Have students observe two hanging figures in room. They will have same shape and design but differ in size. Students will explain that they are similar but not congruent. 3.1.4 DOK 2 ❑ Students will draw a figure and translate it across a vertical or horizontal line making it have a mirror image on the other side. 3.2.2 DOK 2 ❑ Students will take several given figures and label them as what figure they are and then relate them to figures they see in their everyday life. 3.1.2 DOK 2 ❑ <u>Assess students on Measurement and Geometry by testing them</u>.

Grade 6 Math	Unit 6: Measurement and Geometry		Suggested Length: 5 weeks
Essential Questions	*Program of Studies* and Core Content	Key Terms and Vocabulary	Classroom Instruction and Assessment Student will:
	elements (points, rays, lines, segments, angles [acute, right, obtuse], planes, radius, diameter, circumference). DOK 1 ❑ **MA-06-3.1.2 Students will describe and provide examples of the elements (e.g., sides, vertices, angles, congruent parts) of two-dimensional figures (circles, triangles, quadrilaterals, regular polygons) and will apply these elements and figures to solve real-world and mathematical problems. DOK 2** ❑ MA-06-3.1.3 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-06-3.1.4 Students will identify and describe congruent figures and will apply congruent figures to solve real-world and mathematical problems. DOK 2** ❑ MA-06-3.2.1 Students will describe, provide examples of and apply line symmetry to real world and mathematical situations. ❑ **MA-06-3.2.2 Students will:** ❑ **reflect figures across horizontal or vertical line in the first quadrant;** ❑ **translate figures in a plane in the first quadrant and** ❑ **determine the coordinates of the image after transformation in the first quadrant. DOK 2** ❑ MA-06-3.2.3 Students will identify rotations of figures in the plane (90º and 180º).		