

## Grade 5 Mathematics Curriculum Guide

Grade Level/Course Title: Grade 5		Trimester 1	Academic Year: 2015-2016
<p><b>Grade Level Mathematics Focus:</b>                      In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.</p>			
<p><b>Essential Questions for this Unit:</b>                      1. How can students develop understanding of base-ten numerals?</p>			
Unit (Time)	Standard	Standard Description	Resources
<p><b>(Aug- Sep)</b></p> <p><b>Unit 1:</b></p> <p><b>Number Sense and Place Value</b></p> <p><b>(Approx. 10 days)</b></p>	5.NBT.1	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents to its left.	<p><b>General</b></p> <p>“Lesson ____” refers to <i>Everyday Math</i> Lessons <a href="#">CDE Mathematics Framework, Grade 5</a> [GMR] <a href="#">Syntax</a> [GMR] <a href="#">Bar Models Throughout the Grades</a> [CP]</p> <p><b>Number Sense and Place Value (10 days)</b></p> <p><a href="#">Progressions Document, Numbers and Operations in Base Ten</a> [GMR]</p> <p><a href="#">Engage NY 1.A.1 Understanding Place Value</a> [L]</p> <p><a href="#">Equivalent Decimals and Fractions</a> [L]</p> <p>Lesson 7.2: Exponential Notation for Powers of 10</p> <p>Lesson 7.3: Scientific Notation</p> <p><a href="#">Engage NY 1.B.5 Expanded Notation with Decimal Fractions</a> [L]</p> <p><a href="#">Rounding and Estimating</a> [L]</p> <p>Lesson 2.5 – Estimate Your Reaction Time</p>
	5.NBT.2	Explain patterns in the number of zeroes of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	
	5.NBT.3	Read, write, and compare decimals to thousandths. a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$ b. Compare two decimals to thousandths based on meanings of the digits in each place, using $>$ , $=$ , and $<$ symbols to record results of comparisons.	
	5.NBT.4	Use place value to round decimals to any place.	
		<ul style="list-style-type: none"> <li>Mental Math</li> <li>Decompose numbers</li> <li>Place value for whole numbers and decimals</li> <li>Expanded notation</li> <li>Estimating</li> <li>Rounding</li> <li>Multiply and divide by powers of 10</li> </ul>	

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<p><b>Grade Level Mathematics Focus:</b>            In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.</p>					
<p><b>Essential Questions for this Unit:</b></p> <ol style="list-style-type: none"> <li>How can students develop understanding of why addition, subtraction, multiplication and division procedures work based on the meaning of base-ten numerals and properties of operations?</li> <li>How can students apply their understanding of arithmetic to formulate and evaluate expressions?</li> </ol>					
Unit (Time)	Standard	Standard Description	Content	Resources	
<b>(Sep-Oct)</b>  <b>Unit 2:</b>  <b>Operations with Whole Numbers and Decimals and Algebra</b>  <b>(Approx. 40 days)</b>	5.NBT.5	Fluently multiply multi-digit whole numbers using the standard algorithm.	<ul style="list-style-type: none"> <li>Mental Math</li> <li>Word problems</li> <li>Commutative Property</li> <li>Associative Property</li> <li>Distributive Property</li> <li>Decompose numbers</li> <li>Prime factoring</li> <li>Partial sums and differences with whole numbers and decimals</li> <li>Use open number lines to add and subtract</li> <li>Arrays</li> <li>Multiply and divide by powers of 10</li> <li>Bar models</li> <li>Multiply using Area Model</li> <li>Multiply using Generic Rectangle</li> <li>Multiply using Partial Products</li> <li>Multiply using standard algorithm</li> </ul>	<p><b><u>Adding and Subtracting Decimals (5 days)</u></b></p> <p><a href="#">Common Addition &amp; Subtraction Situations</a> (CCSS Resource)            Lesson 2.2: Addition of Whole Numbers and Decimals  <a href="#">Adding &amp; Subtracting Whole Numbers – Multiple Methods</a> [CP]  <a href="#">Adding Whole Numbers and Decimals</a> [L]            Lesson 2.3: Subtraction of Whole Numbers &amp; Decimals  <a href="#">Number Line Worksheets</a> [GMR]  <a href="#">Number Line Subtraction</a> [L]  <a href="#">Decomposing Word Problems</a> [L]            Lesson 2.4: Addition and Subtraction Number Stories            Lesson 2.8 (partial): Solving Number Stories (Teacher’s Edition pg. 123, Math Journal pg. 52)</p>	
	5.NBT.6	Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.			
	5.NBT.7	Add, subtract, multiply, & 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 reasoning used.			

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<b>Essential Questions for this Unit:</b> 1. How can students develop understanding of why addition, subtraction, multiplication and division procedures work based on the meaning of base-ten numerals and properties of operations? 2. How can students apply their understanding of arithmetic to formulate and evaluate expressions?			
Unit (Time)	Standard	Standard Description	Resources
<b>(Sep-Oct)</b>  <b>Unit 2:</b> <b>(Continued)</b>  <b>Operations with Whole Numbers and Decimals and Algebra</b>  <b>(Approx. 40 days)</b>	5.OA.1	Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	<p style="text-align: center;"><b><u>Multiplying Whole Numbers &amp; Decimals (15 days)</u></b></p> <p><a href="#">Parent Guide (English): Multiplying Numbers – Multiple Methods</a>  <a href="#">Parent Guide (Spanish): Multiplicando Números Common Multi. &amp; Div. Situations</a> (CCSS Resource)</p> Lesson 1.2: Rectangular Arrays Lesson 1.3: Factors Lesson 1.4: Factor Captor Lesson 1.6 – Prime and Composites Lesson 1.9 – Factor Strings and Prime Factorization <a href="#">Hundreds Chart</a> [GMR] <a href="#">Sieve of Eratosthenes</a> [CP] <a href="#">Prime Factorization</a> [CP] Lesson 12.1: Factor Trees & Math Journal 1 page 104 <a href="#">Engage NY 2.A.1 Multiply w/ Multiples of 10</a> [L] <a href="#">Engage NY 2.A.2 Estimating Multi-digit Products</a> [L] Lesson 2.7 – Estimating Products <a href="#">Area Models Through the Grades</a> [CP] <a href="#">Distributive Property</a> [CP] <a href="#">Multiplying Whole Numbers – Generic Rectangle</a> [L] <a href="#">Engage NY 2.B.6 Connecting Multiplying with Multiple Methods</a> [L] Lesson 2.8: Multiplying Whole Numbers and Decimals <a href="#">Engage NY 2.B.8 Multi-digit Multiplication</a> [L] <a href="#">Decimal Operations</a> [CP] <a href="#">Multiplying Decimals</a> [L] <a href="#">Problem Solving with Multiplication and Division</a> [L]
	5.OA.2	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. <i>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 <math>18932 + 921</math>, without having to calculate the indicated sum or product.</i>	
	5.OA.2.1	Express a whole number in the range 2-50 as a product of its prime factors	

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<b>Essential Questions for this Unit:</b> 1. How can students develop understanding of why addition, subtraction, multiplication and division procedures work based on the meaning of base-ten numerals and properties of operations? 2. How can students apply their understanding of arithmetic to formulate and evaluate expressions?				
Unit (Time)	Standard	Standard Description	Content	Resources (Suggested Number of Days)
(Sep-Oct)  <b>Unit 2:</b> (Continued)  <b>Operations with Whole Numbers and Decimals and Algebra</b>  (Approx. 40 days)				<a href="#">Decomposing Word Problems</a> [L] <a href="#">Multi-Step Word Problems</a> [L] <b>Dividing Whole Numbers &amp; Decimals (13 days)</b> <a href="#">Parent Guide (English): Dividing Numbers- Multiple Methods</a> <a href="#">Parent Guide (Spanish): Dividiendo Números</a> Lesson 1.5: Divisibility Rules Lesson 4.1: Division Facts and Extensions <a href="#">Division – Multiple Representations</a> [CP] <a href="#">Conceptualizing Division</a> [L] <a href="#">Division Algorithms</a> [L] Lesson 4.2: Partial Quotients Division Algorithm Lesson 4.4: Partial Quotients Strategies Lesson 4.5: Division of Decimal Numbers <a href="#">Dividing Decimals</a> [L] <a href="#">Decomposing Word Problems</a> [L] <a href="#">Multi-Step Word Problems</a> [L] <a href="#">Solving Multi-Step Word Problems</a> [L] <a href="#">Problem Solving: Bar Models and Number Lines</a> [L] <a href="#">Problem Solving with Multiplication and Division</a> [L] <b>Expressions and Equations (2 days)</b> <a href="#">Progressions Document, Operations &amp; Algebraic Thinking</a> [GMR] <a href="#">Georgia DOE, Order of Operations &amp; Expressions, pages 13-36 and 47-53</a> [L] Lesson 7.4: Parenthesis in Number Sentences <b>Review, Assessment, Reteach (5 days)</b> <b>BENCHMARK 1 (Units 1 through 2)</b>

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**Grade Level Mathematics Focus:**

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

**Essential Questions for this Unit:**

- How can students use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense? (Note: **Division** is limited to dividing **unit fractions by whole numbers and whole numbers by unit fractions.**)

Unit (Time)	Standard	Standard Description	Content	Resources (Suggested Number of Days)
<p><b>(Nov-Dec)</b></p> <p><b>Unit 3:</b></p> <p><b>Fraction Concepts, Multiplying and Dividing</b></p>	5.NF.3	<p>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 leading to answers in the form of fractions &amp; mixed numbers, e.g., by using visual fraction models or equations to represent the problem. <i>For example, interpret <math>3/4</math> as the result of dividing 3 by 4, noting that <math>3/4</math> multiplied by 4 equals 3, &amp; that when 3 wholes are shared equally among 4 people, each person has a share size of <math>3/4</math>. If 9 people want to share a 50-pound sack of rice equally, how many pounds of rice should each person get? Between what two whole numbers does the answer lie?</i></p>	<ul style="list-style-type: none"> <li>• Mental Math</li> <li>• Word problems</li> <li>• Decompose fractions</li> <li>• Number sense of fractions</li> <li>• Multiplicative Identity Property</li> <li>• Equivalent forms of 1</li> <li>• Equivalent fractions (incl. mixed numbers and improper fractions)</li> </ul>	<p><a href="#">Progressions Document, Number and Operations - Fractions</a> [GMR]</p> <p style="text-align: center;"><b><u>Fraction Concepts (10 days)</u></b></p> <p><a href="#">Fraction Bars</a> [GMR]</p> <p><a href="#">Decomposing Fractions</a> [L]</p> <p><a href="#">Fractions Greater than 1 w/ Fractions Bars and Number Lines</a> [L]</p> <p><a href="#">Number Lines, Fractions, and Bar Models</a> [L]</p>
<p><b>(Approx. 30 days)</b></p>	5.NF.4	<p>Apply and extend previous understanding of multiplication to multiply a fraction or a whole number by a fraction.</p> <p>a. Interpret the product <math>(a/b) \times q</math> as 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>. <i>For example, use a visual fraction model to show <math>(2/3) \times 4 = 8/3</math>, and create a story context for this equation. Do the same with <math>(2/3) \times (4/5) = 8/15</math>. (In general, <math>(a/b) \times (c/d) = ac/bd</math>.)</i></p> <p>b. 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>	<ul style="list-style-type: none"> <li>• Visual models to compare, multiply and divide fractions &amp; mixed numbers.</li> <li>• Bar models to compare, multiply, &amp; divide fractions</li> <li>• Area models to multiply fractions</li> </ul>	<p>Lesson 5.1: Fraction Review</p> <p>Lesson 8.1: Comparing Fraction Review</p> <p>Lesson 5.3: Comparing and Ordering Fractions</p> <p>Lesson 5.4: Two Rules for Finding Equivalent Fractions</p> <p>Lesson 6.10: Quick Common Denominators</p> <p><a href="#">Engage NY 4.B.4 Model Fractions as Division with Bar Models</a> [L]</p> <p><a href="#">Dividing by Decomposing Fractions</a> [L]</p> <p><a href="#">Converting Improper Fractions and Mixed Numbers</a> [L]</p>

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<b>Essential Questions for this Unit:</b> 1. How can students use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense? (Note: <b>Division</b> is limited to dividing <b>unit fractions by whole numbers and whole numbers by unit fractions.</b> )				
Unit (Time)	Standard	Standard Description	Content	Resources (Suggested Number of Days)
(Nov-Dec)  Unit 3: (Continued)  Fraction Concepts, Multiplying and Dividing  (Approx. 30 days)	5.NF.5	Interpret multiplication as scaling (resizing) by: a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing indicated multiplication. b. 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 $a/b = (n \times a) / (n \times b)$ to the effect of multiplying $a/b$ by 1.	<ul style="list-style-type: none"> <li>Generic rectangle to multiply and divide fractions with whole numbers and mixed numbers</li> <li>Multiply and divide mixed numbers by converting to improper fractions</li> <li>Distributive property to multiply fractions with whole numbers and mixed numbers</li> </ul>	<p align="center"><b>Multiplying Fractions (12 days)</b></p> <p><a href="#">Parent Guide (English): Multiplying Fractions</a>  <a href="#">Parent Guide (Spanish): Multiplicando Fracciones</a>  <a href="#">Engage NY 4.C.6 Fractions of a Set</a> [L]            Review: <a href="#">Prime Factorization</a> [CP]  <a href="#">Multiplying Fractions</a> [L]  <a href="#">Engage NY 4.C.7 Multiply a Whole Number by a Fraction with Bar Models</a> [L]            Lesson 8.5: Fractions of Fractions            Lesson 8.6: Area Model for Fraction Multiplication            Lesson 8.7: Multiplication of Fractions and Whole Numbers  <a href="#">Multiplying Fractions</a> [CP]  <a href="#">Engage NY 4.E.14 Multiply Fractions by Non-unit Fractions including Word Problems</a> [L]  <a href="#">Problem Solving: Bar Models and Number Lines</a> [L]  <a href="#">Engage NY 4.F.22 Compare Size of Products and Factors (Scaling)</a> [L]</p>
	5.NF.6	Solve real word problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.		

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**Grade Level Mathematics Focus:**

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

**Essential Questions for this Unit:**

1. How can students use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense? (Note: **Division** is limited to dividing **unit fractions by whole numbers and whole numbers by unit fractions.**)

Unit (Time)	Standard	Standard Description	Content	Resources (Suggested Number of Days)
<p style="color: blue;">(Nov-Dec)</p> <p><b>Unit 3: (Continued)</b></p> <p><b>Fraction Concepts, Multiplying and Dividing</b></p> <p style="color: red;">(Approx. 30 days)</p>	5.NF.7	<p>Apply and extend previous understanding of division to divide unit fractions by whole numbers and whole numbers by unit fractions.</p> <p>a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. <i>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>.</i></p> <p>b. Interpret division of a whole number by a unit fraction, and compute such quotients. <i>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>.</i></p> <p>c. Solve real word 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. <i>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?</i></p>		<p style="text-align: center; color: blue;"><b><u>Dividing Fractions (8 days)</u></b></p> <p><a href="#">Parent Guide (English): Dividing Fractions</a>  <a href="#">Parent Guide (Spanish): Dividiendo Fracciones</a>  <a href="#">Modeling Division of Whole Numbers by Unit Fractions [L]</a>  <a href="#">Engage NY 4.G.25 Division of Whole Numbers by Unit Fractions [L]</a>  <a href="#">Engage NY 4.G.26 Division of Unit Fractions by Whole Numbers [L]</a>  <a href="#">Engage NY 4.G.27 Division of Unit Fractions and Whole Numbers- Word Problems [L]</a>  <a href="#">Problem Solving with Multiplication and Division [L]</a></p>

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<b>Grade Level Mathematics Focus:</b> In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.					
<b>Essential Questions for this Unit:</b>					
1. How can students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators (including mixed numbers) as equivalent calculations with like denominators?					
2. How can students develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them?					
Unit (Time)	Standard	Standard Description	Content	Resources (Suggested Number of Days)	
(Jan)  Unit 4:  Fractions: Adding and Subtracting  (Approx. 25 days)	5.NF.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. <i>For example, <math>2/3 + 5/4 = 8/12 + 15/12 = 23/12</math>. (In general, <math>a/b + c/d = (ad + bc)/bd</math>.)</i>	<ul style="list-style-type: none"> <li>Mental Math</li> <li>Word problems</li> <li>Decompose fractions</li> <li>Equivalent forms of 1</li> <li>Equivalent fractions (incl. mixed numbers and improper fractions)</li> <li>Find common denominators using Multiplicative Identity Property</li> <li>Use visual models to add and subtract, fractions and mixed numbers.</li> <li>Use bar models to add and subtract fractions and mixed numbers</li> </ul>	<p><b><u>Adding and Subtracting Fractions (20 days)</u></b></p> <p><a href="#">Engage NY 3.A.1 Equivalent Fractions</a> [L]  <a href="#">Adding Fractions with Unlike Denominators Using Pattern Blocks</a> [CP]  <a href="#">Adding Fractions with Multiple Methods</a> [CP]  <a href="#">Engage NY 3.A.2 Adding Fractions w/ Like Denominators Using Visuals</a> [L]  <a href="#">Engage NY 3.B.3 Adding Fractions w/ Unlike Denominators Using Visuals</a> [L]  <a href="#">Engage NY 3.B.5 Subtract. Fractions w/ Unlike Denominators Using Visuals</a> [L]  <a href="#">Engage NY 3.B.7 Two-Step Fraction Word Prob.</a> [L]  <a href="#">Engage NY 3.C.8 Adding &amp; Subtracting Mixed Numbers</a> [L]  <a href="#">Engage NY 3.C.9 Adding Fractions by Converting to Like Denominators Numerically</a> [L]  <a href="#">Adding Mixed Numbers</a> [L]  <a href="#">Subtracting Mixed Numbers – Multiple Methods</a> [CP]  <a href="#">Subtracting Mixed Numbers</a> [L]</p> <p><b>Review, Assessment, Reteach (5 days)</b>  <b>BENCHMARK 2 (Units 3 and 4)</b></p>	
5.NF.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. <i>For example, recognize an incorrect result <math>2/5 + 1/2 = 3/7</math> by observing that <math>3/7 &lt; 1/2</math>.</i>				



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**Essential Questions for this Unit:**

1. How can students understand how units within the same measurement system (customary or metric) are related?
2. How can students recognize volume as an attribute of three-dimensional space?
3. How can students understand that volume can be measured by finding the total number of same-size units required to fill the space without gaps or overlaps and understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume?
4. How can students decompose 3-dimensional shapes made of multiple right rectangular prisms by viewing them as decomposed into layers of arrays of cubes?
5. How can students find volume to solve real-world and mathematical problems?

Unit (Time)	Standard	Standard Description	Content	Resources (Suggested Number of Days)
<b>Unit 5:</b>  <b>Measurement</b> <b>(incl. Volume)</b>  <b>(Approx.</b> <b>18 days)</b>	5.MD.1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05m), and use these conversions in solving multi-step, real world problems.	<ul style="list-style-type: none"> <li>• Measurement unit conversion for <b>U.S. customary and metric</b></li> <li>• Volume of rectangular prisms</li> <li>• Volume formulas:               <ul style="list-style-type: none"> <li>• Length (<math>l</math>) x width x height: <math>V = lwh</math></li> <li>• Area of base (<math>B</math>) x height(<math>h</math>): <math>V = Bh</math></li> </ul> </li> <li>• Solve real-world problems involving volume</li> </ul>	<p><a href="#">Progressions Document, Geometric Measurement</a> [GMR]</p> <p style="text-align: center;"><b>Measurement Conversion (8 days)</b></p> <p>Lesson 6.2 – Natural Measures of Length  <a href="#">Bar Models for Customary Units</a> [GMR]  <a href="#">Measurement</a> [L]  <a href="#">Engage NY 2.D.13 Measurement Conversion using Whole Number Multiplication</a> [L]  <a href="#">Engage NY 2.D.14 Measurement Conversion using Fraction and Decimal Multiplication</a> [L]  <a href="#">Engage NY 2.D.15 Two-Step Measurement Word Problems</a> [L]</p> <p style="text-align: center;"><b>Volume (10 days)</b></p> <p><a href="#">Volume: A Foundation in Unit Cubes</a> [L]  <a href="#">Engage NY 5.A.1 Building Volume with Unit Cubes</a> [L]  <a href="#">Engage NY 5.A.2 Find Volume by Packing with Cubes</a> [L]  <a href="#">Engage NY 5.B.4 Multiplication to Find Volume</a> [L]  <a href="#">Engage NY 5.B.6 Volume of Two Rectangular Prisms</a> [L]</p>
	5.MD.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement. <ol style="list-style-type: none"> <li>a. A cube 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.</li> <li>b. 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> </ol>		
	5.MD.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.		

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<b>Grade Level/Course Title: Grade 5</b>	<b>Trimester 2</b>	<b>Academic Year: 2015-2016</b>
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**Grade Level Mathematics Focus:**

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

**Essential Questions for this Unit:**

1. How can students understand how units within the same measurement system (customary or metric) are related?
2. How can students recognize volume as an attribute of three-dimensional space?
3. How can students understand that volume can be measured by finding the total number of same-size units required to fill the space without gaps or overlaps and understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume?
4. How can students decompose 3-dimensional shapes made of multiple right rectangular prisms by viewing them as decomposed into layers of arrays of cubes?
5. How can students find volume to solve real-world and mathematical problems?

Unit (Time)	Standard	Standard Description	Content	Resources (Suggested Number of Days)
<p>(Feb. – Mar.)</p> <p><b>Unit 5: (Continued)</b></p> <p><b>Measurement (incl. Volume)</b></p> <p>(Approx. 18 days)</p>	5.MD.5	<p>Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.</p> <p>a. 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.</p> <p>b. Apply the formulas <math>V = l \times w \times h</math> and <math>V = B \times h</math> for rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.</p> <p>c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying the technique to solve real world problems.</p>		

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Grade Level/Course Title: Grade 5		Trimester 2		Academic Year: 2015-2016	
<p><b>Grade Level Mathematics Focus:</b>            In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.</p>					
<p><b>Essential Questions for this Unit:</b>            1. How can students understand the properties of two-dimensional figures?            2. How can students understand that two-dimensional figures are classified in a hierarchy based on their properties?</p>					
Unit (Time)	Standard	Standard Description	Content	Resources (Suggested Number of Days)	
(Mar.)  Unit 6:  Geometry	5.G.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. <i>For example, all rectangles have four right angles &amp; squares are rectangles, so all squares have 4 right angles..</i>	<ul style="list-style-type: none"> <li>Definitions of 2D geometric shapes</li> <li>Categories and subcategories of 2D shapes</li> </ul>	<p><b>Classifying Polygons (5 days)</b></p> <p><a href="#">Progressions Document, Geometry</a> [GMR]  <a href="#">Engage NY 5.D.16 Draw Trapezoids to Clarify &amp; Define</a> [L]  <a href="#">Engage NY 5.D.17 Draw Parallelograms to Clarify &amp; Define</a> [L]  <a href="#">Engage NY 5.D.18 Draw Rectangles &amp; Rhombuses to Clarify &amp; Define</a> [L]  <a href="#">Engage NY 5.D.19 Draw Kites &amp; Squares to Clarify &amp; Define</a> [L]  <a href="#">Engage NY 5.D.20 Classify Two-dimensional Figures in a Hierarchy Based on Properties</a> [L]            Game: <i>Everyday Math</i> – Capture the Polygon</p>	
(Approx.  5 days)	5.G.4	Classify two-dimensional figures in a hierarchy based on properties.			

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Grade Level/Course Title: Grade 5		Trimester 3		Academic Year: 2015-2016	
<b>Grade Level Mathematics Focus:</b> In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.					
<b>Essential Questions for this Unit:</b> 1. How can students make a line plot from a list of data in fractional units? 2. How can students use operations of fractions to solve problems based on the data from line plots? 3. How can students generate terms in patterns, form ordered pairs, and graph them on a coordinate plane?					
Unit (Time)	Standard	Standard Description	Content	Resources (Suggested Number of Days)	
<b>Unit 7:</b>  <b>Data, Patterns, and Graphing</b>  <b>(Approx. 20 days)</b>  <b>Review for SBAC Assessment</b>  <b>(Approx. 10 days)</b>	5.G.1	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. 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).	<ul style="list-style-type: none"> <li>Mental Math</li> <li>Word problems</li> <li>Graph using patterns and relationships</li> <li>Graph on a coordinate plane in <b>Quadrant I</b></li> <li>Analyzing and displaying data using line plots</li> <li>Decompose fractions</li> <li>Equivalent forms of 1</li> <li>Equivalent fractions</li> <li>Use visual models to add and divide fractions and mixed numbers.</li> <li>Use bar models to add and divide fractions and mixed numbers</li> <li>Generic rectangle to divide fractions with whole numbers and mixed numbers</li> <li>Divide mixed numbers by converting to improper fractions</li> </ul>	<p align="center"><b>Coordinate Plane Graphing and Patterns (10 days)</b></p> <p><a href="#">Progressions Doc., Operations &amp; Algebraic Thinking</a> [GMR]  <a href="#">Engage NY 6.A.1 Construct a Coordinate System on a Line</a> [L]  <a href="#">Engage NY 6.A.2 Construct a Coordinate Syst. on a Plane</a> [L]  <a href="#">Engage NY 6.A.3 Name &amp; Plot Pts. Using Coordinate Pairs</a> [L]  <a href="#">Patterns: Foundations of Functions</a> [L]  <a href="#">Engage NY 6.B.7 Plot Points to Form Lines &amp; Describe Patterns</a> [L]            Lesson10.4: Rules, Tables, and Graphs – Part 1            Lesson 10.6: Rules, Tables, and Graphs – Part 2  <a href="#">Engage NY 6.B.8 Create a Pattern from a Rule &amp; Plot Points</a> [L]  <a href="#">Engage NY 6.B.9 Create Patterns from Rules &amp; Analyze</a> [L]</p> <p align="center"><b>Line Plots (5 days)</b></p> <p><a href="#">Progressions Document, Measurement and Data</a> [GMR]            Review Adding and Dividing Fractions  <a href="#">Line Plots</a> [L]  <a href="#">Engage NY 4.A.1 Line Plots with Fractional Values</a> [L]            Lesson 6.4: Mystery Plots</p> <p><b>Review, Assessment, Reteach (5 days)</b></p> <p><b>BENCHMARK 3 (Units 5 through 7)</b></p> <p align="center"><b>CUMULATIVE REVIEW FOR SBAC ASSESSMENT (10 days)</b></p>	
	5.G.2	Represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.			

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**Grade Level Mathematics Focus:**

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

**Essential Questions for this Unit:**

1. How can students make a line plot from a list of data in fractional units?
2. How can students use operations of fractions to solve problems based on the data from line plots?
3. How can students generate terms in patterns, form ordered pairs, and graph them on a coordinate plane?

Unit (Time)	Standard	Standard Description	Content	Resources (Suggested Number of Days)
<p><b>(Mar. – Apr.)</b>  <b>Unit 7:</b>  <b>(Continued)</b>  <b>Data,</b>  <b>Patterns, and</b>  <b>Graphing</b></p> <p><b>(Approx.</b>  <b>20 days)</b></p> <p><b>Cumulative</b>  <b>Review for</b>  <b>SBAC</b>  <b>Summative</b>  <b>Assessment</b></p> <p><b>(Approx.</b>  <b>10 days)</b></p>	5.OA.3	<p>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. <i>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 are twice the corresponding terms in the other sequence. Explain informally why this is so.</i></p>		

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**Grade Level Mathematics Focus:**

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

**Essential Questions for this Unit:**

1. How can students extend their previous understanding of fractions to the concept of ratios?

Unit (Time)	Standard	Standard Description	Content	Resources (Suggested Number of Days)
<p style="color: blue;">(May)</p> <p><b>Unit 8:</b></p> <p><i>(If time allows)</i></p>	6.RP.1	Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. <i>For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."</i>	<ul style="list-style-type: none"> <li>• Understand unit rate, rate tables, patterns and functions to complete a table</li> <li>• Express ratios in words, fraction form and w/ colon</li> </ul>	<p style="text-align: center;"><b><u>Ratios and Proportional Relationships (5 days)</u></b></p> <p><a href="#">Proportions</a> [L]</p>
<p><b>Advanced Topics (Preview of Grade 6 – Ratios and Proportional Relationships )</b></p> <p style="color: red;">(Approx. 5 days)</p>	6.RP.2	Understand the concept of a unit rate $a/b$ associated with a ratio $a:b$ with $b \neq 0$ , and use rate language in the context of a ratio relationship. <i>For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is <math>3/4</math> cup of flour for each cup of sugar." "We paid \$75 for 15 hamburgers, which is a rate of \$5 per hamburger."</i>		