

**Berlin Brothersvalley School District  
 Berlin Brothersvalley Middle School  
 5th Grade Math Curriculum Framework  
 Full Year Course**

<b>Big Idea(s) for 1st nine weeks</b>	<b>Concept(s) of 1st nine weeks</b>	<b>Competencies of 1st nine weeks</b>	<b>Essential Questions for 1st nine weeks</b>
<p>Area and volume introduces and reviews addition and multiplication by applying a formula.</p> <p>To expand upon basic fact fluency and discover new algorithms in multiplying and dividing multi-digit numbers are essential to basic math skills.</p>	<p>Students will know...</p> <ul style="list-style-type: none"> <li>● area and strategies for finding area</li> <li>● volume and strategies for finding volume</li> <li>● concept of volume</li> <li>● multi-digit multiplication and multi-digit division</li> <li>● traditional methods of multiplication</li> </ul>	<p>Students will be able to...</p> <ul style="list-style-type: none"> <li>● find areas of rectangles with fractional side lengths</li> <li>● explain and apply two different formulas for finding volume of a rectangular prism</li> <li>● compare volume</li> <li>● multiply multi-digit numbers by using U.S. traditional multiplication</li> </ul>	<p>What is the formula for area?</p> <p>What are the two formulas for volume?</p> <p>With a rectangular prism, what strategy do you use to find the volume?</p> <p>What are volume comparisons between two objects?</p> <p>How do you explain and apply the U.S. tradition algorithm for multiplying?</p>

**Berlin Brothersvalley School District  
 Berlin Brothersvalley Middle School  
 5th Grade Math Curriculum Framework  
 Full Year Course**

<u>Unit/Chapter/Selection of Study</u>	<u>Approx # of weeks - % of time</u>	<u>PA Core Standards</u>	<u>Assessment Anchors &amp; Eligible Content</u>
Unit 1A: Area	3 weeks	CC.2.4.5.A.5 Apply concepts of volume to solve problems and relate volume to multiplication and to addition.	<p>M05.D-M.3.1.1 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. Formulas will be provided.</p> <p>M05.D-M.3.1.2 Find volumes of solid figures composed of two non-overlapping right rectangular prisms.</p>
Unit 1B: Volume	3 weeks	CC.2.4.5.A.5 Apply concepts of volume to solve problems and relate volume to multiplication and to addition.	<p>M05.D-M.3.1.1 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. Formulas will be provided.</p> <p>M05.D-M.3.1.2 Find volumes of solid figures composed of two non-overlapping right rectangular prisms.</p>

**Berlin Brothersvalley School District  
Berlin Brothersvalley Middle School  
5th Grade Math Curriculum Framework  
Full Year Course**

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Unit 2A: Multi-digit multiplication and multi-digit division	3 weeks	CC.2.1.5.B.2 Extend an understanding of operations with whole numbers to perform operations including decimals.	<p>M05.A-T.2.1.1 Multiply multi-digit whole numbers (not to exceed three-digit by three-digit).</p> <p>M05.A-T.2.1.2 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.</p> <p>M05.A-T.2.1.3 Add, subtract, multiply, and divide decimals to hundredths (no divisors with decimals).</p>

<b>Big Idea(s) for 2nd nine weeks</b>	<b>Concept(s) of 2nd nine weeks</b>	<b>Competencies of 2nd nine weeks</b>	<b>Essential Questions for 2nd nine weeks</b>
<p>Understanding and using the differences between exponential notation and standard notation are concepts for writing multi-digit numbers.</p> <p>To understand how fractions are used, manipulatives and benchmarks estimate addition,</p>	<p>Students will know...</p> <ul style="list-style-type: none"> <li>● powers of ten and its application and conversion</li> <li>● fraction concepts and all operational fraction problems</li> </ul>	<p>Students will be able to...</p> <ul style="list-style-type: none"> <li>● calculate power of tens and write them into standard notation</li> <li>● apply fraction concepts to estimate and assess</li> </ul>	<p>How do you convert exponential notation to standard notation?</p> <p>How do you convert standard notation to exponential notation?</p> <p>How can you use fraction circle pieces to estimate a fraction word problem?</p>

**Berlin Brothersvalley School District  
 Berlin Brothersvalley Middle School  
 5th Grade Math Curriculum Framework  
 Full Year Course**

subtraction, multiplication, and division.			How do you use a fraction number line to add and subtract fractions?
<p style="text-align: center;"><b><u>Unit/Chapter/Selection of Study</u></b></p> <p>Unit 2B: Powers of Ten</p>	<p style="text-align: center;"><b><u>Approx # of weeks - % of time</u></b></p> <p style="text-align: center;">2 weeks</p>	<p style="text-align: center;"><b><u>PA Core Standards</u></b></p> <p>CC.2.2.5.A.1 Interpret and evaluate numerical expressions using order of operations.</p> <p>CC.2.2.5.A.4 Analyze patterns and relationships using two rules.</p>	<p style="text-align: center;"><b><u>Assessment Anchors &amp; Eligible Content</u></b></p> <p>M05.B-O.1.1.1 Use multiple grouping symbols (parentheses, brackets, or braces) in numerical expressions and evaluate expressions containing these symbols.</p> <p>M05.B-O.1.1.2 Write simple expressions that model calculations with numbers and interpret numerical expressions without evaluating them. Example 1: Express the calculation “add 8 and 7, then multiply by 2” as <math>2 \times (8 + 7)</math>. Example 2: Recognize that <math>3 \times (18,932 + 921)</math> is three times as large as <math>18,932 + 921</math> without having to calculate the indicated sum or product.</p> <p>M05.B-O.2.1.1 Generate two numerical patterns using two given rules. 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</p>

**Berlin Brothersvalley School District  
 Berlin Brothersvalley Middle School  
 5th Grade Math Curriculum Framework  
 Full Year Course**

			<p>resulting sequences.</p> <p>M05.B-O.2.1.2 Identify apparent relationships between corresponding terms of two patterns with the same starting numbers that follow different rules. Example: Given two patterns in which the first pattern follows the rule “add 8” and the second pattern follows the rule “add 2,” observe that the terms in the first pattern are 4 times the size of the terms in the second pattern.</p>
<p style="text-align: center;"><b><u>Unit/Chapter/Selection of Study</u></b></p> <p>Unit 3A: Fraction Concepts</p>	<p style="text-align: center;"><b><u>Approx # of weeks - % of time</u></b></p> <p style="text-align: center;">7 weeks</p>	<p style="text-align: center;"><b><u>PA Core Standards</u></b></p> <p>CC.2.1.5.C.1 Use the understanding of equivalency to add and subtract fractions.</p> <p>CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions.</p> <p>CC.2.4.5.A.4 Solve problems involving computation of fractions using information provided in a line plot.</p>	<p style="text-align: center;"><b><u>Assessment Anchors &amp; Eligible Content</u></b></p> <p>M05.A-F.1.1.1 Add and subtract fractions (including mixed numbers) with unlike denominators. (May include multiple methods and representations.) Example: <math>2/3 + 5/4 = 8/12 + 15/12 = 23/12</math></p> <p>M05.A-F.2.1.1 Solve word problems involving division of whole numbers leading to answers in the form of fractions (including mixed numbers).</p> <p>M05.A-F.2.1.2 Multiply a fraction (including mixed numbers) by a fraction.</p>

**Berlin Brothersvalley School District  
Berlin Brothersvalley Middle School  
5th Grade Math Curriculum Framework  
Full Year Course**

			<p>M05.A-F.2.1.3 Demonstrate an understanding of multiplication as scaling (resizing). Example 1: 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. Example 2: 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.</p> <p>M05.A-F.2.1.4 Divide unit fractions by whole numbers and whole numbers by unit fractions.</p> <p>M05.D-M.2.1.1 Solve problems involving computation of fractions by using information presented in line plots.</p>
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**Berlin Brothersvalley School District  
Berlin Brothersvalley Middle School  
5th Grade Math Curriculum Framework  
Full Year Course**

<b>Big Idea(s) for 3rd nine weeks</b>	<b>Concept(s) of 3rd nine weeks</b>	<b>Competencies of 3rd nine weeks</b>	<b>Essential Questions for 3rd nine weeks</b>
<p>Using a set of decimals, comparisons and order can occur.</p> <p>Labeling and plotting of points in quadrant one is the basis for all coordinate graphing.</p> <p>Adding, subtracting, and multiplying fractions provides a foundation of fractional knowledge.</p>	<p>Students will know...</p> <ul style="list-style-type: none"> <li>● decimal concepts and what is greater, less than or equal to</li> <li>● coordinate grids and plot points</li> <li>● operations with fractions and methods to calculate fractions</li> <li>● measurement conversions in the standard and metric system</li> </ul>	<p>Students will be able to...</p> <ul style="list-style-type: none"> <li>● compare and order decimal concepts</li> <li>● plot points in quadrant one of a coordinate grid</li> <li>● add, subtract, multiply and divide fractions</li> <li>● convert standard and metric measurement</li> </ul>	<p>How do you compare two decimals?</p> <p>How do you order a set of decimals to greatest to least and least to greatest?</p> <p>How can you plot and label a point on a coordinate grid?</p> <p>What methods can you use to add and subtract fractions?</p> <p>What methods can you use to multiply and divide fractions?</p> <p>How can you convert measurements?</p> <p>What methods can be used to multiply and divide decimals?</p>
<p style="text-align: center;"><b><u>Unit/Chapter/Selection of Study</u></b></p> <p style="text-align: center;">Unit 4A: Decimal Concepts</p>	<p style="text-align: center;"><b><u>Approx # of weeks - % of time</u></b></p> <p style="text-align: center;">3 weeks</p>	<p style="text-align: center;"><b><u>PA Core Standards</u></b></p> <p style="text-align: center;">CC.2.1.5.B.1 Apply place-value concepts to show an understanding of operations and rounding as they pertain to whole numbers and decimals</p>	<p style="text-align: center;"><b><u>Assessment Anchors &amp; Eligible Content</u></b></p> <p>M05.A-T.1.1.1 Demonstrate an understanding that in a multi-digit number, a digit in one place represents 1/10 of what it represents in the place to its left. Example:</p>

**Berlin Brothersvalley School District  
 Berlin Brothersvalley Middle School  
 5th Grade Math Curriculum Framework  
 Full Year Course**

		<p>CC.2.1.5.B.2 Extend an understanding of operations with whole numbers to perform operations including decimals.</p>	<p>Recognize that in the number 770, the 7 in the tens place is <math>\frac{1}{10}</math> the 7 in the hundreds place.</p> <p>M05.A-T.1.1.2 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. Example 1: <math>4 \times 10^2 = 400</math> Example 2: <math>0.05 \div 10^3 = 0.00005</math></p> <p>M05.A-T.1.1.3 Read and write decimals to thousandths using base-ten numerals, word form, and expanded form. Example: <math>347.392 = 300 + 40 + 7 + 0.3 + 0.09 + 0.002 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (0.1) + 9 \times (0.01) + 2 \times (0.001)</math></p> <p>M05.A-T.1.1.4 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.</p> <p>M05.A-T.1.1.5 Round decimals to any place (limit rounding to ones, tenths, hundredths, or thousandths place).</p>
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**Berlin Brothersvalley School District  
 Berlin Brothersvalley Middle School  
 5th Grade Math Curriculum Framework  
 Full Year Course**

			<p>M05.A-T.2.1.1 Multiply multi-digit whole numbers (not to exceed three-digit by three-digit).</p> <p>M05.A-T.2.1.2 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.</p> <p>M05.A-T.2.1.3 Add, subtract, multiply, and divide decimals to hundredths (no divisors with decimals).</p>
<p><b><u>Unit/Chapter/Selection of Study</u></b></p> <p>Unit 4B: Coordinate Grids</p>	<p><b><u>Approx # of weeks - % of time</u></b></p> <p>2 weeks</p>	<p><b><u>PA Core Standards</u></b></p> <p>CC.2.3.5.A.1 Graph points in the first quadrant on the coordinate plane and interpret these points when solving real world and mathematical problems.</p>	<p><b><u>Assessment Anchors &amp; Eligible Content</u></b></p> <p>M05.C-G.1.1.1 Identify parts of the coordinate plane (x-axis, y-axis, and the origin) and the ordered pair (x-coordinate and y-coordinate). Limit the coordinate plane to quadrant I.</p> <p>M05.C-G.1.1.2 Represent real-world and mathematical problems by plotting points in quadrant I of the coordinate plane and interpret coordinate values of points in the context of the situation.</p>

**Berlin Brothersvalley School District  
 Berlin Brothersvalley Middle School  
 5th Grade Math Curriculum Framework  
 Full Year Course**

<u>Unit/Chapter/Selection of Study</u>	<u>Approx # of weeks - % of time</u>	<u>PA Core Standards</u>	<u>Assessment Anchors &amp; Eligible Content</u>
Unit 5A: Operations with Fractions	3 weeks	<p>CC.2.1.5.C.1 Use the understanding of equivalency to add and subtract fractions.</p> <p>CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions.</p>	<p>M05.A-F.1.1.1 Add and subtract fractions (including mixed numbers) with unlike denominators. (May include multiple methods and representations.) Example: <math>2/3 + 5/4 = 8/12 + 15/12 = 23/12</math></p> <p>M05.A-F.2.1.1 Solve word problems involving division of whole numbers leading to answers in the form of fractions (including mixed numbers).</p> <p>M05.A-F.2.1.2 Multiply a fraction (including mixed numbers) by a fraction.</p> <p>M05.A-F.2.1.3 Demonstrate an understanding of multiplication as scaling (resizing). Example 1: 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. Example 2: 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</p>

**Berlin Brothersvalley School District  
 Berlin Brothersvalley Middle School  
 5th Grade Math Curriculum Framework  
 Full Year Course**

			<p>case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number.</p> <p>M05.A-F.2.1.4 Divide unit fractions by whole numbers and whole numbers by unit fractions.</p>
<p><b><u>Unit/Chapter/Selection of Study</u></b></p> <p>Unit 6A: Measurement</p>	<p><b><u>Approx # of weeks - % of time</u></b></p> <p>1 week</p>	<p><b><u>PA Core Standards</u></b></p> <p>CC.2.2.5.A.4 Analyze patterns and relationships using two rules.</p> <p>CC.2.4.5.A.1 Solve problems using conversions within a given measurement system.</p> <p>CC.2.4.5.A.2 Represent and interpret data using appropriate scale.</p>	<p><b><u>Assessment Anchors &amp; Eligible Content</u></b></p> <p>M05.B-O.2.1.1 Generate two numerical patterns using two given rules. 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.</p> <p>M05.B-O.2.1.2 Identify apparent relationships between corresponding terms of two patterns with the same starting numbers that follow different rules. Example: Given two patterns in which the first pattern follows the rule “add 8” and the second pattern follows the rule “add 2,” observe that the terms in the first pattern are 4 times the size of the terms in the second pattern.</p>

**Berlin Brothersvalley School District  
 Berlin Brothersvalley Middle School  
 5th Grade Math Curriculum Framework  
 Full Year Course**

			<p>M05.D-M.1.1.1 Convert between different-sized measurement units within a given measurement system. A table of equivalencies will be provided. Example: Convert 5 cm to meters.</p> <p>M05.D-M.2.1.1 Solve problems involving computation of fractions by using information presented in line plots.</p>
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Big Idea(s) for 4th nine weeks	Concept(s) of 4th nine weeks	Competencies of 4th nine weeks	Essential Questions for 4th nine weeks
<p>The comparison of two-dimensional shapes is the foundation to basic geometry.</p> <p>Line plots and bar graphs are used to gather and understand data.</p> <p>Everyday math problems allow for application to everyday and realistic problems.</p>	<p>Students will know...</p> <ul style="list-style-type: none"> <li>● multiplication and division methods for decimals</li> <li>● multiplication methods of mixed numbers</li> <li>● details of shapes, line plots, and bar graphs</li> <li>● math skill application in everyday problems</li> </ul>	<p>Students will be able to...</p> <ul style="list-style-type: none"> <li>● multiply and divide decimals</li> <li>● multiply mixed numbers</li> <li>● identify and compare two dimensional shapes</li> <li>● interpret line plots and bar graphs</li> <li>● apply math skills in everyday problems</li> </ul>	<p>What methods can you use to multiply mixed numbers?</p> <p>How do you compare two dimensional shapes?</p> <p>How can you use data to construct a line plot or bar graph?</p> <p>How can you apply math skills to solve everyday problems?</p>

**Berlin Brothersvalley School District  
 Berlin Brothersvalley Middle School  
 5th Grade Math Curriculum Framework  
 Full Year Course**

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Unit 6B: Decimal Multiplication and Division	2 weeks	CC.2.1.5.B.2 Extend an understanding of operations with whole numbers to perform operations including decimals.	<p>M05.A-T.2.1.1 Multiply multi-digit whole numbers (not to exceed three-digit by three-digit).</p> <p>M05.A-T.2.1.2 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.</p> <p>M05.A-T.2.1.3 Add, subtract, multiply, and divide decimals to hundredths (no divisors with decimals).</p>
Unit 7A: Multiplication of Mixed Numbers	2 weeks	CC.2.1.5.C.2 Apply and extend previous understandings of multiplication and division to multiply and divide fractions.	<p>M05.A-F.2.1.1 Solve word problems involving division of whole numbers leading to answers in the form of fractions (including mixed numbers).</p> <p>M05.A-F.2.1.2 Multiply a fraction (including mixed numbers) by a fraction.</p> <p>M05.A-F.2.1.3 Demonstrate an understanding of multiplication as scaling (resizing). Example 1: Comparing the size of a product to the</p>

**Berlin Brothersvalley School District  
 Berlin Brothersvalley Middle School  
 5th Grade Math Curriculum Framework  
 Full Year Course**

			<p>size of one factor on the basis of the size of the other factor without performing the indicated multiplication. Example 2: 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.</p> <p>M05.A-F.2.1.4 Divide unit fractions by whole numbers and whole numbers by unit fractions.</p>
<p style="text-align: center;"><b><u>Unit/Chapter/Selection of Study</u></b></p> <p>Unit 7B: Geometry/Graphs</p>	<p style="text-align: center;"><b><u>Approx # of weeks - % of time</u></b></p> <p style="text-align: center;">2 weeks</p>	<p style="text-align: center;"><b><u>PA Core Standards</u></b></p> <p>CC.2.3.5.A.2 Classify two-dimensional figures into categories based on an understanding of their properties.</p> <p>CC.2.4.5.A.2 Represent and interpret data using appropriate scale.</p> <p>CC.2.4.5.A.4 Solve problems involving computation of fractions using information provided in a line plot.</p>	<p style="text-align: center;"><b><u>Assessment Anchors &amp; Eligible Content</u></b></p> <p>M05.C-G.2.1.1 Classify two-dimensional figures in a hierarchy based on properties. Example 1: All polygons have at least three sides, and pentagons are polygons, so all pentagons have at least three sides. Example 2: A rectangle is a parallelogram, which is a quadrilateral, which is a polygon; so, a rectangle can be classified as a parallelogram, as a quadrilateral, and</p>

**Berlin Brothersvalley School District  
 Berlin Brothersvalley Middle School  
 5th Grade Math Curriculum Framework  
 Full Year Course**

			<p>as a polygon.</p> <p>M05.D-M.2.1.2 Display and interpret data shown in tallies, tables, charts, pictographs, bar graphs, and line graphs, and use a title, appropriate scale, and labels. A grid will be provided to display data on bar graphs or line graphs.</p> <p>M05.D-M.2.1.1 Solve problems involving computation of fractions by using information presented in line plots.</p>
<p style="text-align: center;"><b><u>Unit/Chapter/Selection of Study</u></b></p> <p>Application, Assessment, and Remediation of Math Skills</p>	<p style="text-align: center;"><b><u>Approx # of weeks - % of time</u></b></p> <p style="text-align: center;">3 weeks</p>	<p style="text-align: center;"><b><u>PA Core Standards</u></b></p> <p style="text-align: center;">Includes all standards listed above</p>	<p style="text-align: center;"><b><u>Assessment Anchors &amp; Eligible Content</u></b></p> <p style="text-align: center;">Includes all Eligible Content listed above</p>

Standards Legend: Essential Important Supplementary

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