

## 5<sup>th</sup> Grade Mathematics – Scope and Sequence – MSD of Pike Township

Purpose Statement					
The purpose of this scope and sequence document is to ensure that MSD of Pike Township has a viable and guaranteed Mathematics curriculum. It is meant to provide the foundational skills, strategies, and concepts necessary for our students to leave Pike Township college and career ready. Please remember that this scope and sequence is based on the Indiana Academic Standards and the typical progress of students. Use your professional judgment when addressing the individual needs of your students. If you need to shorten or lengthen a unit, then do so based on mastery of standards, evidence from your classroom assessments and professional observations. Always consider the students' need and interest as well as social studies and science content area topics to guide your units of study. Collaborate with your instructional coach and school librarian to plan and implement the units of study, mini-lesson ideas, and instructional resources.					
Components Included in the Scope and Sequence					
<u>Mathematics Content</u> As you work with your students, please remember the following: <ul style="list-style-type: none"><li>Students are expected to <b>apply</b> the math they previously learned as they progress through the year and to the next level.</li><li>Math content builds on previous lessons and years, but students learn in different ways and take different paths to learn concepts. Provide them with many opportunities every day to tackle and master math content in their world.</li><li>The workshop model for Reading and Writing is applicable to Mathematics as well. Use your knowledge of creating mini-lessons, allowing for independent and collaborative work time (problem solving), small group instruction, conferring, etc. to guide your math instruction.</li><li>All students are mathematicians. Find ways to allow our students to make true connections with math content.</li><li>Math instruction should incorporate reading and writing daily.</li><li><u>Fluency Expectation:</u><ul style="list-style-type: none"><li>Fluently add and subtract multi-digit whole numbers.</li><li>Fluently multiply with multi-digit whole numbers</li></ul></li></ul>			<u>Process Standards for Mathematics</u> As you work with your students, please remember the following: <ul style="list-style-type: none"><li>The Process Standards for Mathematics are the “how” when delivering mathematics instruction. They rely on students communicating with each other about mathematics in order to learn mathematics.</li><li>The Process Standards for Mathematics are expected student behaviors.<ol style="list-style-type: none"><li>Make sense of problems and persevere in solving them.</li><li>Reason abstractly and quantitatively.</li><li>Construct viable arguments and critique the reasoning of others.</li><li>Model with mathematics.</li><li>Use appropriate tools strategically.</li><li>Attend to precision.</li><li>Look for and make use of structure.</li><li>Look for and express regularity in repeated reasoning.</li></ol></li></ul>		
Each Component Includes:					
Essential Goals	Priority Standards	Strategies/Skills	Academic Vocabulary	Possible Instructional Resources	Differentiation
These goals define the necessary habits, skills, and dispositions we want students to know and be able to do when the unit is completed.	The Indiana Academic Standards listed represent the priority standards for the unit. Other standards may be taught explicitly or implicitly.	The strategy and skill focus gives guidance for mini-lesson topics and ideas. It also gives ideas for teaching strategies you might rely upon for instruction. The goal is for students to gain understanding of these skills/strategies by the end of the unit.	Academic vocabulary includes the words that are needed to understand the content. You will also teach other vocabulary throughout the rest of your day. Assessment vocabulary should be integrated throughout the year. They should be explicitly taught and used regularly.	Professional and mentor text ideas are suggested in this section. Additionally, this is where you will find your connection to the Go Math resources. Ask your school librarian and/or instructional coach for assistance in this area also!	Ideas for scaffolding support for striving mathematicians, English learners and special education is provided. Please use your available resources to differentiate for students. Ask your building resource teachers for assistance if needed.
Testing Vocabulary to be Taught Throughout the Year					
<p><b>Best:</b> “Which statement <b>BEST</b> describes the two shapes?” Although more than one option might make sense, students will need to choose one that is better than all the others.</p> <p><b>Choose:</b> “Choose <b>TWO</b> fractions that are greater than 0.50.” Students will be asked to choose one or more items that fit the criteria.</p> <p><b>Complete:</b> “Complete the table by filling in the missing numbers.” Students may be asked to complete tables, graphs, and/or statements.</p> <p><b>Define the Variable:</b> Students should be able to provide a precise description of a variable used in an equation.</p> <p><b>Enter:</b> “Enter the product. 214 x 12”. Students will be asked to enter items. This means they type the answer in the appropriate place.</p> <p><b>Greatest:</b> “What is the <b>GREATEST</b> number of hats Sarah can buy?”</p> <p><b>Identify:</b> “Identify all errors in Jenna’s work.” Students will need to choose one or more items that fit the criteria.</p> <p><b>In ALL:</b> “How much money does Amy spend <b>IN ALL</b>?” Students will need to give a total. This does not mean to simply apply an operation, though. Students will need to read critically to determine the operation(s) that make(s) sense.</p> <p><b>More/Fewer:</b> “How many <b>MORE</b> stickers does Jimmy need to complete his collection?” Students will need to compare two quantities and determine how much more or less one quantity is than another.</p> <p><b>Plot:</b> “Plot an X on the line plot to represent Eric’s data.” Students will need to place data points on a coordinate grid, data display, or number line.</p> <p><b>Represent:</b> “Represent 0.20 as a fraction.” Students will need to be able to translate between different forms of the same concept (i.e. fractions and decimals, equivalent fractions, equivalent expressions).</p> <p><b>Select:</b> “Select the shape(s) that match the given attributes.” Students will need to choose one or more items that fit the criteria.</p> <p><b>Shade:</b> “Shade squares in the grid that represents the given fraction.” Students will need to fill in the appropriate amount</p> <p><b>Show All Work:</b> Students will need to show all work needed to solve problems in order to receive full credit.</p>					

**Solve/Evaluate:** “Solve.  $145 + 82$ ” or “Evaluate.  $145 + 82$ ” Students will need to give an answer for the test item.

**Use Word, Numbers and/or Symbols:** “Use words, numbers, and/or symbols to support your answer.” Students will need to explain their ideas clearly using math words, numbers or symbols. It should include evidence from the problem and student work.

## 5<sup>th</sup> Grade Mathematics – Scope and Sequence – MSD of Pike Township

Quarter 1 Weeks 1 – 6	Essential Goals	Priority Standards	Strategies/Skills	Academic Vocabulary	Possible Instructional Resources	Differentiation
<b>Unit 1:</b>  <b>Intro to Math Block</b>  <b>Whole Numbers and Equations</b>	<ul style="list-style-type: none"> <li>Mathematicians write and talk about their thinking.</li> <li>Mathematicians show their work.</li> <li>Mathematicians ask questions of themselves, others, and the world around them.</li> <li>Mathematicians find math ideas in their world.</li> <li>Mathematicians understand the structure of the place value system.</li> <li>Mathematicians use estimation to decide if answers are reasonable.</li> <li>Mathematicians use properties of operations and the relationships among them to solve problems.</li> <li>Mathematicians perform operations with multi-digit numbers.</li> </ul>	5.NS.3 5.NS.4 5.C.1 5.C.2 5.C.3 5.C.9 5.AT.1 5.AT.8	<ul style="list-style-type: none"> <li>Introduce procedures and routines.</li> <li>Help students to see they are mathematicians.</li> <li>Use multiple ways to find solutions to problems.</li> <li>Solve real-world problems using multiplication and division.</li> <li>Write and evaluate equations and expressions to represent real-world situations involving multiplication or division.</li> <li>In a multi-digit number, recognize that a digit in one place represents 10 times as much as its place to the right.</li> <li>In a multi-digit number, recognize that a digit in one place represents 1/10 as much as its place to the left.</li> <li>Explain patterns in the number of zeros of the product when you multiply by a power of 10.</li> <li>Multiply multi-digit numbers in real-world problems.</li> <li>Divide multi-digit numbers in real-world problems and explain the remainder if one exists.</li> <li>Compare the size of a product to the size of one factor without performing the computation.</li> <li>Multiply multi-digit whole numbers fluently.</li> <li>Solve problems by applying the commutative, associative, and distributive properties.</li> <li>Solve real-world multiplication and division problems (including writing and evaluating equations and expressions, using variables, to understand the problem).</li> </ul>	associative property base brackets commutative property compatible numbers distributive property dividend divisor equation estimate evaluate explain exponent expression factor inverse operations numerical expression order of operations parentheses partial quotients period place value powers of 10 problem solving strategies product quotient remainder rounding sum variable	<p><b>“First 20 Days”</b> resources/examples/ideas on P: Drive</p> <p><b><u>Weeks of Inspirational Math</u></b>  <a href="https://www.youcubed.org/week-inspirational-math/">https://www.youcubed.org/week-inspirational-math/</a></p> <p><b><u>Go Math:</u></b>            Chapters 1 &amp; 2            Additional IN lessons: 1.12a, 1.12b            IN Success Supplement – STEM Activities</p> <p><b><u>Illustrative Mathematics:</u></b>  <a href="http://www.illustrativemathematics.org">www.illustrativemathematics.org</a>            Kipton’s Scale (5.NS.3)            Millions and Billions of People (5.NS.3)            Which Number is it? (5.NS.3)            Marta’s Multiplication Error (5.NS.4)            Elmer’s Multiplication Error (5.C.1)</p> <p><b><u>Learning Math in the Intermediate Grades (Madison MSD)</u></b>  <a href="https://mathweb.madison.k12.wi.us/files/math/LMIComplete.pdf">https://mathweb.madison.k12.wi.us/files/math/LMIComplete.pdf</a></p> <p><b><u>Inside Mathematics:</u></b>            Fruits and Vegetables (5.C.1, 5.C.2/PS.2, PS.6)  <a href="http://www.insidemathematics.org/assets/common-core-math-tasks/fruits%20and%20vegetables.pdf">http://www.insidemathematics.org/assets/common-core-math-tasks/fruits%20and%20vegetables.pdf</a></p> <p><b><u>Mentor Texts</u></b>  <i>Each Orange Has 8 Slices</i> by: Paul Giganti  <i>A Remainder of One</i> by: Elinor Princes</p>	<p><b><u>Spiral Review:</u></b>            4.AT.1, 4.C.1</p> <p><b><u>Prerequisite Skills:</u></b></p> <ul style="list-style-type: none"> <li>Multiply single digit whole numbers</li> <li>Familiarity with place value</li> <li>Renaming numbers</li> <li>Finding missing factors</li> <li>Using pictures or diagrams to show multiplication and division</li> <li>Meaning of multiplication and division</li> <li>Estimate with 1-digit divisors</li> </ul> <p><b><u>Scaffolding Support: (ELL, SPED, Striving Learners)</u></b></p> <ul style="list-style-type: none"> <li>Go Math: differentiation materials</li> <li>Open ended problems with multiple entry points</li> <li>Written instructions</li> <li>Small group instruction</li> <li>Graphic Organizers</li> <li>Manipulatives</li> <li>Encourage multiple ways to solve problems</li> <li>Provide models of finished products</li> <li>Provide picture support</li> <li>Ask all students to show their strategies while explaining</li> <li>Send home games to practice specific skills</li> </ul>
<b>Process Standards for Mathematics:</b>	<ul style="list-style-type: none"> <li>Mathematicians make sense of problems and persevere in solving them.</li> <li>Mathematicians use estimation to decide if answers are reasonable.</li> <li>Mathematicians look for patterns to uncover the relationship between multiplication and division.</li> </ul>	PS.1 PS.3 PS.7	<ul style="list-style-type: none"> <li>Provide contextual problems and time to solve real problems that involve the four operations with whole numbers.</li> <li>Explore multiple strategies for multiplication and division to help make sense of different strategies and contexts.</li> <li>Use number lines, fact families, place value charts and other tools to make sense of the structure of the number system.</li> <li>Write and evaluate algebraic and numerical expressions and equations for contextual problems, relating the solution(s) back to the original context.</li> </ul>			

5.NS.3: Recognize the relationship 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 inversely, a digit in one place represents 1/10 of what it represents in the place to its left.

5.NS.4: 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.C.1: Multiply multi-digit whole numbers fluently using a standard algorithmic approach.

5.C.2: Find whole-number quotients and remainders 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. Describe the strategy and explain the reasoning used.

5.C.3: 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.

5.C.9: Evaluate expressions with parentheses or brackets involving whole numbers using the commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property.

5.AT.1: Solve real-world problems involving multiplication and division of whole numbers (e.g. by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem.  
 5.AT.8: Define and use up to two variables to write linear expressions that arise from real-world problems, and evaluate them for given values.

### 5<sup>th</sup> Grade Mathematics – Scope and Sequence – MSD of Pike Township

Quarter 1/2 Weeks 7 – 11	Essential Goals	Priority Standards	Strategies/Skills	Academic Vocabulary	Possible Instructional Resources	Differentiation
<b>Unit 2:</b> <b>Understanding Decimals and Percents</b>	<ul style="list-style-type: none"> <li>Mathematicians understand the structure of the place value system.</li> <li>Mathematicians use estimation to decide whether answers are reasonable.</li> <li>Mathematicians find ways to apply mathematics to their world.</li> <li>Mathematicians can read, write and compare decimals.</li> <li>Mathematicians apply previous understanding of whole numbers to problems involving fractions and decimals</li> </ul>	5.NS.1 5.NS.3 5.NS.4 5.NS.5 5.NS.6 5.C.8 5.AT.5	<ul style="list-style-type: none"> <li>Compare and order decimals.</li> <li>Explain patterns in the placement of decimals when a decimal is multiplied or divided by a power of 10.</li> <li>Round decimals (to thousandths) to any given place value.</li> <li>Understand, interpret, and model percents as parts of a hundred.</li> <li>Add, subtract, multiply, and divide decimals to hundredths to solve problems.</li> <li>Write equations to represent real-world problems involving decimals.</li> <li>Solve problems using the four operations with decimals to hundredths.</li> </ul>	benchmark compatible numbers decimal decimal point dividend divisor equivalent fractions estimate expanded form exponent hundredth multiplication ones part pattern percent percent sign place value product quotient remainder round sequence tenth term thousandth	<p><b>Go Math:</b> Chapters 3, 4, 5, Additional IN lessons: 3.2a, 3.2b, 3.3a <b>SKIP: Lesson 3.2</b> IN Success Supplement – STEM Activities</p> <p><b>Illustrative Mathematics Tasks:</b>  <a href="http://www.illustrativemathematics.org">www.illustrativemathematics.org</a>            How Much Pie? (5.NS.2)            Sharing Lunches (5.NS.2)            What is 23/5? (5.NS.2)            Tenths and Hundredths (5.NS.3)            Multiplying Decimals by 10 (5.NS.4)            Rounding to Tenths and Hundredths (5.NS.5)            The Value of Education (5.C.8)            What is 23/5? (5.C.8)</p> <p><b>Learning Math in the Intermediate Grades (Madison MSD)</b>  <a href="https://mathweb.madison.k12.wi.us/files/math/LMI/Gcomplete.pdf">https://mathweb.madison.k12.wi.us/files/math/LMI/Gcomplete.pdf</a></p> <p><b>Inside Mathematics:</b>            Decimals (5.NS.1, 5.NS.5/PS.3, PS.6)            Fractions (5.NS.1, 5.NS.5/PS.3, PS.5)  <a href="http://www.insidemathematics.org/performance-assessment-tasks">http://www.insidemathematics.org/performance-assessment-tasks</a></p> <p><b>Good Questions for Math Teaching 5-8</b>            Fractions &amp; Decimals (p.40)</p> <p><b>Mentor Texts</b>  <i>Fraction Fun</i>, David Adler  <i>Fractions are Parts of Things</i>, Richard Dennis  <i>Piece=Part=Portion: Fractions =Decimal=Percents</i>, Scott Gifford  <i>Full House: An Invitation to Fractions</i>, Dayle Ann Dodds  <i>Fraction Action</i>, Lorean Leedy</p>	<p><b>Spiral Review:</b> 5.C.2, 5.C.9</p> <p><b>Prerequisite Skills:</b></p> <ul style="list-style-type: none"> <li>Addition and subtraction of whole numbers</li> <li>Read and write decimals, in standard form, word form and expanded form</li> <li>Translate between decimals and fractions for tenths and hundredths</li> <li>Multiplication and division of whole numbers</li> <li>Estimate products and quotients</li> </ul> <p><b>Scaffolding Support:</b>  <b>(ELL, SPED, Striving Learners)</b></p> <ul style="list-style-type: none"> <li>Go Math: differentiation materials</li> <li>Open ended problems with multiple entry points</li> <li>Written instructions</li> <li>Small group instruction</li> <li>Graphic Organizers</li> <li>Manipulatives</li> <li>Concrete models</li> <li>Encourage multiple ways to solve problems</li> <li>Models of finished products</li> <li>Provide picture support</li> <li>Ask all students to show their strategies while explaining</li> <li>Send home games to practice specific skills</li> </ul>
<b>Process Standards for Mathematics:</b>	<ul style="list-style-type: none"> <li>Mathematicians use math to solve real-world problems.</li> <li>Mathematicians break problems into smaller parts in order to solve them.</li> <li>Mathematicians choose appropriate tools, and can explain why they chose the tool, to solve problems.</li> <li>Mathematicians look for patterns, make generalizations, and apply similar reasoning to other problems.</li> </ul>	PS.1 PS.2 PS.5 PS.8	<ul style="list-style-type: none"> <li>Provide contextual problems and time to solve real-world problems that involve the four operations with decimals.</li> <li>Write and evaluate algebraic and numerical expressions and equations for contextual problems, relating the solution(s) back to the original context.</li> <li>Use tools such as base-ten blocks, number lines, visual models, etc. to solve problems involving decimals.</li> <li>Relate strategies for adding, subtracting, multiplying and dividing whole numbers to adding, subtracting, multiplying, and dividing decimals.</li> <li>Make generalizations about patterns when multiplying or dividing by powers of 10. Test the generalizations on other mathematical and real-world problems.</li> </ul>			

5.NS.1: Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. Write the results using >, =, and < symbols.

5.NS.3: Recognize the relationship 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 inversely, a digit in one place represents 1/10 of what it represents in the place to its left.

5.NS.4: 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.NS.5: Use place value understanding to round decimal numbers up to thousandths to any given place value.

5.NS.6: Understand, interpret, and model percents as part of a hundred (e.g. by using pictures, diagrams, and other visual models).

5.C.8: Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.

5.AT.5: Solve real-world problems involving addition, subtraction, multiplication, and division with decimals to hundredths, including problems that involve money in decimal notation (e.g. by using equations, models or drawings and strategies based on place value or properties of operations to represent the problem).

## 5<sup>th</sup> Grade Mathematics – Scope and Sequence – MSD of Pike Township

Quarter 2 Weeks 12 – 15	Essential Goals	Priority Standards	Strategies/Skills	Academic Vocabulary	Possible Instructional Resources	Differentiation
<b>Unit 3:</b>  <b>Understanding Fractions</b>	<ul style="list-style-type: none"> <li>Mathematicians apply previous understanding of whole numbers to problems involving fractions.</li> <li>Mathematicians use place value understandings to solve problems.</li> <li>Mathematicians use models, including drawing pictures to show understanding of addition/subtraction and multiplication/division of fractions.</li> <li>Mathematicians use estimation to decide whether answers are reasonable.</li> <li>Mathematicians find ways to apply mathematics to their world.</li> </ul>	5.NS.1 5.NS.2 5.C.3 5.C.4 5.C.5 5.C.6 5.C.7 5.AT.2 5.AT.3 5.AT.4 5.M.2	<ul style="list-style-type: none"> <li>Compare and order fractions, mixed numbers, and decimals.</li> <li>Add and subtract fractions with unlike denominators to solve problems.</li> <li>Multiply fractions using a visual model to solve problems.</li> <li>Understand and explain what happens when you multiply by a fraction between 0 and 1.</li> <li>Understand and explain what happens when you multiply by a fraction greater than 1.</li> <li>Use a visual model to divide a whole number by a fraction or a fraction by a whole number to solve problem.</li> <li>Relate the area model for multiplication to the area of a rectangle.</li> <li>Find the area of a rectangle with fractional side lengths.</li> <li>Solve real-world problems involving fractions by using the four operations.</li> <li>Multiply and divide fractions by whole numbers.</li> </ul>	common denominator common factor common multiple denominator difference equivalent fractions factor mixed number numerator product simplest form sum	<p><b>Go Math:</b>            Chapters 6, 7, 8            Additional IN lessons: 6.0a, 6.0b, 7.0a            IN Success Supplement – STEM Activities</p> <p><b>Illustrative Mathematics Tasks:</b>  <a href="http://www.illustrativemathematics.org">www.illustrativemathematics.org</a>            Egyptian Fractions (5.C.4)            Cross Country Training (5.C.5)            Mrs. Gray's Homework Assignment (5.C.6)            How Many Marbles?(5.C.7)            Salad Dressing (5.AT.2)            Drinking Juice (5.AT.3)            New Park (5.AT.3)            Banana Pudding (5.AT.4),</p> <p><b>Learning Math in the Intermediate Grades (Madison MSD)</b>  <a href="https://mathweb.madison.k12.wi.us/files/math/LMIGcomplete.pdf">https://mathweb.madison.k12.wi.us/files/math/LMIGcomplete.pdf</a></p> <p><b>Inside Mathematics:</b>            Cindy's Cats (5.C.4, 5.C.5, 5.AT.2, 5.AT.3/PS.1)  <a href="http://www.insidemathematics.org/assets/comm-on-core-math-tasks/cindy's%20cats.pdf">http://www.insidemathematics.org/assets/comm-on-core-math-tasks/cindy's%20cats.pdf</a></p> <p><b>Good Questions for Math Teaching 5-8</b>            Fractions &amp; Decimals (p.40)</p> <p><b>Mentor Texts</b>  <i>Fraction Fun</i>, David Adler  <i>Fractions are Parts of Things</i>, Richard Dennis  <i>Piece=Part=Portion: Fractions =Decimal=Percents</i>, Scott Gifford  <i>Full House: An Invitation to Fractions</i>, Dayle Dodds  <i>Fraction Action</i>, Loreen Leedy</p>	<p><b>Spiral Review:</b>            5.C.1, 5.AT.1</p> <p><b>Prerequisite Skills:</b></p> <ul style="list-style-type: none"> <li>Write fractions from pictures</li> <li>Add and subtract fractions with common denominators</li> <li>Find multiples of whole numbers</li> <li>Find area of shapes on a grid</li> <li>Find equivalent fractions</li> <li>Understand multiplication and division are inverse operations</li> </ul> <p><b>Scaffolding Support: (ELL, SPED, Striving Learners)</b></p> <ul style="list-style-type: none"> <li>Go Math: differentiation materials</li> <li>Open ended problems with multiple entry points</li> <li>Written instructions</li> <li>Small group instruction</li> <li>Graphic Organizers</li> <li>Manipulatives</li> <li>Concrete models</li> <li>Encourage multiple ways to solve problems</li> <li>Models of finished products</li> <li>Provide picture support</li> <li>Ask all students to show their strategies while explaining</li> <li>Send home games to practice specific skills</li> </ul>
<b>Process Standards for Mathematics:</b>	<ul style="list-style-type: none"> <li>Mathematicians persevere in solving problems.</li> <li>Mathematicians create and evaluate algebraic equations and expressions from contextual situations.</li> <li>Mathematicians justify their conclusions, communicate them with others, and respond to the arguments of others.</li> <li>Mathematicians choose appropriate tools, and can explain why they chose the tool, to solve problems.</li> </ul>	PS.1 PS.2 PS.3 PS.5	<ul style="list-style-type: none"> <li>Provide contextual problems and time to solve real-world problems that involve the four operations with fractions.</li> <li>Write and evaluate algebraic and numerical expressions and equations for contextual problems, relating the solution(s) back to the original context.</li> <li>Use tools such as base-ten blocks, number lines, visual models, etc. to solve problems involving fractions.</li> <li>Relate strategies for adding, subtracting, multiplying and dividing whole numbers to adding, subtracting, multiplying, and dividing fractions.</li> </ul>			

5.NS.1: Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. Write the results using >, =, and < symbols.

5.NS.2: Explain different interpretations of fractions, including: as parts of a whole, parts of a set, and division of whole numbers by whole numbers.

5.C.3: 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.

5.C.4\*: Add and subtract fractions with unlike denominators, including mixed numbers.

5.C.5\*: Use visual fraction models and numbers to multiply a fraction by a fraction or a whole number.

5.C.6: Explain why multiplying a positive number by a fraction greater than 1 results in a product greater than the given number. Explain why multiplying a positive number by a fraction less than 1 results in a product smaller than the given number. Relate the principle of fraction equivalence,  $a/b = (n \times a)/(n \times b)$ , to the effect of multiplying  $a/b$  by 1.

5.C.7\*: Use visual fraction models and numbers to divide a unit fraction by a non-zero whole number and to divide a whole number by a unit fraction.

5.AT.2\*: Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable.

5.AT.3: Solve real-world problems involving multiplication of fractions, including mixed numbers (e.g., by using visual fraction models and equations to represent the problem).

5.AT.4: Solve real-world problems involving division of unit fractions by non-zero whole numbers, and division of whole numbers by unit fractions (e.g., by using visual fraction models and equations to represent the problem).

5.M.2: Find the area of a rectangle with fractional side lengths by modeling 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 lengths to find areas of rectangles, and represent fraction products as rectangular areas.

## 5<sup>th</sup> Grade Mathematics – Scope and Sequence – MSD of Pike Township

Quarter 2 Weeks 16 - 18	Essential Goals	Priority Standards	Strategies/Skills	Academic Vocabulary	Possible Instructional Resources	Differentiation
<b>Unit 4:</b>  <b>Data Analysis: Patterns and Graphing</b>	<ul style="list-style-type: none"> <li>Mathematicians use a variable to represent an unknown number.</li> <li>Mathematicians write simple algebraic expressions in one or two variables and evaluate them by substitution or the distributive property.</li> <li>Mathematicians identify, graph, and find positive ordered pairs that fit a linear equation.</li> <li>Mathematicians understand the length of a horizontal line based on the difference between the x-coordinates and a vertical line is the difference between the y-coordinates.</li> </ul> <p><b>**Need to supplement for 5.AT.1, 5.AT.7, 5.AT.8, and 5.C.9. Heavy focus should be put on defining variables, writing equations and expressions with variables, creating input/output tables and graphing ordered pairs obtained from equations.</b></p>	5.AT.6 5.DS.1 5.DS.2 5.AT.1 5.AT.7 5.AT.8 5.C.9	<ul style="list-style-type: none"> <li>Graph points (whole number coordinates) on a coordinate plane to solve problems.</li> <li>Interpret coordinate values of points in the context of the situation.</li> <li>Define and use up to two variables to write and graph linear expressions that arise from real-world problems.</li> <li>Evaluate linear expressions with up to two variables for given values using the properties of operations.</li> <li>Evaluate expressions with parentheses or brackets.</li> <li>Formulate questions and make predictions that can be addressed with data (<b>STEM integration</b>)</li> <li>Use observations, surveys, and experiments to collect data.</li> <li>Represent and interpret data using tables, line plots, bar graphs, and line graphs.</li> <li>Explain the difference in categorical and numerical data.</li> <li>Understand and use measures of center (mean and median) and frequency (mode) to describe a data set.</li> <li>Represent real-world problems by graphing or interpreting ordered pairs on a coordinate plane.</li> <li>Solve problems using the properties of operations.</li> </ul>	associative property categorical data commutative property coordinate grid data degree Fahrenheit distributive property frequency horizontal interval line graph line plot mean measure of center median mode numerical data ordered pair origin rule scale table vertical x-axis x-coordinate y-axis y-coordinate	<p><b>Go Math:</b> Chapter 9 Additional IN lessons: 9.0a, 9.0b, 9.1a, 9.1b, 9.4a IN Success Supplement – STEM Activities</p> <p><b>Illustrative Mathematics Tasks:</b> (<a href="http://www.illustrativemathematics.org">www.illustrativemathematics.org</a>) Battle Ship Using Grid Paper (5.AT.6) Meerkat Coordinate Plane Task (5.AT.7) Fractions on a Line Plot (5.DS.1) Bowling for Numbers (5.C.9) Using Operations and Parentheses (5.C.9) Watch Out for Parentheses 1 (5.C.9)</p> <p><b>Learning Math in the Intermediate Grades (Madison MSD)</b> (<a href="https://mathweb.madison.k12.wi.us/files/math/LMIGcomplete.pdf">https://mathweb.madison.k12.wi.us/files/math/LMIGcomplete.pdf</a>)</p> <p><b>Good Questions for Math Teaching 5-8</b> Algebraic Thinking (Pg. 91-114) Data Analysis and Probability (Pgs. 115-131)</p> <p><b>Inside Mathematics:</b> Granny's Balloon Trip (5.AT.6, 5.AT.7, PS.2) (<a href="http://www.insidemathematics.org/assets/common-core-math-tasks/granny's%20balloon%20trip.pdf">http://www.insidemathematics.org/assets/common-core-math-tasks/granny's%20balloon%20trip.pdf</a>)</p> <p><b>Mentor Texts</b> <i>Mystery Math: The First Book of Algebra</i> <i>Safari Park</i> <i>Gray Rabbit's odd one out</i> <i>Data, Chance and Probability</i> by: Graham A. Jones</p>	<p><b>Spiral Review:</b> 5.C.8, 5.AT.5</p> <p><b>Prerequisite Skills:</b></p> <ul style="list-style-type: none"> <li>Read and interpret bar graphs.</li> <li>Add and divide whole numbers.</li> </ul> <p><b>Scaffolding Support: (ELL, SPED, Striving Learners)</b></p> <ul style="list-style-type: none"> <li>Go Math: differentiation materials</li> <li>Open ended problems with multiple entry points</li> <li>Written instructions</li> <li>Small group instruction</li> <li>Graphic Organizers</li> <li>Manipulatives</li> <li>Concrete models</li> <li>Encourage multiple ways to solve problems</li> <li>Models of finished products</li> <li>Provide picture support</li> <li>Ask all students to show their strategies while explaining</li> <li>Send home games to practice specific skills</li> </ul>
<b>Process Standards for Mathematics:</b>	<ul style="list-style-type: none"> <li>Mathematicians use symbols to represent numbers. They explain the meaning of the symbols in words.</li> <li>Mathematicians use graphs and algebraic expressions to model real-world situations.</li> <li>Mathematicians look for and make use of structure in the coordinate grid.</li> <li>Mathematicians look for patterns in words and numbers to make algebraic expressions.</li> </ul>	PS. 2 PS. 4 PS. 7 PS. 8	<ul style="list-style-type: none"> <li>Create algebraic expressions to describe real-world situations. Explain how real-world situations fit given expressions.</li> <li>Represent and explain real-world situations using data, graphs, expressions, etc.</li> <li>Use the structure of coordinate grids, line plots, line graphs, bar graphs and data tables to make sense of a context.</li> <li>Use repeated reasoning in situations to create algebraic expressions or rules.</li> </ul>			

5.AT.1: Solve real-world problems involving multiplication and division of whole numbers (e.g. by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem.

5.AT.6: Graph points with whole number coordinates on a coordinate plane. Explain how the coordinates relate the point as the distance from the origin on each axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

5.AT.7: Represent real-world problems and equations by graphing ordered pairs in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

5.AT.8: Define and use up to two variables to write linear expressions that arise from real-world problems, and evaluate them for given values.

5.C.9: Evaluate expressions with parentheses or brackets involving whole numbers using the commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property.

5.DS.1: Formulate questions that can be addressed with data and make predictions about the data. Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, bar graphs, and line graphs. Recognize the differences in representing categorical and numerical data.

5.DS.2: Understand and use measures of center (mean and median) and frequency (mode) to describe a data set.

### 5<sup>th</sup> Grade Mathematics – Scope and Sequence – MSD of Pike Township

Quarter 3 Weeks 19 – 24	Essential Goals	Priority Standards	Strategies/Skills	Academic Vocabulary	Possible Instructional Resources	Differentiation
<b>Unit 5:</b>  <b>Applying Fractions and Decimals</b>	<ul style="list-style-type: none"> <li>Mathematicians use multiple approaches to solving problems.</li> <li>Mathematicians use all four operations to solve problems.</li> <li>Mathematicians use fractions, decimals, and money to solve problem</li> </ul>	5.AT.2 5.AT.3 5.C.4 5.C.5 5.C.8	<ul style="list-style-type: none"> <li>Compare and order fractions and decimals.</li> <li>Convert between different representations of numbers (fractions – decimals – mixed numbers)</li> <li>Solve problems using more than one strategy.</li> <li>Add, subtract, multiply and divide with decimals</li> <li>Add, subtract and multiply fractions (with like and unlike denominators).</li> <li>Add, subtract, multiply, and divide whole numbers to solve real-world problems.</li> <li>Write and evaluate equations or expressions to represent problems involving whole numbers, fractions, or decimals.</li> <li>Multiply and divide fractions by whole numbers.</li> <li>Solve real-world problems involving fractions (with like and unlike denominators) or decimals by using the four operations.</li> </ul>	benchmark compatible common denominator decimal equivalent fractions estimate expanded form hundredth mixed number place value percent round simplest form tenth thousandth	<b>Go Math!</b> Chapters 3 – 8 (Note: these chapters were covered earlier in the year but are good ones to revisit. The end of chapter lessons focus on the problem solving extensions) <b>IN Success Supplement – STEM Activities</b>  <u><b>Learning Math in the Intermediate Grades (Madison MSD)</b></u> <a href="https://mathweb.madison.k12.wi.us/files/math/LMIGcomplete.pdf">https://mathweb.madison.k12.wi.us/files/math/LMIGcomplete.pdf</a>  <u><b>Illustrative Mathematics Tasks:</b></u> <a href="http://www.illustrativemathematics.org">www.illustrativemathematics.org</a> Jog-A-Thon (5.C.4) Making S' mores (5.C.4) Finding Common Denominators to Add (5.C.4) Connecting the Area Model to Context (5.C.5) Do These Add Up?(5.AT.2) Making Cookies (5.AT.3) Origami Stars (5.C.7)  <u><b>Good Questions for Math Teaching 5-8</b></u> Fractions & Decimals (p.40)  <u><b>Mentor Text</b></u> <i>Fraction Fun</i> , David Adler <i>Fractions are Parts of Things</i> , Richard Dennis <i>Piece=Part=Portion: Fractions</i> <i>=Decimal=Percents</i> , Scott Gifford <i>Full House: An Invitation to Fractions</i> , Dayle Ann Dodds <i>Fraction Action</i> , Loreen Leedy	<b>Spiral Review:</b> 5.M.1, 5.AT.1, 5.C.8  <u><b>Scaffolding Support:</b></u> <u><b>(ELL, SPED, Striving Learners)</b></u> <ul style="list-style-type: none"> <li>Open ended problems with multiple entry points</li> <li>Written instructions</li> <li>Small group instruction</li> <li>Graphic Organizers</li> <li>Manipulatives</li> <li>Concrete models</li> <li>Encourage multiple ways to solve problems</li> <li>Models of finished products</li> <li>Provide picture support</li> <li>Ask all students to show their strategies while explaining</li> <li>Send home games to practice specific skills</li> </ul>
<b>Process Standards for Mathematics</b>	<ul style="list-style-type: none"> <li>Mathematicians make sense of problems and persevere in solving them.</li> <li>Mathematicians use estimation to decide if answers are reasonable.</li> <li>Mathematicians keep working when the problems seem difficult, trying multiple strategies.</li> <li>Mathematicians calculate accurately and efficiently, expressing numerical answers with a degree of precision appropriate for the problem context.</li> </ul>	PS. 1 PS. 2 PS. 6	<ul style="list-style-type: none"> <li>Use visual models, drawings, and strategies based on place value for computation with fractions and decimals.</li> <li>Write and evaluate equations or expressions for a problem situation. Explain the solution, relating it back to the context of the problem.</li> <li>Use estimation to check reasonableness of a solution.</li> <li>Calculate accurately when using decimals and fractions.</li> </ul>			

5.AT.2: Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable.

5.AT.3: Solve real-world problems involving multiplication of fractions, including mixed numbers (e.g., by using visual fraction models and equations to represent the problem).

5.C.4: Add and subtract fractions with unlike denominators, including mixed numbers.

5.C.5: Use visual fraction models and numbers to multiply a fraction by a fraction or a whole number.

5.C.8: Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.



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Quarter 3 Weeks 25 – 27	Essential Goals	Priority Standards	Strategies/Skills	Academic Vocabulary	Possible Instructional Resources	Differentiation
<b>Unit 6: Measurement</b>	<ul style="list-style-type: none"> <li>Mathematicians apply and extend prior knowledge of measurement systems to complex, multi-step problems involving conversions within measurement systems.</li> <li>Mathematicians use multiple strategies to approach and solve complex problems.</li> </ul>	5.M.1 5.NS.4 5.AT.1 5.AT.8 5.C.8	<ul style="list-style-type: none"> <li>Convert among different-sized standards measurement units, within the same system. Use the conversions to solve multi-step problems.</li> <li>Define and use variables in equations or expressions to represent and solve problem situations.</li> <li>Use multiplication and division of whole numbers to solve multi-step, real-world problems.</li> <li>Solve multi-step word problems based on conversions within a measurement system.</li> <li>Understand the relationship between place value and powers of ten.</li> <li>Multiply multi-digit whole numbers fluently.</li> <li>Solve real-world problems using the four operations with decimals to hundredths (using equations or expressions).</li> <li>Solve real-world multiplication and division problems (using equations or expressions).</li> </ul>	capacity centimeter cup decimeter dekameter elapsed time fluid ounce foot gallon gram inch kilogram liter mass meter mile milligram milliliter millimeter ounce pint pound quart ton visual model weight yard	<p><b>Go Math:</b> Chapter 10 IN Success Supplement – STEM Activities</p> <p><b>Illustrative Mathematics Tasks:</b> (<a href="http://www.illustrativemathematics.org">www.illustrativemathematics.org</a>) Minutes and Days (5.M.1) Converting Fractions of a Unit into a Smaller Unit (5.M.1)</p> <p><b>Learning Math in the Intermediate Grades (Madison MSD)</b> (<a href="https://mathweb.madison.k12.wi.us/files/math/LMIGcomplete.pdf">https://mathweb.madison.k12.wi.us/files/math/LMIGcomplete.pdf</a>)</p> <p><b>Good Questions for Math Teaching</b> Weight pg. 50 – 51 Length and Perimeter pg. 70 – 71 Volume and Capacity pg. 55 – 56</p> <p><b>Inside Mathematics:</b> Hexagons in a Row (5.AT.1, PS. 4, PS.8) <a href="http://www.insidemathematics.org/assets/common-core-math-tasks/hexagons%20in%20a%20row.pdf">http://www.insidemathematics.org/assets/common-core-math-tasks/hexagons%20in%20a%20row.pdf</a></p> <p><b>Everyday Mathematics Teacher's Guide to Games</b></p> <p><b>Mentor Text</b> <i>Monster Book of Dimensions</i></p>	<p><b>Spiral Review:</b> 5.C.4, 5.C.5, 5.C.7</p> <p><b>Prerequisite Skills:</b></p> <ul style="list-style-type: none"> <li>Measure objects with a ruler</li> <li>Multiply or divide by powers of 10</li> <li>Understand the relative size difference between inch, foot, yard and mile</li> </ul> <p><b>Scaffolding Support: (ELL, SPED, Striving Learners)</b></p> <ul style="list-style-type: none"> <li>Go Math: differentiation materials</li> <li>Open ended problems with multiple entry points</li> <li>Written instructions</li> <li>Small group instruction</li> <li>Graphic Organizers</li> <li>Manipulatives</li> <li>Concrete models</li> <li>Encourage multiple ways to solve problems</li> <li>Models of finished products</li> <li>Provide picture support</li> <li>Ask all students to show their strategies while explaining</li> <li>Send home games to practice specific skills</li> </ul>
<b>Process Standards for Mathematics:</b>	<ul style="list-style-type: none"> <li>Mathematicians use appropriate tools strategically to understand the relationships between different units within a measurement system.</li> <li>Mathematicians use precision when measuring and discussing attributes of objects.</li> <li>Mathematicians calculate accurately and efficiently, expressing numerical answers with a degree of precision appropriate for the problem context.</li> </ul>	PS. 5 PS. 6 PS. 8	<ul style="list-style-type: none"> <li>Use a variety of tools to make connections between different units within a measurement system.</li> <li>Use precise vocabulary and units when discussing mathematics.</li> <li>Use estimation to check solutions to real-world problems.</li> <li>Show work to ensure precision in calculations.</li> </ul>			

5.M.1: Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step real-world problems.

5.NS.4: 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.C.8: Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.

5.AT.1: Solve real-world problems involving multiplication and division of whole numbers (e.g. by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem.

5.AT.8: Define and use up to two variables to write linear expressions that arise from real-world problems, and evaluate them for given values.

### 5<sup>th</sup> Grade Mathematics – Scope and Sequence – MSD of Pike Township

Quarter 4 Weeks 28 – 32	Essential Goals	Priority Standards	Strategies/Skills	Academic Vocabulary	Possible Instructional Resources	Differentiation
Unit 7:  Geometry	<ul style="list-style-type: none"> <li>Mathematicians classify, identify, describe, and draw different types of triangles and quadrilaterals.</li> <li>Mathematicians identify, describe, draw, and classify polygons.</li> <li>Mathematicians understand the relationship between the radius and the diameter.</li> <li>Mathematicians solve problems involving area and perimeter of polygons and complex figures.</li> <li>Mathematicians solve problems involving volume of rectangular prisms and three-dimensional complex figures.</li> <li>Mathematicians use fractions when solving real-world problems.</li> </ul>	5.G.1 5.G.2 5.M.2 5.M.3 5.M.4 5.M.5 5.M.6 5.AT.3	<ul style="list-style-type: none"> <li>Identify, describe, and draw triangles (right, acute, and obtuse) and circles using appropriate tools.</li> <li>Understand the relationship between radius and diameter.</li> <li>Identify and classify polygons based on angle measures and sides.</li> <li>Find the area and perimeter of a rectangle with fractional side lengths.</li> <li>Find missing side lengths given area or perimeter.</li> <li>Represent fraction products as rectangular areas.</li> <li>Develop and use area formulas for polygons.</li> <li>Develop and use the volume formula for rectangular prisms.</li> <li>Find the volume of complex 3D figures by adding volumes of rectangular prisms to find the total volume.</li> <li>Solve real-world problems based on finding the area and perimeter of triangles, parallelograms, and trapezoids.</li> <li>Solve real-world problems involving fractions by using the four operations.</li> </ul>	acute acute triangle angles area base congruent cubic unit decagon diameter equiangular equilateral triangle heptagon hexagon isosceles triangle nonagon obtuse triangle octagon parallel lines parallelogram pentagon perimeter perpendicular lines polygon quadrilateral radius rectangle rhombus right triangle scalene triangle sides square trapezoid triangle unit cube volume	<p><b>Go Math:</b> Chapter 11 Additional IN lessons: 11.2a, 11.3a, 11.3b, 11.3c, 11.3d, 11.3e, 11.3g, 11.3h <b>SKIP – 11.4</b> IN Success Supplement – STEM Activities</p> <p><b>Illustrative Mathematics Tasks:</b> <a href="http://www.illustrativemathematics.org">www.illustrativemathematics.org</a> Always, Sometimes, Never (5.G.2) What is a Trapezoid? (5.G.2) Using Volume to Understand the Associative Property of Multiplication (5.M.4) Cari's Aquarium (5.M.5) Breaking Apart Composite Solids (5.M.6)</p> <p><b>Learning Math in the Intermediate Grades (Madison MSD)</b> <a href="https://mathweb.madison.k12.wi.us/files/math/LMIGcomplete.pdf">https://mathweb.madison.k12.wi.us/files/math/LMIGcomplete.pdf</a></p> <p><b>Good Questions for Math Teaching 5-8</b> Geometry, page 77-89 Area pg. 60 – 61 Length and Perimeter pg. 70 – 71 Volume and Capacity pg. 55 – 56</p> <p><b>Inside Mathematics:</b> How Many Cubes? (5.M.4, 5.M.5, 5.M.6) Sorting Shapes (5.G.2, PS.1, PS.7) <a href="http://www.insidemathematics.org/performance-assessment-tasks">http://www.insidemathematics.org/performance-assessment-tasks</a></p> <p><b>Mentor Text</b> <i>When a Line Bends... A Shape Begins</i> <i>The Greedy Triangle</i> <i>Sir Circumference and the Dragon of Pi</i> <i>Perimeter, Area, and Volume –A</i></p>	<p><b>Spiral Review:</b> 5.AT.1, 5.C.9</p> <p><b>Prerequisite Skills:</b></p> <ul style="list-style-type: none"> <li>Find the perimeter and area of a figure on a grid.</li> <li>Add and multiply whole numbers and fractions.</li> </ul> <p><b>Scaffolding Support:</b> <b>(ELL, SPED, Striving Learners)</b></p> <ul style="list-style-type: none"> <li>Go Math: differentiation materials</li> <li>Open ended problems with multiple entry points</li> <li>Written instructions</li> <li>Small group instruction</li> <li>Graphic Organizers</li> <li>Manipulatives</li> <li>Concrete models</li> <li>Encourage multiple ways to solve problems</li> <li>Models of finished products</li> <li>Provide picture support</li> <li>Ask all students to show their strategies while explaining</li> <li>Send home games to practice specific skills</li> </ul>
Process Standards for Mathematics:	<ul style="list-style-type: none"> <li>Mathematicians make sense of problems and persevere in solving them.</li> <li>Mathematicians construct viable arguments and critique the reasoning of others.</li> <li>Mathematicians calculate accurately and efficiently, expressing numerical answers with a degree of precision appropriate for the problem context.</li> <li>Mathematicians use clear definitions when discussing and reasoning about geometric figures.</li> </ul>	PS. 1 PS. 3 PS. 6	<ul style="list-style-type: none"> <li>Use multiples strategies, manipulatives, and concrete models to solve problems.</li> <li>Use precise vocabulary to describe and classify geometric figures.</li> <li>Justify claims using mathematical arguments.</li> <li>Politely defend or reject others' claims, using mathematical arguments.</li> <li>Use precision in calculations and unit labels.</li> </ul>			

5.G.1: Identify, describe, and draw triangles (right, acute, obtuse) and circles using appropriate tools (e.g., ruler or straightedge, compass and technology). Understand the relationship between radius and diameter.

5.G.2: Identify and classify polygons including quadrilaterals, pentagons, hexagons, and triangles (equilateral, isosceles, scalene, right, acute and obtuse) based on angle measures and sides. Classify polygons in a hierarchy based on properties.

5.M.2: Find the area of a rectangle with fractional side lengths by modeling 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 lengths to find areas of rectangles, and represent fraction products as rectangular areas.

5.M.3: Develop and use formulas for the area of triangles, parallelograms and trapezoids. Solve real-world and other mathematical problems that involve perimeter and area of triangles, parallelograms, and trapezoids, using appropriate units for measures.

5.M.4: 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 lengths or multiplying the height by the area of the base.

5.M.5: Apply the formulas  $V = l \times w \times h$  and  $V = B \times h$  for right rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths to solve real-world problems and other mathematical problems.

5.M.6: Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems and other mathematical problems.

5.A.T.3: Solve real-world problems involving multiplication of fractions, including mixed numbers (e.g., by using visual fraction models and equations to represent the problem).

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Quarter 4 Weeks 33 – 36	Essential Goals	Priority Standards	Strategies/Skills	Academic Vocabulary	Instructional Resources	Differentiation
<b>Math Content:</b>  <b>Unit 8:</b> <b><u>Reinforce and Extend Mathematical Understandings</u></b>	<ul style="list-style-type: none"> <li>Mathematicians practice critical grade level skills, in a variety of formats, to prepare them for more complex mathematical understandings.</li> <li>Mathematicians make sense of a variety of problems and persevere in solving them.</li> <li>Mathematicians reason abstractly and quantitatively to solve problems.</li> <li>Mathematicians construct viable arguments and critique the reasoning of others.</li> <li>Mathematicians apply math skills and understandings to solve real-world problems.</li> <li>Mathematicians use a variety of tools to aid them in solving mathematical and real-world problems.</li> <li>Mathematicians use structures and patterns to solve problems efficiently.</li> </ul>	5.C.1 5.C.2 5.C.4 5.C.5 5.C.7 5.C.8 5.C.9 5.A.T.1 5.A.T.2 5.A.T.5 5.M.1 5.M.3 5.M.5	<ul style="list-style-type: none"> <li>Use pre and post assessments to determine reinforcement or extension of skills and understandings.</li> <li>Use multiple representations to solve problems.</li> <li>Connect mathematics to students' daily lives.</li> <li>Use correct mathematical vocabulary.</li> <li>Use accurate labels, symbols, and calculations.</li> <li>Work in teams to solve problems and justify solutions.</li> <li>Select an appropriate tool to solve a problem and explain why the tool makes sense to use.</li> <li>Explain whether or not a solution or process is reasonable for the problem situation.</li> </ul>	abstract reasoning argument construct critique efficient mathematical models persevere precision proficient quantitative reasoning reasonable reasoning repeated reasoning strategically structure	<b><u>Go Math!</u></b> Feel free to pull ideas from: IN Success Supplement – STEM Activities End of Year Review Projects Unit Projects Getting Ready for 6 <sup>th</sup> Grade  <b><u>Learning Math in the Intermediate Grades (Madison MSD)</u></b> <a href="https://mathweb.madison.k12.wi.us/files/math/LMIComplete.pdf">https://mathweb.madison.k12.wi.us/files/math/LMIComplete.pdf</a>  <b><u>Good Questions for Math Teaching 5-8</u></b>  <b><u>Mentor Text</u></b> <i>Fraction Fun</i> , David Adler <i>Fractions are Parts of Things</i> , Richard Dennis <i>Piece=Part=Portion: Fractions =Decimal=Percents</i> , Scott Gifford <i>Full House: An Invitation to Fractions</i> , Dayle Ann Dodds <i>Fraction Action</i> , Loreen Leedy	<b>*Spiral review: use critical standards from previous units</b>  <b><u>Scaffolding Support: (ELL, SPED, Striving Learners)</u></b> <ul style="list-style-type: none"> <li>Go Math: differentiation materials</li> <li>Open ended problems with multiple entry points</li> <li>Written instructions</li> <li>Small group instruction</li> <li>Graphic Organizers</li> <li>Manipulatives</li> <li>Concrete models</li> <li>Encourage multiple ways to solve problems</li> <li>Models of finished products</li> <li>Picture Support</li> <li>Ask all students to show their strategies while explaining</li> <li>Games to practice specific skills at home</li> </ul>
5.C.1: Multiply multi-digit whole numbers fluently using a standard algorithmic approach. 5.C.2: Find whole-number quotients and remainders 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. Describe the strategy and explain the reasoning used. 5.C.4: Add and subtract fractions with unlike denominators, including mixed numbers. 5.C.5: Use visual fraction models and numbers to multiply a fraction by a fraction or a whole number. 5.C.7: Use visual fraction models and numbers to divide a unit fraction by a non-zero whole number and to divide a whole number by a unit fraction. 5.C.8: Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning. 5.C.9: Evaluate expressions with parentheses or brackets involving whole numbers using the commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property. 5.A.T.1: Solve real-world problems involving multiplication and division of whole numbers (e.g. by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem. 5.A.T.2: Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable. 5.A.T.5: Solve real-world problems involving addition, subtraction, multiplication, and division with decimals to hundredths, including problems that involve money in decimal notation (e.g. by using equations, models or drawings and strategies based on place value or properties of operations to represent the problem). 5.M.1: Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step real-world problems.						

5.M.3: Develop and use formulas for the area of triangles, parallelograms and trapezoids. Solve real-world and other mathematical problems that involve perimeter and area of triangles, parallelograms and trapezoids, using appropriate units for measures.
5.M.5: Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for right rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths to solve real-world problems and other mathematical problems.

## Process Standards for Mathematics

The Process Standards demonstrate the ways in which students should develop conceptual understanding of mathematical content, and the ways in which students should synthesize and apply mathematical skills.	
<b>PS.1: Make sense of problems and persevere in solving them.</b>	Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway, rather than simply jumping into a solution attempt. They consider analogous problems and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” and “Is my answer reasonable?” They understand the approaches of others to solving complex problems and identify correspondences between different approaches. Mathematically proficient students understand how mathematical ideas interconnect and build on one another to produce a coherent whole.
<b>PS.2: Reason abstractly and quantitatively.</b>	Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.
<b>PS.3: Construct viable arguments and critique the reasoning of others.</b>	Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They analyze situations by breaking them into cases and recognize and use counterexamples. They organize their mathematical thinking, justify their conclusions and communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. They justify whether a given statement is true always, sometimes, or never. Mathematically proficient students participate and collaborate in a mathematics community. They listen to or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.
<b>PS.4: Model with mathematics.</b>	Mathematically proficient students apply the mathematics they know to solve problems arising in everyday life, society, and the workplace using a variety of appropriate strategies. They create and use a variety of representations to solve problems and to organize and communicate mathematical ideas. Mathematically proficient students apply what they know and are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.
<b>PS.5: Use appropriate tools strategically.</b>	Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Mathematically proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. Mathematically proficient students identify relevant external mathematical resources, such as digital content, and use them to pose or solve problems. They use technological tools to explore and deepen their understanding of concepts and to support the development of learning mathematics. They use technology to contribute to concept development, simulation, representation, reasoning, communication and problem solving.
<b>PS.6: Attend to precision.</b>	Mathematically proficient students communicate precisely to others. They use clear definitions, including correct mathematical language, in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They express solutions clearly and logically by using the appropriate mathematical terms and notation. They specify units of measure and label axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently and check the validity of their results in the context of the problem. They express numerical answers with a degree of precision appropriate for the problem context.
<b>PS.7: Look for and make use of structure.</b>	Mathematically proficient students look closely to discern a pattern or structure. They step back for an overview and shift perspective. They recognize and use properties of operations and equality. They organize and classify geometric shapes based on their attributes. They see expressions, equations, and geometric figures as single objects or as being composed of several objects.

<b>PS.8: Look for and express regularity in repeated reasoning.</b>	Mathematically proficient students notice if calculations are repeated and look for general methods and shortcuts. They notice regularity in mathematical problems and their work to create a rule or formula. Mathematically proficient students maintain oversight of the process, while attending to the details as they solve a problem. They continually evaluate the reasonableness of their intermediate results.
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**NUMBER SENSE**

<b>5.NS.1</b>	Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. Write the results using >, =, and < symbols.
<b>5.NS.2</b>	Explain different interpretations of fractions, including: as parts of a whole, parts of a set, and division of whole numbers by whole numbers.
<b>5.NS.3</b>	Recognize the relationship 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 inversely, a digit in one place represents 1/10 of what it represents in the place to its left.
<b>5.NS.4</b>	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.
<b>5.NS.5</b>	Use place value understanding to round decimal numbers up to thousandths to any given place value.
<b>5.NS.6</b>	Understand, interpret, and model percents as part of a hundred (e.g. by using pictures, diagrams, and other visual models).

**COMPUTATION**

<b>5.C.1</b>	Multiply multi-digit whole numbers fluently using a standard algorithmic approach.
<b>5.C.2</b>	Find whole-number quotients and remainders 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. Describe the strategy and explain the reasoning used.
<b>5.C.3</b>	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.
<b>5.C.4</b>	Add and subtract fractions with unlike denominators, including mixed numbers.
<b>5.C.5</b>	Use visual fraction models and numbers to multiply a fraction by a fraction or a whole number.
<b>5.C.6</b>	Explain why multiplying a positive number by a fraction greater than one results in a product greater than the given number. Explain why multiplying a positive number by a fraction less than 1 results in a product smaller than the given number. Relate the principle of fraction equivalence, $\frac{a}{b} = \frac{(n \times a)}{(n \times b)}$ , to the effect of multiplying $\frac{a}{b}$ by one.

<b>5.C.7</b>	Use visual fraction models and numbers to divide a unit fraction by a non-zero whole number and to divide a whole number by a unit fraction.
<b>5.C.8</b>	Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.
<b>5.C.9</b>	Evaluate expressions with parentheses or brackets involving whole numbers using the commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property.

**ALGEBRAIC THINKING**

<b>5.AT.1</b>	Solve real-world problems involving multiplication and division of whole numbers (e.g. by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem.
<b>5.AT.2</b>	Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable.
<b>5.AT.3</b>	Solve real-world problems involving multiplication of fractions, including mixed numbers (e.g., by using visual fraction models and equations to represent the problem).
<b>5.AT.4</b>	Solve real-world problems involving division of unit fractions by non-zero whole numbers, and division of whole numbers by unit fractions (e.g., by using visual fraction models and equations to represent the problem).
<b>5.AT.5</b>	Solve real-world problems involving addition, subtraction, multiplication, and division with decimals to hundredths, including problems that involve money in decimal notation (e.g. by using equations, models or drawings and strategies based on place value or properties of operations to represent the problem).
<b>5.AT.6</b>	Graph points with whole number coordinates on a coordinate plane. Explain how the coordinates relate the point as the distance from the origin on each axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
<b>5.AT.7</b>	Represent real-world problems and equations by graphing ordered pairs in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.
<b>5.AT.8</b>	Define and use up to two variables to write linear expressions that arise from real-world problems, and evaluate them for given values.

**GEOMETRY**

<b>5.G.1</b>	Identify, describe, and draw triangles (right, acute, obtuse) and circles using appropriate tools (e.g., ruler or straightedge, compass and technology). Understand the relationship between radius and diameter.
<b>5.G.2</b>	Identify and classify polygons including quadrilaterals, pentagons, hexagons, and triangles (equilateral, isosceles, scalene, right, acute and obtuse) based on angle measures and sides. Classify polygons in a hierarchy based on properties.

**MEASUREMENT**

<b>5.M.1</b>	Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step real-world problems.
<b>5.M.2</b>	Find the area of a rectangle with fractional side lengths by modeling 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 lengths to find areas of rectangles, and represent fraction products as rectangular areas.
<b>5.M.3</b>	Develop and use formulas for the area of triangles, parallelograms and trapezoids. Solve real-world and other mathematical problems that involve perimeter and area of triangles, parallelograms and trapezoids, using appropriate units for measures.
<b>5.M.4</b>	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 lengths or multiplying the height by the area of the base.
<b>5.M.5</b>	Apply the formulas $V = l \times w \times h$ and $V = B \times h$ for right rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths to solve real-world problems and other mathematical problems.
<b>5.M.6</b>	Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems and other mathematical problems.

**DATA ANALYSIS**

<b>5.DS.1</b>	Formulate questions that can be addressed with data and make predictions about the data. Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, bar graphs, and line graphs. Recognize the differences in representing categorical and numerical data.
<b>5.DS.2</b>	Understand and use measures of center (mean and median) and frequency (mode), to describe a data set.



### 3 – 5 Math Standards Vertical Alignment (2014 Language)

Number Sense		
Third Grade	Fourth Grade	Fifth Grade
3.NS.1: Read and write whole numbers up to 10,000. Use words, models, standard form and expanded form to represent and show equivalent forms of whole numbers up to 10,000.	4.NS.1: Read and write whole numbers up to 1,000,000. Use words, models, standard form and expanded form to represent and show equivalent forms of whole numbers up to 1,000,000.	5.NS.3: Recognize the relationship 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 inversely, a digit in one place represents 1/10 of what it represents in the place to its left.
3.NS.2: Compare two whole numbers up to 10,000 using >, =, and < symbols.	4.NS.2: Compare two whole numbers up to 1,000,000 using >, =, and < symbols.	5.NS.4: 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.
3.NS.3: Understand a fraction, $1/b$ , as the quantity formed by 1 part when a whole is partitioned into $b$ equal parts; understand a fraction, $a/b$ , as the quantity formed by $a$ parts of size $1/b$ . [In grade 3, limit denominators of fractions to 2, 3, 4, 6, 8.]	4.NS.3: Express whole numbers as fractions and recognize fractions that are equivalent to whole numbers. Name and write mixed numbers using objects or pictures. Name and write mixed numbers as improper fractions using objects or pictures.	5.NS.2: Explain different interpretations of fractions, including: as parts of a whole, parts of a set, and division of whole numbers by whole numbers.
3.NS.4: Represent a fraction, $1/b$ , on a number line by defining the interval from 0 to 1 as the whole, and partitioning it into $b$ equal parts. Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.		
3.NS.5: Represent a fraction, $a/b$ , on a number line by marking off lengths $1/b$ from 0. Recognize that the resulting interval has size $a/b$ , and that its endpoint locates the number $a/b$ on the number line.		
3.NS.6: Understand two fractions as equivalent (equal) if they are the same size, based on the same whole or the same point on a number line.		
3.NS.7: Recognize and generate simple equivalent fractions (e.g., $1/2 = 2/4$ , $4/6 = 2/3$ ). Explain why the fractions are equivalent (e.g., by using a visual fraction model).	4.NS.4: Explain why a fraction, $a/b$ , is equivalent to a fraction, $(n \times a)/(n \times b)$ , by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. [In grade 4, limit denominators of fractions to 2, 3, 4, 5, 6, 8, 10, 25, 100.]	5.NS.1: Use a number line to compare and order fractions, mixed numbers, and decimals to thousandths. Write the results using >, =, and < symbols.
3.NS.8: Compare two fractions with the same numerator or the same denominator by reasoning about their size based on the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions (e.g., by using a visual fraction model).	4.NS.5: Compare two fractions with different numerators and different denominators (e.g., by creating common denominators or numerators, or by comparing to a benchmark, such as 0, $1/2$ , and 1). Recognize comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions (e.g., by using a visual fraction model).	
	4.NS.7: Compare two decimals to hundredths by reasoning about their size based on the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions (e.g., by using a visual model).	
3.NS.9: Use place value understanding to round 2- and 3-digit whole numbers to the nearest 10 or 100.	4.NS.9: Use place value understanding to round multi-digit whole numbers to any given place value.	5.NS.5: Use place value understanding to round decimal numbers up to thousandths to any given place value.
	4.NS.6: Write tenths and hundredths in decimal and fraction notations. Use words, models, standard form and expanded form to represent decimal numbers to hundredths. Know the fraction and decimal equivalents for halves and fourths (e.g., $1/2 = 0.5 = 0.50$ , $7/4 = 1\ 3/4 = 1.75$ ).	5.NS.6: Understand, interpret, and model percents as part of a hundred (e.g. by using pictures, diagrams, and other visual models).
	4.NS.8: Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number.	

## 3 – 5 Math Standards Vertical Alignment (2014 Language)

Computation		
Third Grade	Fourth Grade	Fifth Grade
3.C.1: Add and subtract whole numbers fluently within 1000.	4.C.1: Add and subtract multi-digit whole numbers fluently using a standard algorithmic approach.	
3.C.2: Represent the concept of multiplication of whole numbers with the following models: equal-sized groups, arrays, area models, and equal "jumps" on a number line. Understand the properties of 0 and 1 in multiplication.	4.C.7: Show how the order in which two numbers are multiplied (commutative property) and how numbers are grouped in multiplication (associative property) will not change the product. Use these properties to show that numbers can be multiplied in any order. Understand and use the distributive property.	5.C.3: 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.
3.C.3: Represent the concept of division of whole numbers with the following models: partitioning, sharing, and an inverse of multiplication. Understand the properties of 0 and 1 in division.	4.C.3: Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Describe the strategy and explain the reasoning.	5.C.2: Find whole-number quotients and remainders 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. Describe the strategy and explain the reasoning used.
3.C.4: Interpret whole-number quotients of whole numbers (e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each).		
3.C.5: Multiply and divide within 100 using strategies, such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$ , one knows $40 \div 5 = 8$ ), or properties of operations.	4.C.2: Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Describe the strategy and explain the reasoning.	
3.C.6: Demonstrate fluency with multiplication facts and corresponding division facts of 0 to 10.	4.C.4: Multiply fluently within 100.	5.C.1: Multiply multi-digit whole numbers fluently using a standard algorithmic approach.
	4.C.5: Add and subtract fractions with common denominators. Decompose a fraction into a sum of fractions with common denominators. Understand addition and subtraction of fractions as combining and separating parts referring to the same whole.	5.C.4: Add and subtract fractions with unlike denominators, including mixed numbers.
	4.C.6: Add and subtract mixed numbers with common denominators (e.g. by replacing each mixed number with an equivalent fraction and/or by using properties of operations and the relationship between addition and subtraction).	
		5.C.5: Use visual fraction models and numbers to multiply a fraction by a fraction or a whole number.
		5.C.6: Explain why multiplying a positive number by a fraction greater than 1 results in a product greater than the given number. Explain why multiplying a positive number by a fraction less than 1 results in a product smaller than the given number. Relate the principle of fraction equivalence, $a/b = (n \times a)/(n \times b)$ , to the effect of multiplying $a/b$ by 1.
		5.C.7: Use visual fraction models and numbers to divide a unit fraction by a non-zero whole number and to divide a whole number by a unit fraction.
		5.C.8: Add, subtract, multiply, and divide decimals to hundredths, using models or drawings and strategies based on place value or the properties of operations. Describe the strategy and explain the reasoning.
		5.C.9: Evaluate expressions with parentheses or brackets involving whole numbers using the commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property.



Algebraic Thinking		
Third Grade	Fourth Grade	Fifth Grade
3.AT.1: Solve real-world problems involving addition and subtraction of whole numbers within 1000 (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).	4.AT.1: Solve real-world problems involving addition and subtraction of multi-digit whole numbers (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).	
3.AT.2: Solve real-world problems involving whole number multiplication and division within 100 in situations involving equal groups, arrays, and measurement quantities (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).	4.AT.2: Recognize and apply the relationships between addition and multiplication, between subtraction and division, and the inverse relationship between multiplication and division to solve real-world and other mathematical problems.	5.AT.1: Solve real-world problems involving multiplication and division of whole numbers (e.g. by using equations to represent the problem). In division problems that involve a remainder, explain how the remainder affects the solution to the problem.
3.AT.3: Solve two-step real-world problems using the four operations of addition, subtraction, multiplication and division (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem).	4.AT.4: Solve real-world problems with whole numbers involving multiplicative comparison (e.g., by using drawings and equations with a symbol for the unknown number to represent the problem), distinguishing multiplicative comparison from additive comparison. [In grade 4, division problems should not include a remainder.]	
3.AT.4: Interpret a multiplication equation as equal groups (e.g., interpret $5 \times 7$ as the total number of objects in 5 groups of 7 objects each). Represent verbal statements of equal groups as multiplication equations.	4.AT.3: Interpret a multiplication equation as a comparison (e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7, and 7 times as many as 5). Represent verbal statements of multiplicative comparisons as multiplication equations.	
3.AT.5: Determine the unknown whole number in a multiplication or division equation relating three whole numbers.		
3.AT.6: Create, extend, and give an appropriate rule for number patterns using multiplication within 1000.	4.AT.6: Understand that an equation, such as $y = 3x + 5$ , is a rule to describe a relationship between two variables and can be used to find a second number when a first number is given. Generate a number pattern that follows a given rule.	5.AT.8: Define and use up to two variables to write linear expressions that arise from real-world problems, and evaluate them for given values.
	4.AT.5: Solve real-world problems involving addition and subtraction of fractions referring to the same whole and having common denominators (e.g., by using visual fraction models and equations to represent the problem).	5.AT.2: Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators (e.g., by using visual fraction models and equations to represent the problem). Use benchmark fractions and number sense of fractions to estimate mentally and assess whether the answer is reasonable.
		5.AT.3: Solve real-world problems involving multiplication of fractions, including mixed numbers (e.g., by using visual fraction models and equations to represent the problem).
		5.AT.4: Solve real-world problems involving division of unit fractions by non-zero whole numbers, and division of whole numbers by unit fractions (e.g., by using visual fraction models and equations to represent the problem).
		5.AT.5: Solve real-world problems involving addition, subtraction, multiplication, and division with decimals to hundredths, including problems that involve money in decimal notation (e.g. by using equations to represent the problem).
		5.AT.6: Graph points with whole number coordinates on a coordinate plane. Explain how the coordinates relate the point as the distance from the origin on each axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
		5.AT.7: Represent real-world problems and equations by graphing ordered pairs in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

### 3 – 5 Math Standards Vertical Alignment (2014 Language)

Geometry		
Third Grade	Fourth Grade	Fifth Grade
3.G.1: Identify and describe the following: cube, sphere, prism, pyramid, cone, and cylinder.		
3.G.2: Understand that shapes (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize and draw rhombuses, rectangles, and squares as examples of quadrilaterals. Recognize and draw examples of quadrilaterals that do not belong to any of these subcategories.	4.G.5: Classify triangles and quadrilaterals based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles (right, acute, obtuse).	5.G.2: Identify and classify polygons including quadrilaterals, pentagons, hexagons, and triangles (equilateral, isosceles, scalene, right, acute and obtuse) based on angle measures and sides. Classify polygons in a hierarchy based on properties.
3.G.3: Identify, describe and draw points, lines and line segments using appropriate tools (e.g., ruler, straightedge, and technology), and use these terms when describing two-dimensional shapes.	4.G.1: Identify, describe, and draw parallelograms, rhombuses, and trapezoids using appropriate tools (e.g., ruler, straightedge and technology).	5.G.1: Identify, describe, and draw triangles (right, acute, obtuse) and circles using appropriate tools (e.g., ruler or straightedge, compass and technology). Understand the relationship between radius and diameter.
	4.G.3: Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint.	
	4.G.4: Identify, describe, and draw rays, angles (right, acute, obtuse), and perpendicular and parallel lines using appropriate tools (e.g., ruler, straightedge and technology). Identify these in two-dimensional figures.	
3.G.4: Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole ( $\frac{1}{2}$ , $\frac{1}{3}$ , $\frac{1}{4}$ , $\frac{1}{6}$ , $\frac{1}{8}$ ).	4.G.2: Recognize and draw lines of symmetry in two-dimensional figures. Identify figures that have lines of symmetry.	

Data Analysis (and Statistics in Gr.5)		
Third Grade	Fourth Grade	Fifth Grade
3.DA.1: Create scaled picture graphs, scaled bar graphs, and frequency tables to represent a data set—including data collected through observations, surveys, and experiments—with several categories. Solve one- and two-step “how many more” and “how many less” problems regarding the data and make predictions based on the data.	4.DA.1: Formulate questions that can be addressed with data. Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, and bar graphs.	5.DS.1: Formulate questions that can be addressed with data and make predictions about the data. Use observations, surveys, and experiments to collect, represent, and interpret the data using tables (including frequency tables), line plots, bar graphs, and line graphs. Recognize the differences in representing categorical and numerical data.
3.DA.2: Generate measurement data by measuring lengths with rulers to the nearest quarter of an inch. Display the data by making a line plot, where the horizontal scale is marked off in appropriate units, such as whole numbers, halves, or quarters.	4.DA.2: Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ , $\frac{1}{4}$ , $\frac{1}{8}$ ). Solve problems involving addition and subtraction of fractions by using data displayed in line plots.	5.DS.2: Understand and use measures of center (mean and median) and frequency (mode) to describe a data set.
	4.DA.3: Interpret data displayed in a circle graph.	



## 3 – 5 Math Standards Vertical Alignment (2014 Language)

Measurement		
Third Grade	Fourth Grade	Fifth Grade
<p>3.M.1: Estimate and measure the mass of objects in grams (g) and kilograms (kg) and the volume of objects in quarts (qt), gallons (gal), and liters (l). Add, subtract, multiply, or divide to solve one-step real-world problems involving masses or volumes that are given in the same units (e.g., by using drawings, such as a beaker with a measurement scale, to represent the problem).</p>	<p>4.M.2: Know relative sizes of measurement units within one system of units, including km, m, cm; kg, g; lb, oz; l, ml; hr, min, sec. Express measurements in a larger unit in terms of a smaller unit within a single system of measurement. Record measurement equivalents in a two-column table.</p> <p>4.M.3: Use the four operations (addition, subtraction, multiplication and division) to solve real-world problems involving distances, intervals of time, volumes, masses of objects, and money. Include addition and subtraction problems involving simple fractions and problems that require expressing measurements given in a larger unit in terms of a smaller unit.</p>	<p>5.M.1: Convert among different-sized standard measurement units within a given measurement system, and use these conversions in solving multi-step real-world problems.</p>
<p>3.M.2: Choose and use appropriate units and tools to estimate and measure length, weight, and temperature. Estimate and measure length to a quarter-inch, weight in pounds, and temperature in degrees Celsius and Fahrenheit.</p> <p>3.M.3: Tell and write time to the nearest minute from analog clocks, using a.m. and p.m., and measure time intervals in minutes. Solve real-world problems involving addition and subtraction of time intervals in minutes.</p> <p>3.M.4: Find the value of any collection of coins and bills. Write amounts less than a dollar using the ¢ symbol and write larger amounts using the \$ symbol in the form of dollars and cents (e.g., \$4.59). Solve real-world problems to determine whether there is enough money to make a purchase.</p>	<p>4.M.1: Measure length to the nearest quarter-inch, eighth-inch, and millimeter.</p>	
<p>3.M.5: Find the area of a rectangle with whole-number side lengths by modeling with unit squares, and show that the area is the same as would be found by multiplying the side lengths. Identify and draw rectangles with the same perimeter and different areas or with the same area and different perimeters.</p> <p>3.M.6: Multiply side lengths to find areas of rectangles with whole-number side lengths to solve real-world problems and other mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.</p> <p>3.M.7: Find perimeters of polygons given the side lengths or by finding an unknown side length.</p>	<p>4.M.4: Apply the area and perimeter formulas for rectangles to solve real-world problems and other mathematical problems. Recognize area as additive and find the area of complex shapes composed of rectangles by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts; apply this technique to solve real-world problems and other mathematical problems involving shapes.</p>	<p>5.M.2: Find the area of a rectangle with fractional side lengths by modeling 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 lengths to find areas of rectangles, and represent fraction products as rectangular areas.</p> <p>5.M.3: Develop and use formulas for the area of triangles, parallelograms and trapezoids. Solve real-world and other mathematical problems that involve perimeter and area of triangles, parallelograms and trapezoids, using appropriate units for measures.</p>
	<p>4.M.5: Understand that an angle is measured with reference to a circle, with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. Understand an angle that turns through <math>\frac{1}{360}</math> of a circle is called a "one-degree angle," and can be used to measure other angles. Understand an angle that turns through <math>n</math> one-degree angles is said to have an angle measure of <math>n</math> degrees.</p> <p>4.M.6: Measure angles in whole-number degrees using appropriate tools. Sketch angles of specified measure.</p>	
		<p>5.M.4: 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 lengths or multiplying the height by the area of the base.</p> <p>5.M.5: Apply the formulas <math>V = l \times w \times h</math> and <math>V = B \times h</math> for right rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths to solve real-world problems and other mathematical problems.</p> <p>5.M.6: Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems and other mathematical problems.</p>