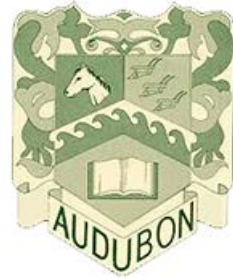


# Audubon Public Schools



## **Grade 5: Math Curriculum Guide**

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## Course Description

### Grade 5: Math

In addition to strengthening skills previously covered, this course will help students to think mathematically and to understand the basic structure of mathematics through experience with an appreciation of abstract concepts. This course is also designed to help students develop an ever increasing proficiency in the application of mathematics and prepare them for successful experiences in further mathematics courses. The content included in this course are Understanding the Place Value System, Volume, Fractions, Geometry and Classifying Figures. This course will also help students develop an ever increasing proficiency in the application of mathematics and prepare them for successful experiences in the future.

## Overview / Progressions

Overview	Standards for Mathematical Content	Unit Focus	Standards for Mathematical Practice
<b>Unit 1</b>	<ul style="list-style-type: none"> <li>● 5.OA.A.1</li> <li>● 5.OA.A.2</li> <li>● 5.NBT.A.1</li> <li>● 5.NBT.A.2*</li> <li>● 5.NBT.A.3</li> <li>● 5.NBT.A.4</li> <li>● 5.NBT.B.5*</li> <li>● 5.NBT.B.6</li> </ul>	<ul style="list-style-type: none"> <li>●</li> <li>● Write and interpret numerical expressions</li> <li>● Understand the place value system</li> <li>● Perform operations with multi-digit whole numbers and with decimals to hundredths</li> <li>● Apply and extend previous understandings of multiplication and division</li> </ul>	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p>
<b>Unit 2</b>	<ul style="list-style-type: none"> <li>● 5.NBT.B.5*</li> <li>● 5.NF.A.1</li> <li>● 5.NF.A.2</li> <li>● 5.NF.B.3</li> <li>● 5.NF.B.4</li> </ul>	<ul style="list-style-type: none"> <li>● Use equivalent fractions as a strategy to add and subtract fractions</li> <li>● Apply and extend previous understandings of multiplication and division</li> <li>● Perform operations with multi-digit whole numbers and with decimals to hundredths</li> </ul>	<p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>

<p><b>Unit 3</b></p>	<ul style="list-style-type: none"> <li>● 5.NF.B.4b</li> <li>● 5.NF.B.5</li> <li>● 5.NF.B.6</li> <li>● 5.NF.B.7*</li> <li>● 5.NBT.A.2*</li> <li>● 5.NBT.B.7*</li> <li>● 5.MD.A.1</li> </ul>	<ul style="list-style-type: none"> <li>● Apply and extend previous understandings of multiplication and division</li> <li>● Understand the place value system</li> <li>● Perform operations with multi-digit whole number</li> <li>● Convert like measurement units within a given measurement system</li> </ul>	
<p><b>Unit 4</b></p>	<ul style="list-style-type: none"> <li>● 5.G.A.1</li> <li>● 5.G.A.2</li> <li>● 5.OA.B.3</li> <li>● 5.G.B.3</li> <li>● 5.G.B.4</li> <li>● 5.MD.B.2</li> <li>● 5.NBT.B.5*</li> <li>● 5.NBT.B.7*</li> <li>● 5.NF.B.7*</li> <li>● 5.MD.C.3</li> <li>● 5.MD.C.4</li> <li>● 5.MD.C.5</li> </ul>	<ul style="list-style-type: none"> <li>● Graph points on the coordinate plane to solve real world and mathematical problems</li> <li>● Analyze patterns and relationships</li> <li>● Classify two dimensional figures into categories based on their properties</li> <li>● Represent and interpret data</li> <li>● Perform operations with multi-digit whole numbers and with decimals to hundredths</li> <li>● Apply and extend previous understanding of multiplication and division</li> </ul>	

		<ul style="list-style-type: none"><li>• Understand concepts of volume</li></ul>	
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<b>Subject: Math</b>	<b>Grade: 5</b>	<b>Unit: 1</b>	<b>60 Instructional Days</b>
<b>Content Standards</b>	<b>Suggested Standards for Mathematical Practice</b>	<b>Critical Knowledge &amp; Skills</b>	
<ul style="list-style-type: none"> <li>5.OA.A.1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.</li> </ul>	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> <li>Standard convention for performing operations (Order of operations, including grouping symbols)</li> </ul> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>evaluate numerical expressions that include grouping symbols (parentheses, brackets or braces).</li> <li>evaluate numerical expressions that include nested grouping symbols (for example, <math>3 \times [5 + (7 - 3)]</math>).</li> </ul> <p>Learning Goal 1: Evaluate numerical expressions that contain parentheses, brackets and braces.</p>	
<ul style="list-style-type: none"> <li>5.OA.A.2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as <math>2 \times (8 + 7)</math>. Recognize that <math>3 \times (18932 + 921)</math> is three times as large as</li> </ul>	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> <li>Order of operations, including grouping symbols</li> </ul> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>write a simple numerical expression when given a verbal description.</li> <li>interpret the quantitative relationships in numerical expressions without evaluating (simplifying) the expression.</li> </ul>	

<p>18932 + 921, without having to calculate the indicated sum or product</p>		<p>Learning Goal 2: Write numerical expressions when given a verbal description or word problem; interpret numerical expressions without evaluating them.</p>
<ul style="list-style-type: none"> <li>5.NBT.A.1. Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.</li> </ul>	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> <li>Quantitative relationships exist between the digits in place value positions of a multi-digit number.</li> </ul> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>explain that a digit in one place represents 1/10 of what it would represent in the place to its left.</li> <li>explain that a digit in one place represents ten times what it would represent in the place to its right.</li> </ul> <p>Learning Goal 3: Explain that a digit in one place represents 1/10 of what it would represent in the place to its left and ten times what it would represent in the place to its right.</p>
<p>5.NBT.A.2. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.</p>	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> <li>Scientific notation and exponents</li> </ul> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>explain patterns in the number of zeros of the product when multiplying a whole number by powers of 10.</li> <li>write powers of 10 using whole-number exponents</li> </ul>



		Learning Goal 4: Explain patterns in the number of zeros in the product when a whole number is multiplied by a power of 10; represent powers of 10 using whole-number exponents.
<ul style="list-style-type: none"> <li>5.NBT.B.5. Fluently multiply multidigit whole numbers using the standard algorithm.</li> </ul>	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> <li>No new concept(s) introduced</li> </ul> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>multiply a whole number of up to a four digits by a whole number of up two digits using the standard algorithm with accuracy and efficiency</li> </ul> <p>Learning Goal 5: Use the standard algorithm to multiply a whole number of up to a four digits by a whole number of up two digits.</p>
<ul style="list-style-type: none"> <li>5.NBT.B.6. Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations,</li> </ul>	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.7 Look for and make use of structure.regularity in repeated</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> <li>No new concept(s) introduced</li> </ul> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>divide to find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors using strategies based on place value, properties of operations, and the relationship between multiplication and division. • represent these operations with equations, rectangular arrays, and area models. • explain the calculation by referring to the model (equation, array, or area model).</li> </ul> <p>Learning Goal 6: Calculate whole number quotients of whole numbers</p>

<p>rectangular arrays, and/or area models.</p>	<p>reasoning.</p>	<p>with 4-digit dividends and 2-digit divisors; explain and represent calculations with equations, rectangular arrays, and area models.</p>
<p>● 5.NBT.A.3. Read, write, and compare decimals to thousandths. 5.NBT.A.3a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., <math>347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)</math>. 5.NBT.A.3b. Compare two decimals to thousandths based on meanings of the digits in each place, using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols to record the results of comparisons</p>	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): Multiple representations of whole numbers</p> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>● read and write decimals to thousandths using base-ten numerals.</li> <li>● read and write decimals to thousandths using number names.</li> <li>● read and write decimals to thousandths using expanded form.</li> <li>● compare two decimals to thousandths using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> symbols.</li> <li>● compare decimals when each is presented in a different form (base-ten numeral, number name, and expanded form).</li> </ul> <p>Learning Goal 7: Compare two decimals to thousandths using <math>&gt;</math>, <math>=</math>, and <math>&lt;</math> for numbers presented as base ten numerals, number names, and/or in expanded form.</p>
<p>5.NBT.A.4. Use place value understanding to round decimals to any place.</p>	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s): No new concept(s) introduced</p> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>● round decimals to any place value.</li> </ul> <p>Learning Goal 8: Round decimals to any place value</p>

Formative Assessments	Summative Assessments
<ul style="list-style-type: none"> <li>● Whiteboard/ Slate work</li> <li>● Quizzes</li> <li>● Entrance Slip</li> <li>● Exit Slip</li> </ul>	<ul style="list-style-type: none"> <li>● Test</li> <li>● Common Assessment</li> </ul>
Suggested Primary Resources	Suggested Supplemental Resources
<ul style="list-style-type: none"> <li>● MyMath Textbook</li> </ul>	<ul style="list-style-type: none"> <li>● Various Foldables</li> <li>● Reflex Math</li> <li>● IXL</li> <li>● Schoolhouse Rocks</li> <li>● Study Jams.com</li> <li>● Khan Academy</li> </ul>
Cross-Curricular Connections & 21 <sup>st</sup> Century Skills	
<ul style="list-style-type: none"> <li>● ELA - Open ended math problems using language from ELA <ul style="list-style-type: none"> <li>○ McGraw-Hill Activity Cards Writing Extension Activities</li> <li>○ McGraw-Hill Graphic Novels</li> </ul> </li> <li>● McGraw-Hill - Real-World Problem Solving Math and Social Studies “Our Nation’s 50 States” (Numbers and Operations)</li> <li>● McGraw-Hill Real-World Problem Solving Math and Science “ Nature’s Delicate Balance” (Numbers and Operations, and Algebra)</li> </ul>	
Essential Questions	Enduring Understanding
<p>How do I use symbols such as parentheses, brackets, and braces to evaluate expressions?</p> <p>What is a numerical expression?</p> <p>What is the order of operations?</p> <p>How can I interpret numerical expressions without evaluating them?</p>	<p>I can solve expressions by using symbols such as parentheses, brackets, and braces to evaluate expressions.</p> <p>A numerical expression combines numbers and operations, where words or phrases are matched with numbers.</p>

<p>How can I use rules to create number patterns?</p> <p>How does the position of a digit affect the value of a number?</p> <p>How can I use whole-number exponents to denote powers of 10?</p> <p>How can I fluently multiply whole numbers?</p> <p>How can I divide whole numbers?</p> <p>How can I write quotients as equations?</p>	<p>The order of operations is a way to simplify problems by grouping numbers operations together and solving them in this order – multiply, divide, add and subtract.</p> <p>I can interpret numerical expressions without evaluating them, i.e., by making inferences using a number line.</p> <p>I can use rules to create number patterns by following this sequence: each number in a pattern is called a term; the terms form a sequence, which is based on the rule used to create the pattern.</p> <p>I know that a digit in one place represents 10 times as much as it represent in the place to the right and 1/10 of what it represent in the place to its left.</p> <p>I can explain patterns in the number of zeros of the product when multiplying a number by powers of 10.</p> <p>I can multiply by 2 digit by 1 digit/ 3 digits by 1 digit/ 2 digits by 2 digits/ 3 digits by 2 digits/ 4 digits by 2 digits</p> <p>When I divide whole numbers, multiplication and division are inverse operations.</p> <p>When I divide, I can use the result to write an equation that represents the dividend.</p>
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<b>Subject: Math</b>	<b>Grade: 5</b>	<b>Unit: 2</b>	<b>40 Instructional Days</b>
<b>Content Standards</b>	<b>Suggested Standards for Mathematical Practice</b>	<b>Critical Knowledge &amp; Skills</b>	

<ul style="list-style-type: none"> <li>5.NBT.B.5. Fluently multiply multi-digit whole numbers using the standard algorithm. *(benchmarked)</li> </ul>	<p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.7 Look for and make use of structure</p>	<p>Concept(s): No new concept(s) introduced</p> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>multiply multi-digit whole numbers with accuracy and efficiency.</li> </ul> <p>Learning Goal 1: Fluently multiply multi-digit whole numbers with accuracy and efficiency</p>
<p>5.NF.A.1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, <math>\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}</math> (in general, <math>\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}</math>).</p>	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> <li>Equivalent fractions can be used to add and subtract fractions.</li> </ul> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>produce an equivalent sum (or difference) of fractions with like denominators from the original sum (or difference) of fractions that has unlike denominators.</li> <li>add and subtract fractions with unlike denominators by replacing given fractions with equivalent fractions.</li> </ul> <p>Learning Goal 2: Add and subtract fractions (including mixed numbers) with unlike denominators by replacing the given fractions with equivalent fractions having like denominators</p>

	<p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>	
<ul style="list-style-type: none"> <li>5.NF.A.2. Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result <math>2/5 + 1/2 = 3/7</math>, by observing that <math>3/7 &lt; 1/2</math>.</li> </ul>	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> <li>No new concept(s) introduced</li> </ul> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>add and subtract fractions, including mixed numbers, with unlike denominators to solve word problems.</li> <li>represent calculations and solutions with visual fraction models and equations</li> <li>estimate answers using benchmark fractions and explain whether the answer is reasonable.</li> <li>estimate answers by reasoning about the size of the fractions and explain whether the answer is reasonable</li> </ul> <p>Learning Goal 3: Solve word problems involving adding or subtracting fractions with unlike denominators, and determine if the answer to the word problem is reasonable, using estimations with benchmark fractions.</p>
<ul style="list-style-type: none"> <li>5.NF.B.3. Interpret a fraction as division of the numerator by the denominator (<math>a/b = a \div b</math>). Solve word problems involving division of whole numbers</li> </ul>	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> <li>Fractions represent division.</li> </ul> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>represent a fraction as a division statement (<math>a/b = a \div b</math>).</li> </ul>

<p>leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret <math>\frac{3}{4}</math> as the result of dividing 3 by 4, noting that <math>\frac{3}{4}</math> multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size <math>\frac{3}{4}</math>. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?</p>	<p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<ul style="list-style-type: none"> <li>• divide whole numbers in order to solve real world problems, representing the quotient as a fraction or a mixed number.</li> <li>• represent word problems involving division of whole numbers using visual fraction models and equations.</li> </ul> <p>Learning Goal 4: Interpret a fraction as a division of the numerator by the denominator; solve word problems in which division of whole numbers leads to fractions or mixed numbers as solutions.</p>
<p>5.NF.B.4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. 5.NF.B.4a. Interpret the product <math>(\frac{a}{b}) \times q</math> as a parts of a partition of <math>q</math> into <math>b</math> equal parts; equivalently, as the result of a sequence of operations <math>a \times q \div b</math>. For example, use a visual fraction</p>	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p>	<p>Concept(s): No new concept(s) introduced</p> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>• for whole number or fraction <math>q</math>, represent <math>(\frac{a}{b}) \times q</math> as a parts of a partition of <math>q</math> into <math>b</math> equal parts [e.g. using a visual fraction model, <math>(\frac{3}{4}) \times 5</math> can be represented by 3 parts, after partitioning 5 objects into 4 equal parts].</li> <li>• for whole number or fraction <math>q</math>, represent <math>(\frac{a}{b}) \times q</math> as <math>a \times q \div b</math> [e.g. showing that <math>(\frac{2}{5}) \times 3</math> is equivalent to <math>(2 \times 3) \div 5</math>].</li> <li>• from a story context, interpret <math>(\frac{a}{b}) \times q</math> as a parts of a partition of <math>q</math> into <math>b</math> equal parts.</li> </ul>

<p>model to show <math>(\frac{2}{3}) \times 4 = \frac{8}{3}</math>, and create a story context for this equation. Do the same with <math>(\frac{2}{3}) \times (\frac{4}{5}) = \frac{8}{15}</math>. (In general, <math>(\frac{a}{b}) \times (\frac{c}{d}) = \frac{ac}{bd}</math>.) 5.NF.B.4b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.</p>	<p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p>	<ul style="list-style-type: none"> <li>• tile a rectangle having fractional side lengths using unit squares of the appropriate unit fraction [e.g. given a <math>3\frac{1}{4}</math> inch x <math>7\frac{3}{4}</math> inch rectangle, tile the rectangle using <math>\frac{1}{4}</math> inch tiles].</li> <li>• show that the area found by tiling with unit fraction tiles is the same as would be found by multiplying the side lengths.</li> </ul> <p>Learning Goal 5: For whole number or fraction <math>q</math>, interpret the product <math>(\frac{a}{b}) \times q</math> as a parts of a whole partitioned into <math>b</math> equal parts added <math>q</math> times (e.g. using a visual fraction model).</p> <p>Learning Goal 6: Tile a rectangle with unit fraction squares to find the area and multiply side lengths to find the area of the rectangle, showing that the areas are the same.</p>
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Formative Assessments	Summative Assessments
<ul style="list-style-type: none"> <li>• Whiteboard/ Slate work</li> <li>• Quizzes</li> <li>• Entrance Slip</li> <li>• Exit Slip</li> </ul>	<ul style="list-style-type: none"> <li>• Test</li> <li>• Common Assessment</li> </ul>
Suggested Primary Resources	Suggested Supplemental Resources
<ul style="list-style-type: none"> <li>• MyMath Textbook</li> </ul>	<ul style="list-style-type: none"> <li>• Various Foldables</li> <li>• Reflex Math</li> <li>• IXL</li> <li>• Schoolhouse Rocks</li> </ul>



- Study Jams.com
- Khan Academy

**Cross-Curricular Connections & 21<sup>st</sup> Century Skills**

- ELA - Open ended math problems using language from ELA
  - McGraw-Hill Activity Cards Writing Extension Activities
  - McGraw-Hill Graphic Novels
- McGraw-Hill - Real-World Problem Solving Math and Social Studies “Life in Colonial America” (Fractions)
- McGraw-Hill Real-World Problem Solving Math and Science “ Nature’s Delicate Balance” and “ How Big is the Solar System (Measurement)

**Essential Questions**

How can I fluently multiply whole numbers?

How can I subtract fractions with like and unlike denominators?

How can I subtract mixed numbers?

**Enduring Understanding**

I can multiply by 2 digit by 1 digit/ 3 digits by 1 digit/ 2 digits by 2 digits/ 3 digits by 2 digits/ 4 digits by 2 digits

I can subtract fractions with like denominators by keeping the denominator the same and subtracting the numerator. I can subtract with unlike denominators by finding the least common denominator and then subtract.

I can subtract mixed numbers by writing them as improper fractions and convert them so they have like denominators.

Subject: Math	Grade: 5	Unit: 3	40 Instructional Days
Content Standards	Suggested Standards for Mathematical Practice	Critical Knowledge & Skills	
<ul style="list-style-type: none"> <li>5.NF.B.4b Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.</li> <li>5.NF.B.4b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas</li> </ul>	<p>MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s): No new concept(s) introduced Students are able to:</p> <ul style="list-style-type: none"> <li>multiply fractional side lengths to find areas of rectangles.</li> <li>represent fraction products as rectangular areas.</li> <li>multiply a fraction by a whole number.</li> <li>multiply a fraction by a fraction, in general,</li> </ul> <p>if <math>q</math> is a fraction <math>c/d</math>, then <math>(a/b) \times (c/d) = a(1/b) \times c(1/d) = ac(1/b)(1/d) = ac(1/bd) = ac/bd</math>. Learning Goal 1: Multiply fractions by whole numbers and fractions by fractions, drawing visual models to represent products, showing <math>(a/b) \times (c/d) = ab(1/bd)</math>, and creating story contexts.</p> <p>Learning Goal 1: Multiply fractions by whole numbers and fractions by fractions, drawing visual models to represent products, showing <math>(a/b) \times (c/d) = ab(1/bd)</math>, and creating story contexts.</p>	
<ul style="list-style-type: none"> <li>5.NF.B.5 Interpret multiplication as scaling (resizing), by:</li> </ul>	<p>MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.6 Attend to</p>	<p>Concept(s): • Multiplication as resizing (scaling) Students are able to: • compare the size of a product to the size of one of its factors, considering the size of the other factor (at least one factor is a fraction). • explain why</p>	

<ul style="list-style-type: none"> <li>● 5.NF.B.5a. Comparing 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.</li> <li>● 5.NF.B.5b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence <math>a/b = (n \times a)/(n \times b)</math> to the effect of multiplying <math>a/b</math> by 1.</li> </ul>	<p>precision. MP.7 Look for and make use of structure.</p>	<p>multiplying a given number by a fraction greater than 1 results in a product greater than the given number. • explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number. • explain that multiplying a given number by a fraction equivalent to 1 does not change the product.</p> <p>Learning Goal 2: Explain how a product is related to the magnitude of the factors, including cases in which one factor is a fraction greater than 1 and cases in which one factor is a fraction less than 1.</p>
<ul style="list-style-type: none"> <li>● 5.NF.B.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or</li> </ul>	<p>MP.4 Model with mathematics. MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the</p>	<p>No new concepts introduced:</p> <p>Students are able to: • multiply fractions and mixed numbers in order to solve real world problems. • represent the solution to these real world problems with visual fraction models and equations.</p>

<p>equations to represent the problem.</p>	<p>reasoning of others.MP.5 Use appropriate tools strategically.MP.6 Attend to precision. MP.7 Look for and make use of structure.MP.8 Look for and express regularity in repeated reasoning</p>	<p>Learning Goal 3: Solve real-world problems involving multiplication of fractions (including mixed numbers),</p>
<ul style="list-style-type: none"> <li>● 5.NF.B.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. *(benchmarked)</li> <li>● 5.NF.B.7a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for <math>(1/3) \div 4</math>, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that <math>(1/3) \div 4 = 1/12</math> because <math>(1/12) \times 4 = 1/3</math>.</li> <li>● 5.NF.B.7b. Interpret division of a whole number by a unit fraction, and compute such</li> </ul>	<p>MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and express regularity in repeated reasoning</p>	<p>Concept(s): No new concept(s) introduced Students are able to: • use a story context to interpret division of a unit fraction by a whole number. • divide of a unit fraction by a whole number and represent with visual fraction models. • use a story context to interpret division of a whole number by a unit fraction. • divide of a whole number by a unit fraction and represent with visual fraction models. • divide unit fractions by whole numbers to solve real-world problems, using visual fraction models and equations to represent the problem. • divide whole numbers by unit fractions to solve real-world problems, using visual fraction models and equations to represent the problem.</p> <p>Learning Goal 4: Divide a unit fraction by a non-zero whole number and interpret by creating a story context or visual fraction model.</p> <p>Learning Goal 5: Divide a whole number by a unit fraction and interpret by creating a story context or visual fraction model.</p> <p>Learning Goal 6: Solve real-world problems involving division of unit fractions by whole numbers or whole numbers by unit fractions.</p>

<p>quotients. For example, create a story context for <math>4 \div (1/5)</math>, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that <math>4 \div (1/5) = 20</math> because <math>20 \times (1/5) = 4</math>.</p> <ul style="list-style-type: none"> <li>● 5.NF.B.7c. 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. For example, how much chocolate will each person get if 3 people share <math>1/2</math> lb of chocolate equally? How many <math>1/3</math>-cup servings are in 2 cups of raisins?</li> </ul>		
<ul style="list-style-type: none"> <li>● 5.NBT.A.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point</li> </ul>	<p>MP.2 Reason abstractly and quantitatively. MP.6 Attend to precision. MP.7 Look for and make use of structure.</p>	<p>Concept(s): No new concept(s) introduced Students are able to: • explain patterns in the placement of the decimal point when multiplying or dividing a decimal by powers of 10. • write powers of 10 using whole-number exponents.</p>

<p>when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.</p>		<p>Learning Goal 7: Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10; represent powers of 10 using whole-number exponents.</p>
<ul style="list-style-type: none"> <li>5.NBT.B.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. *(benchmarked)</li> </ul>	<p>MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure.</p>	<p>Concept(s): No new concept(s) introduced Students are able to: • add and subtract decimals to hundredths using concrete models and drawings. • multiply and divide decimals to hundredths using concrete models and drawings. • add, subtract, multiply, and divide decimals to hundredths using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. • relate the strategy to the written method and explain the reasoning used.</p> <p>Learning Goal 8: Add, subtract, multiply, and divide decimals to hundredths using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; explain the reasoning used, relating the strategy to the written method.</p>
<ul style="list-style-type: none"> <li>5.MD.A.1 Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.</li> </ul>	<p>MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.5 Use appropriate tools strategically</p>	<p>Concept(s): Measurement units can be converted within a given measurement system. Students are able to: • convert from one measurement unit to another within a given measurement system (e.g., convert 5 cm to 0.05 m, convert minutes to hours). • solve multi-step, real world problems that require conversions.</p>

Formative Assessments	Summative Assessments
<ul style="list-style-type: none"> <li>● Whiteboard/ Slate work</li> <li>● Quizzes</li> <li>● Entrance Slip</li> <li>● Exit Slip</li> </ul>	<ul style="list-style-type: none"> <li>● Test</li> <li>● Common Assessment</li> </ul>
Suggested Primary Resources	Suggested Supplemental Resources
<ul style="list-style-type: none"> <li>● MyMath Textbook</li> </ul>	<ul style="list-style-type: none"> <li>● Various Foldables</li> <li>● Reflex Math</li> <li>● IXL</li> <li>● Schoolhouse Rocks</li> <li>● Study Jams.com</li> <li>● Khan Academy</li> </ul>
Cross-Curricular Connections & 21 <sup>st</sup> Century Skills	
<ul style="list-style-type: none"> <li>● ELA - Open ended math problems using language from ELA <ul style="list-style-type: none"> <li>○ McGraw-Hill Activity Cards Writing Extension Activities</li> <li>○ McGraw-Hill Graphic Novels</li> </ul> </li> <li>● McGraw-Hill - Real-World Problem Solving Math and Social Studies “Exploring the World by Sea” and “City Planning” (Measurement)</li> <li>● McGraw-Hill Real-World Problem Solving Math and Science “ Nature’s Delicate Balance” and “How Big is the Solar System” (Numbers and Operations, and Algebra)</li> </ul>	

Essential Questions	Enduring Understanding
<p>How can I find out whether fractions are equivalent?</p> <p>What are a common factor and the greatest common factor?</p> <p>How do I add mixed numbers?</p> <p>How can I subtract fractions with like and unlike denominators?</p>	<p>I can find out if fractions are equivalent by drawing pictures.</p> <p>A number of a factor of two or more numbers is a common factor. The greatest number that is a factor of two or more numbers is the greatest common denominator.</p>

<p>How can I subtract mixed numbers?</p> <p>How can I multiply fractions and mixed numbers?</p> <p>How can I divide fractions?</p>	<p>I can add mixed numbers by writing each mixed number as an improper fraction; then convert them to have like denominators; finally, add the fractions and write the answer in simplest form.</p> <p>I can subtract fractions with like denominators by keeping the denominator the same and subtracting the numerator. I can subtract with unlike denominators by finding the least common denominator and then subtract.</p> <p>I can subtract mixed numbers by writing them as improper fractions and convert them so they have like denominators.</p> <p>I can multiply a fraction by a fractions and fractions and whole numbers by using models.</p> <p>I can divide fractions by dividing the numerator by the denominator.</p>
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<b>Subject: Math</b>	<b>Grade: 5</b>	<b>Unit: 4</b>	<b>40 Instructional Days</b>
<b>Content Standards</b>	<b>Suggested Standards for Mathematical Practice</b>	<b>Critical Knowledge &amp; Skills</b>	
<ul style="list-style-type: none"> <li>5.G.A.1. Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second 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).</li> </ul>	<p>MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> <li>Coordinate plane as perpendicular number lines.</li> <li>Perpendicular number lines (axes) define a coordinate system.</li> <li>Intersection of the lines (origin) coincides with the 0 on each number line.</li> <li>Given points in the plane is located using an ordered pair of numbers (coordinates).</li> <li>First numbers in an ordered pair indicates how far to travel from the origin in the direction of the x-axis.</li> <li>Second numbers in an ordered pair indicate how far to travel in the direction of the y-axis. Students are able to:</li> <li>graph points defined by whole number coordinates in the first quadrant of the coordinate plane in order to represent real world and mathematical problems.</li> <li>interpret coordinates in context.</li> </ul> <p>Learning Goal 1: Represent real world and mathematical problems by graphing points defined by whole number coordinates in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.</p>	

<ul style="list-style-type: none"> <li>5.G.A.2. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.</li> </ul>		
<ul style="list-style-type: none"> <li>5.OA.A.3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence</li> </ul>	<p>MP.2 Reason abstractly and quantitatively. MP.7 Look for and make use of structure.</p>	<p>Concept(s): No new concept(s) introduced Students are able to:</p> <ul style="list-style-type: none"> <li>use two rules to create two numerical patterns.</li> <li>compare corresponding terms (e.g. compare the first terms in each list, compare the second terms in each list, etc).</li> <li>identify the relationship between corresponding terms and write ordered pairs.</li> <li>graph the ordered pairs.</li> </ul> <p>Learning Goal 2: Generate two numerical patterns from two given rules, identify the relationship between corresponding terms, create ordered pairs and graph the ordered pairs.</p>

<p>are twice the corresponding terms in the other sequence. Explain informally why this is so.</p>		
<ul style="list-style-type: none"> <li>● 5.G.B.3. Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.</li> <li>● 5.G.B.4. Classify two dimensional figures in a hierarchy based on properties.</li> </ul>	<p>MP.2 Reason abstractly and quantitatively.  MP.3 Construct viable arguments and critique the reasoning of others.  MP.5 Use appropriate tools strategically.  MP.6 Attend to precision.  MP.7 Look for and make use of structure.</p>	<p>Concept(s): • Attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. Students are able to: • classify two-dimensional figures (triangles, quadrilaterals) based on shared attributes (e.g. parallel sides, number of sides, angle size, side length, etc.). • arrange the categories/subcategories of figures (e.g. squares, rectangles, trapezoids, etc) in a hierarchy based on attributes. • identify attributes of a two-dimensional shape based on attributes of the categories to which it belongs.</p> <p>Learning Goal 3: Classify two- dimensional figures in a hierarchy based on properties</p>
<ul style="list-style-type: none"> <li>● 5.MD.B.2. Make a line plot to display a data set of measurements in fractions of a unit (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>). Use operations on fractions for this grade to solve problems involving information presented in</li> </ul>	<p>MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of</p>	<p>Concept(s): No new concept(s) introduced Students are able to: • use measurement information to create a line plot. • using measurement information presented in line plots, add, subtract, multiply and divide fractions in order to solve problems.</p> <p>Learning Goal 4: Make a line plot to display a data set in measurements in fractions of a unit (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>) and use it to solve problems involving the four operations on fractions with unlike denominators.</p>

<p>line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.</p>	<p>structure.</p>	
<ul style="list-style-type: none"> <li>5.NBT.B.5. Fluently multiply multi-digit whole numbers using the standard algorithm. *(benchmarked)</li> </ul>	<p>MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure.</p>	<p>Concept(s): No new concept(s) introduced Students are able to:</p> <ul style="list-style-type: none"> <li>multiply multi-digit whole numbers with accuracy and efficiency.</li> </ul> <p>Learning Goal 5: Fluently multiply multi-digit whole numbers with accuracy and efficiency</p>
<ul style="list-style-type: none"> <li>5.NBT.B.7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and</li> </ul>	<p>MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.7 Look for and make use of structure.</p>	<p>Concept(s): No new concept(s) introduced Students are able to:</p> <ul style="list-style-type: none"> <li>add and subtract decimals to hundredths using concrete models and drawings.</li> <li>multiply and divide decimals to hundredths using concrete models and drawings.</li> <li>add, subtract, multiply, and divide decimals to hundredths using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.</li> <li>relate the strategy to the written method and explain the</li> </ul>

<p>subtraction; relate the strategy to a written method and explain the reasoning used. *(benchmarked)</p>		<p>reasoning used.</p> <p>Learning Goal 6: Add, subtract, multiply, and divide decimals to hundredths using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; explain the reasoning used, relating the strategy to the written method.</p>
<ul style="list-style-type: none"> <li>5.NF.B.7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. *(benchmarked)</li> <li>5.NF.B.7c. 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. For example, how much chocolate will each person get if 3 people share <math>\frac{1}{2}</math> lb of chocolate equally?</li> </ul>	<p>MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.3 Construct viable arguments and critique the reasoning of others. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure. MP.8 Look for and expand critique the reasoning of others.</p>	<p>Concept(s): No new concept(s) introduced Students are able to:</p> <ul style="list-style-type: none"> <li>use a story context to interpret division of a unit fraction by a whole number.</li> <li>use a story context to interpret division of a whole number by a unit fraction.</li> <li>divide unit fractions by whole numbers to solve real world problems, using visual fraction models and equations to represent the problem.</li> <li>divide whole numbers by unit fractions to solve real world problems, using visual fraction models and equations to represent the problem.</li> </ul> <p>Learning Goal 7: Solve real world problems involving division of unit fractions by whole numbers or whole numbers by unit fractions.</p>

<p>How many <math>\frac{1}{3}</math>- cup servings are in 2 cups of raisins?</p>		
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<ul style="list-style-type: none"> <li>5.MD.C.3. Recognize volume as an attribute of solid figures and understand concepts of volume measurement.</li> <li>5.MD.C.5a. A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.</li> <li>5.MD.C.5b. A solid figure which can be packed without gaps or overlaps using <math>n</math> unit cubes is said to have a volume of <math>n</math> cubic units.</li> </ul> <p>5.MD.C.4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and nonstandard units.</p>	<p>MP.1 Make sense of problems and persevere in solving them. MP.2 Reason abstractly and quantitatively. MP.4 Model with mathematics. MP.5 Use appropriate tools strategically. MP.6 Attend to precision. MP.7 Look for and make use of structure.</p>	<p>Concept(s):</p> <p>Volume is the amount of space inside a solid (3-dimensional) figure.</p> <p>Cubes with side length of 1 unit, called “a unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.</p> <p>Solid figures which can be packed without gaps or overlaps using <math>n</math> unit cubes is said to have a volume of <math>n</math> cubic units.</p> <p>Volume of a solid can be determined using unit cubes of other dimensions.</p> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>count unit cubes in order to measure the volume of a solid.</li> <li>use unit cubes of centimeters, inches, and/or other units to measure volume</li> </ul> <p>Learning Goal 8: Measure volume by counting the total number cubic units required to fill a figure without gaps or overlaps.</p>
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<ul style="list-style-type: none"> <li>● <i>5.MD.C.5. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. 5.MD.C.5a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. 5.MD.C.5b. Apply the formulas <math>V = l \times w \times h</math> and <math>V = B \times h</math> for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems. 5.MD.C.5c. Recognize volume as additive. Find volumes of solid figures</i></li> </ul>	<p>MP.1 Make sense of problems and persevere in solving them.</p> <p>MP.2 Reason abstractly and quantitatively.</p> <p>MP.3 Construct viable arguments and critique the reasoning of others.</p> <p>MP.4 Model with mathematics.</p> <p>MP.5 Use appropriate tools strategically.</p> <p>MP.6 Attend to precision.</p> <p>MP.7 Look for and make use of structure.</p> <p>MP.8 Look for and express regularity in repeated reasoning.</p>	<p>Concept(s):</p> <ul style="list-style-type: none"> <li>● Volume is additive: volumes of composite solids can be determined by adding the volumes of each solid.</li> </ul> <p>Students are able to:</p> <ul style="list-style-type: none"> <li>● pack right rectangular prisms with cubes to find volume and multiply side lengths of the right rectangular prism to find volume, showing that they are the same.</li> <li>● pack right rectangular prisms with cubes to find volume and multiply height by the area of the base, showing that they are the same.</li> <li>● explain how both volume formulas relate to counting the cubes in one layer and multiplying that value by the number of layers (height).</li> <li>● write the volume of an object as the product of three whole numbers.</li> <li>● solve real-world and mathematical problems using the formulas <math>V = l \times w \times h</math> and <math>V = B \times h</math>.</li> <li>● find the volume of a composite solid composed of two right rectangular prisms.</li> </ul> <p>Learning Goal 9: Show that the volume of a right rectangular prism found by counting all the unit cubes is the same as the formulas <math>V = l \times w \times h</math> or <math>V = B \times h</math>.</p> <p>Learning Goal 10: Apply formulas to solve real world and mathematical problems involving volumes of right rectangular prisms that have whole number edge lengths.</p>
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<p><i>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</i></p>		<p>Learning Goal 11: Find the volume of a composite solid figure composed of two non-overlapping right rectangular prisms, applying this strategy to solve real-world problems.</p>
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<p><b>Formative Assessments</b></p>	<p><b>Summative Assessments</b></p>
<ul style="list-style-type: none"> <li>● Whiteboard/ Slate work</li> <li>● Quizzes</li> <li>● Entrance Slip</li> <li>● Exit Slip</li> </ul>	<ul style="list-style-type: none"> <li>● Test</li> <li>● Common Assessment</li> </ul>
<p><b>Suggested Primary Resources</b></p>	<p><b>Suggested Supplemental Resources</b></p>
<ul style="list-style-type: none"> <li>● MyMath Textbook</li> </ul>	<ul style="list-style-type: none"> <li>● Various Foldables</li> <li>● Reflex Math</li> <li>● IXL</li> <li>● Schoolhouse Rocks</li> <li>● Study Jams.com</li> <li>● Khan Academy</li> </ul>
<p><b>Cross-Curricular Connections &amp; 21<sup>st</sup> Century Skills</b></p>	
<ul style="list-style-type: none"> <li>● ELA - Open ended math problems using language from ELA <ul style="list-style-type: none"> <li>○ McGraw-Hill Activity Cards Writing Extension Activities</li> <li>○ McGraw-Hill Graphic Novels</li> </ul> </li> <li>● McGraw-Hill - Real-World Problem Solving Math and Social Studies “City Planning” and “Exploring the World by Sea” (Measurement)</li> <li>● McGraw-Hill Real-World Problem Solving Math and Science “Nature’s Delicate Balance” and “How Big is the Solar System”</li> </ul>	



Essential Questions	Enduring Understanding
<p>What is a coordinate plane?</p> <p>How can I convert customary units?</p> <p>Do I need to use more than one operation when I use line plots?</p> <p>What is a coordinate plane?</p> <p>What are the properties of two-dimensional figures? What are the types of angles?</p> <p>How can triangles be classified?</p> <p>How can quadrilaterals be classified?</p> <p>What is volume?</p> <p>How can I find the volume of a rectangular prism?</p>	<p>I know that a coordinate plane is a two dimensional system in which the coordinates of a point are described by its distance from two perpendicular number lines.</p> <p>I can convert metric and customary units within a category by dividing or multiplying.</p> <p>A line plot shows how closely grouped together or how spread out over a range the data are. I can use line plots to solve problems in possibly more than one operation.</p> <p>A coordinate plane is a two dimensional system in which the coordinates of a point are described by its distance from two perpendicular number lines. The pair of numbers used to locate a point on the plane is the ordered pair. The x-coordinate is the first number in an ordered pair.</p> <p>Polygons figures have different shapes and different sizes – it is a closed plane figure whose sides are line segments. They are regular if all their sides are the same length; they are triangles if they have three sides; they are quadrilaterals if they have four sides. The types of angles are: right angles, acute angles and obtuse angles. A triangle can be classified by the lengths of the sides and the measures of its angles. A quadrilateral can be classified by the characteristics of their sides and their angles.</p> <p>Volume is a measure of how much space a solid figure encloses and is measured in cubic units.</p>

	I can find the volume of a rectangular prism with this formula: $V=l \times w \times h$ or $V=B \times h$
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## Appendix A

Audubon Public Schools

**Engaging Students ~ Fostering Achievement ~ Cultivating 21st Century Global Skills**

**Written By: Beth Canzanese**

**Revised By: Eunice Englehart**

**Approved June 2017**

**Course Title: Fifth Grade Math      Unit Name: Operations and Algebraic Thinking**

**Grade Level: 5**

<p><b>Content Statements</b> Writing and interpreting numerical expressions; using the order of operations; using rules to create numerical patterns</p>	<p><b>NJSLS:</b> 5.OA.1-3</p>
<p><b>Overarching Essential Questions</b> Why do I need to learn Algebra?</p>	<p><b>Overarching Enduring Understandings</b> Algebra is a part of my everyday life.</p>
<p><b>Unit Essential Questions</b> <b>How do I use symbols such as parentheses, brackets, and braces to evaluate expressions?</b>  What is a numerical expression?</p>	<p><b>Unit Enduring Understandings</b> I can solve expressions by using symbols such as parentheses, brackets, and braces to evaluate expressions. A numerical expression combines numbers and operations, where words or phrases are matched with numbers.</p>

<p>What is the order of operations?</p> <p>How can I interpret numerical expressions without evaluating them?</p> <p>How can I use rules to create number patterns?</p> <p>What is a coordinate plane?</p> <p>How can I use two numerical patterns to identify relationships between corresponding terms?</p> <p>How can I form ordered pairs and graph them on a coordinate plane?</p>	<p>The order of operations is a way to simplify problems by grouping numbers operations together and solving them in this order – multiply, divide, add and subtract.</p> <p>I can interpret numerical expressions without evaluating them, i.e., by making inferences using a number line.</p> <p>I can use rules to create number patterns by following this sequence: each number in a pattern is called a term; the terms form a sequence, which is based on the rule used to create the pattern.</p> <p>I know that a coordinate plane is a two dimensional system in which the coordinates of a point are described by its distance from two perpendicular number lines.</p>
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<p><b>Unit Rationale</b></p> <p>Students need to understand the basic algebraic operations in order to perform the everyday math they need to accomplish to solve everyday problems that require algebraic thinking.</p>	<p><b>Unit Overview</b></p> <p>Students will write and interpret numerical expressions; use the order of operations; and use rules to create numerical patterns in order to solve problems that involve algebra.</p>
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<p><b>Content Statements</b> Find equivalent fractions; change mixed numbers to improper fractions, change improper fractions to mixed numbers and compare fractions; multiply and divide fractions.</p>	<p><b>NJSLS:</b> 5.NP.1-3 5.NF.2, 4-7</p>
<p><b>Overarching Essential Questions</b> How will knowing how to use fractions help me solve complex mathematical problems?</p>	<p><b>Overarching Enduring Understandings</b> Fractions are connected to decimals. Understanding decimals enables me to perform the mathematics I need for higher level problems.</p>
<p><b>Unit Essential Questions</b> How can I find out whether fractions are equivalent? What are a common factor and the greatest common factor? How do I add mixed numbers? How can I subtract fractions with like and unlike denominators? How can I subtract mixed numbers? How can I multiply fractions and mixed numbers? How can I divide fractions?</p>	<p><b>Unit Enduring Understandings</b> I can find out if fractions are equivalent by drawing pictures. A number of a factor of two or more numbers is a common factor. The greatest number that is a factor of two or more numbers is the greatest common denominator. I can add mixed numbers by writing each mixed number as an improper fraction; then convert them to have like denominators; finally, add the fractions and write the answer in simplest form. I can subtract fractions with like denominators by keeping the denominator the same and subtracting the numerator. I can subtract with unlike denominators by finding the least common denominator and then subtract. I can subtract mixed numbers by writing them as improper fractions and convert them so they have like denominators. I can multiply a fraction by a fractions and fractions and whole numbers by using models. I can divide fractions by dividing the numerator by the denominator.</p>

<p><b>Unit Rationale</b> The extension of the knowledge of fractions will provide the opportunity for students to be able to solve the many real world applications of fractions and mixed numbers.</p>	<p><b>Unit Overview</b> Students will extend their knowledge of fractions and the real world applications in which you need to know how to compute with fractions and mixed numbers.</p>
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**Course Title Fifth Grade Math**

**Unit Name: Numbers and Operations in Base Ten: Decimals**  
**Grade Level: 5**

<p><b>Content Statements</b> Read, write, compare, order, and compute with decimals.</p>	<p><b>NJSLS:</b> 5.NBT.1-7</p>
<p><b>Overarching Essential Questions</b> How will knowing how to compute with decimals connect to my life?</p>	<p><b>Overarching Enduring Understandings</b> If I can use decimals, I can compute money problems and understand more complex math in middle school</p>
<p><b>Unit Essential Questions</b> <b>How does the position of a digit affect the value of a number?</b>  ? How can I use whole-number exponents to denote powers of 10?  How can I fluently multiply whole numbers?</p>	<p><b>Unit Enduring Understandings</b> I know that a digit in one place represents 10 times as much as it represent in the place to the right and 1/10 of what it represent in the place to its left.  I can explain patterns in the number of zeros of the product when multiplying a number by powers of 10.  I can multiply by 2 digit by 1 digit/3digits by 1 digit/2digits by 2 digits/ 3 digits by 2 digits/ 4 digits by 2 digits</p>

<p>How can I divide whole numbers?</p> <p>How can I write quotients as equations?</p> <p>How can I read and write decimals?</p> <p>How do I compare decimals?</p> <p>How do I round decimals?</p> <p>How can I add or subtract decimals? How do I multiply decimals?</p> <p>How do I divide decimals?</p>	<p>When I divide whole numbers, multiplication and division are inverse operations. When I divide, I can use the result to write an equation that represents the dividend.</p> <p>I can use models to understand decimals. I can read a decimal number from left to right; the number to the right of the decimal is the whole number. I can use place value to write decimals in expanded form. I can compare decimals by looking at each value from left to right. I can round decimals by looking at the number to the right of the place value. If it is 5 or more round to the next number. I can use place value to add or subtract decimals.</p> <p>I can use a pattern to multiply a decimal number by 10, 100 or 1,000. I can multiply decimals by doing the same process as whole numbers and then finding the total number of decimal places in the factors; finally I can count that many places from the right in the product to place the decimal point. I can use the relationship between multiplication and division to understand decimal division.</p>
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<p><b>Unit Rationale</b> Students need to have a foundation in subtraction estimation and place value tables so they can solve multi-digit mathematical problems.</p>	<p><b>Unit Overview</b> Students will read, write, compare, order, and compute with decimals by rounding, estimating and choosing the appropriate operation.</p>
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**Course Title: Fifth Grade Math      Unit Name: Measurement and Data**  
**Grade Level: 5**

<p><b>Content Statements</b> Convert among customary units and metric units for length, weight and capacity; read and interpret measurement data; use cubic units to find volume of rectangular prisms; find volumes of irregular solids.</p>	<p><b>NJSLS:</b> 4.MD.1-4 4.NF.6</p>
<p><b>Overarching Essential Questions</b> How can I apply what I have learned about measurement?</p>	<p><b>Overarching Enduring Understandings</b> I can compare and convert measurements, solve measurement problems and use line plots to interpret data.</p>
<p><b>Unit Essential Questions</b> How can I convert customary units? Do I need to use more than one operation when I use line plots? What is volume? How can I find the volume of a rectangular prism?</p>	<p><b>Unit Enduring Understandings</b> I can convert metric and customary units within a category by dividing or multiplying. A line plot shows how closely grouped together or how spread out over a range the data are. I can use line plots to solve problems in possibly more than one operation. Volume is a measure of how much space a solid figure encloses and is measured in cubic units.</p>

	I can find the volume of a rectangular prism with this formula: $V=l \times w \times h$ .
<b>Unit Rationale</b> Measurement and data analysis are the basis of understanding geometric shapes, composition and problem solving. Most applied math involves measurement.	<b>Unit Overview</b> Students will convert among customary units and metric units for length, weight and capacity; read and interpret measurement data; use cubic units to find volume of rectangular prisms; find volumes of irregular solids in order to solve problems.

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**Course Title: Fifth Grade Math      Unit Name: Geometry**  
**Grade Level: 5**

<b>Content Statements</b> Review important terms in geometry and use them to name and compare different shapes; find and name a point on the coordinate plane; become familiar with two-dimensional shapes and learn to classify triangles and quadrilaterals.	<b>NJSLS:</b> 5.G.1-5 5.OA.3
<b>Overarching Essential Questions</b> How is geometry connected to my world?	<b>Overarching Enduring Understandings</b> Geometry is everywhere there are shapes.
<b>Unit Essential Questions</b> What is a coordinate plane?	<b>Unit Enduring Understandings</b> A coordinate plane is a two dimensional system in which the coordinates of a point are described by its distance from two perpendicular number lines. The pair of numbers used to locate a point on the plane is the



<p>Understand attributes belonging to a category of two-dimensional figures</p> <p>What are the properties of two-dimensional figures?  How can triangles be classified?  What are the types of triangles?  How can quadrilaterals be classified?</p>	<p>ordered pair. The x-coordinate is the first number in an ordered pair.</p> <p>Polygons figures have different shapes and different sizes – it is a closed plane figure whose sides are line segments. They are regular if all their sides are the same length; they are triangles if they have three sides; they are quadrilaterals if they have four sides.  The types of angles are: right angles, acute angles and obtuse angles.  A triangle can be classified by the lengths of the sides and the measures of its angles.  A quadrilateral can be classified by the characteristics of their sides and their angles.</p>
<p><b>Unit Rationale</b>  Understanding the attributes of shapes provides a foundation for recognizing, analyzing and drawing more complex shapes and enhances the student's capacity to grasp that shared attributes can define a larger category.</p>	<p><b>Unit Overview</b>  Students will identify angles, lines and polygons; symmetric figures and lines of symmetry.  They will use manipulatives and word problems to investigate geometry.</p>

## Appendix

### Differentiation

<b>Enrichment</b>	<ul style="list-style-type: none"> <li>● Utilize collaborative media tools</li> <li>● Provide differentiated feedback</li> <li>● Opportunities for reflection</li> <li>● Encourage student voice and input</li> <li>● Model close reading</li> <li>● Distinguish long term and short term goals</li> </ul>
<b>Intervention &amp; Modification</b>	<ul style="list-style-type: none"> <li>● Utilize “skeleton notes” where some required information is already filled in for the student</li> <li>● Provide access to a variety of tools for responses</li> <li>● Provide opportunities to build familiarity and to practice with multiple media tools</li> <li>● Leveled text and activities that adapt as students build skills</li> <li>● Provide multiple means of action and expression</li> <li>● Consider learning styles and interests</li> <li>● Provide differentiated mentors</li> <li>● Graphic organizers</li> </ul>
<b>ELLs</b>	<ul style="list-style-type: none"> <li>● Pre-teach new vocabulary and meaning of symbols</li> <li>● Embed glossaries or definitions</li> <li>● Provide translations</li> <li>● Connect new vocabulary to background knowledge</li> <li>● Provide flash cards</li> <li>● Incorporate as many learning senses as possible</li> <li>● Portray structure, relationships, and associations through concept webs</li> <li>● Graphic organizers</li> </ul>
<b>21st Century Skills</b>	

- Creativity
- Innovation
- Critical Thinking
- Problem Solving
- Communication
- Collaboration

### **Integrating Technology**

- Chromebooks
- Internet research
- Online programs
- Virtual collaboration and projects
- Presentations using presentation hardware and software