Teacher: Mrs. Mulacek, Ms. Merchant

Grade Level: 5

Course: Math

Course Aims: To develop math skills and strategies

Course Description: This program provides opportunities for students to develop their math skills. Topics that are covered include computation of whole numbers, decimals, fractions, volume, 2-dimensional geometry, and coordinate geometry.

Textbook:
Title: Mathematics Course 1
ISBN: 0-13-372115-9
Authors: Randall Charles, Mark Illingworth, Bonnie McNemar, Darwin Mills, Alma Ramirez, and Andy Reeves
Publisher: Pearson Prentice Hall
Publication Date: Copyright 2010

Assessment
Formative assessments will be used before and during instruction to assess student understanding. Summative assessments, given after instruction, will document student mastery of the mathematical concepts and skills. Points will be obtained from class assignments, quizzes, unit tests, participation in group activities, and projects.

QUARTER: 1st   COURSE: Math

Content	Assessment	Common Core	Essential Questions
Unit 1 - Whole Number Computation and Application **Students will …** *Write and compare whole numbers *Add and Subtract whole numbers *Multiply multi-digit whole numbers. *Divide whole numbers up to four-digit dividends and 2digit divisors *Understand and use the properties of numbers *Use the order of operations to simplify expressions and solve problems	Group Discussions Assignments/Worksheets Quizzes Unit Assessments Projects	**5.OA.1** Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. **5.NBT.5** Fluently multiply multi-digit whole numbers using the standard algorithm. **5.NBT.6** Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models	*How do you multiply multi-digit numbers using a standard algorithm? *How do you choose different division strategies to divide multi-digit numbers? *How do parentheses, brackets, and braces affect the way you simplify expressions? .

| **Unit 2 - Decimal Computation and Application**

Students will …
*Read, write, and round decimals

*Compare and order decimals using models and place value

*Solve problems involving adding, subtracting, multiplying and dividing decimals

*Understand that the exponent indicates how many places the decimal point is moving.

*Model and explain that the value of a digit changes as you move to the left (10 times more) or to the right (1/10 less) using manipulatives, pictures, and/or language.

*Represent and model the pattern of zeros that occurs when multiplying by powers of 10. (10 = 10 *10*10 =1000)

*Represent and explain the patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10.

*Represent and model the use of a whole number exponent to denote powers of 10.

*Read and write decimals to thousandths using base-ten numerals and expanded form, e.g., 347.392 = (3 * 100) + (4 *10) + (7 * 1) + 3 (1/10) + 9 * (1/100) + 2 * (1/10000). | Group Discussions

Assignments/Worksheets

Quizzes

Unit Assessments

Projects | **5.NBT.1** Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

5.NBT.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

5.NBT.3a Read and write decimals to thousandths using base-ten numerals, number names, and expanded form.

5.NBT.3b Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

5.NBT.4 Use place value understanding to round decimals to any place.

5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the | *What occurs when whole numbers and decimals are multiplied or ordered by 10 or powers of 10?

*What does the exponent indicate in digits with decimals?

*Why is it essential to round decimals? Provide examples of rounding decimals in real life situations. |

*Compare two decimals to thousandths based on meaning of the digits in each place, using >, =, and < symbols to record the results of comparisons. *Convert measurements within the metric system to solve multi-step, real world problems. (100cm = 1 meter) *Use concrete models, pictorial representations, written symbols, and language to show addition, subtraction, multiplication, and division of decimals to hundredths.		reasoning used. **5.MD.1** Convert among different-sized standard measurement units within a given measurement system and use these conversions in solving multi-step problems. **5.MD.2** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.	

QUARTER: __2nd_____   COURSE: _____Math_____

Content	Assessment	Common Core	Essential Questions
Unit 3 - Fraction Computation & Applications **Students will…** *Add fractions with unlike denominators and mixed numbers with unlike denominators by replacing given fractions with equivalent fractions. *Subtract fractions with unlike denominators and mixed numbers with unlike denominators by replacing given fractions with equivalent fractions. *Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators using visual fraction models and/or equations. *Use benchmark fractions and number sense to estimate mentally and assess reasonableness of answers. *Interpret a fraction as division of the numerator by the denominator. *Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers using visual fraction models or equations. *Multiply a fraction by a whole number and multiply a fraction by a fraction. *Use visual fraction models and/or language	Group Discussions Assignments/Worksheets Quizzes Unit Assessments Projects	**5.NF.1** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions. **5.NF.2** Solve word problems involving addition and subtraction of fractions. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. **5.NF.3** Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers. **5.NF.4a** Interpret the product (a/b) × q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b. **5.NF.4b** Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side	*What is a reasonable estimate for the answer? *How do operations with fractions relate to operations with whole numbers? *What do equivalent fractions represent and why are they useful when solving equations with fractions? *What models or pictures could aid in understanding a mathematical or real-world problem and the relationship among the quantities? *What models and pictures can be used when solving a mathematical or real-world problem to help decide which operation to use? *What are the effects of multiplying by quantities greater than 1 compared to the effects of multiplying by quantities less than 1?

to interpret multiplication of a fraction by a whole number as multiplying the numerator by the whole and dividing the denominator. *Use visual fraction models and/or language to interpret multiplication of fractions as multiplying numerators and multiplying denominators. (5.NF.4) *Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. (5.NF.4) *Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. (5.NF.4) *Use language and visuals to explain how multiplication of fractions represents scaling (resizing). (5.NF.5) *Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication using visuals, real-life situations and/or language. (5.NF.5) *Explain why multiplying a number by a fraction less than 1, results in a smaller product using visuals, equations, language, and real-life examples. *Explain why multiplying a number by a fraction equal to, results in the same product using visuals, equations, and language and real-life examples.		lengths to find areas of rectangles, and represent fraction products as rectangular areas. **5.NF.5a** Comparing the size of a product to the size of one factor on the basis of the size of the other factor. **5.NF.5b** Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number, explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n{\times}a)/(n{\times}b)$ to the effect of multiplying a/b by 1. **5.NF.6** Solve real world problems involving multiplication of fractions and mixed numbers. **5.NF.7a** Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. **5.NF.7b** Interpret division of a whole number by a unit fraction, and compute such quotients. **5.NF.7c** Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions. **5.MD.1** Convert among different-	

*Explain why multiplying a number by a fraction greater than 1, results in a larger product using visuals, equations, and language and real-life examples. *Solve real-world problems involving multiplication of fractions using visual fraction models and equations. *Solve real world problems involving multiplication of mixed numbers using visual fraction models and equations. *Divide fractions by a non-zero whole number and divide a non-zero whole number by a fraction using manipulatives, visual models, and equations to solve real world problems. *Convert measurements within the metric systems to solve multi-step, real world problems. (100 cm + 1 meter) *Make a line plot to display a set of data using fractions of a unit (1/2, ¼, 1/8). *Add, subtract, multiply, and divide fractions to solve problems involving information presented in line plots.		sized standard measurement units within a given measurement system and use these conversions in solving multi-step problems. **5.MD.2** Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots.	

QUARTER: _3rd_____   COURSE: __Math_____

Content	*Assessment*	*Common Core*	*Essential Questions*
Unit 4 - Volume **Students will…** *Know that the volume of 3-dimensional figures is measured in cubic units. *Know that the cubic unit can be written with an exponent (e.g., in3, m3). *Know the formula for volume and when to use it. *Define volume as the measurement of the space inside a solid 3-dimensional figure. *Identify and describe unit cubes as representing 1 cubic unit of volume, and how they are used to measure volume of 3-dimensional shapes. *Model how a solid figure is packed with units without gaps or overlaps to measure volume.	Group Discussions Assignments/Worksheets Quizzes Unit Assessments Projects	**5.NBT.2** Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. **5.MD.3a** A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume. **5.MD.3b** A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. **5.MD.4** Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft., and improvised units.	*What is volume and how is it used in real life? *How does the area of rectangles relate to the volume of rectangular prisms?

*Use the term "cubic units" to describe units of volume measurement. *Measure volume by counting cubes first with manipulatives and then by pictures using cubic cm. cubic in., and cubic ft. *Find the volume of a right rectangular prism with whole number side lengths by packing it with unit cubes. *Find the volume of a right rectangular prism by finding the area of the base and multiplying the number of layers in the prism (height). *Show that the volume is the same as it would be if volume were found by multiplying the edge lengths. *Build a right rectangular prism model to represent a 3 factor multiplication expression. *Apply the formula to find volumes of right rectangular prisms with whole number edge lengths in real world and mathematical problems. *Find the volume of composite rectangular prisms by adding volumes of the non-overlapping parts and applying the technique to solve real world problems. **State Testing – March**		**5.MD.5a** Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge number products as volumes. **5.MD.5b** Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems	

QUARTER: ___4th_____   COURSE: ___Math_____

Content	Assessment	Common Core	Essential Questions
Unit 5 - 2-Dimensional Geometry **Students will …** *Know that attributes belonging to a category of 2-dimensional figures also belong to all subcategories of that category. *Identify 2-dimensional shapes that can be classified into more than one category based on their attributes. *Explain why figures belong in a category or multiple categories. *Classify 2-dimensional figures in a hierarchy based on properties.	Group Discussions Assignments/Worksheets Quizzes Unit Assessments Projects	**5.G.3** Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. **5.G.4** Classify two-dimensional figures in a hierarchy based on properties	*Why is it important to use precise language and mathematical tools in the study of 2-dimensional and 3-dimensional figures? *How can describing, classifying and comparing properties of 2-dimensional shapes be useful in solving problems in our 3-dimensional world?

Unit 6 - Coordinate Geometry

Students will…
*Know the necessary terminology for working with the coordinate plane (first quadrant, points, lines, etc.)

*Know which is the x-axis and which is the y-axis.

*Know which is the x-coordinate and which is the y-coordinate.

*Generate two numerical patterns using two given rules.

*Identify numerical relationships between corresponding terms in 2 different expressions.

*Form ordered pairs from the two patterns.

*Graph ordered pairs on the coordinate plane.

*Identify, describe, and explain the relationship between the names of the components of the coordinate plane including origin, x- and y- axis, and x- and y- coordinates.

*Explain how to plot points on the coordinate plane.

*Graph points from a real-life situation, oral/written language or a written expression on the coordinate plane.

Group Discussions

Assignments/Worksheets

Quizzes

Unit Assessments

Projects

5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.

5.OA.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

5.G.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates.

5.G.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

*Can you identify the x- and y-axis?

*Can you identify the x- and y-coordinates?

*Can you graph ordered pairs on the coordinate plane?

*What is the purpose of a coordinate plane?

*Can you explain how to plot points on the coordinate plane?

*How can graphing points on the coordinate plane help to solve real world and mathematical problems?

*Explain the relationship or value of the plotted points in the context of the situation.			