



# Greenwich Public Schools Curriculum Overview

## Grade 5: Mathematics

### *Families as Partners in Learning*

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing an 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.

All grade 5 units of study are directly aligned with the approved Connecticut Core Standards for Mathematics.

The GPS Mathematics Program uses the philosophy of CPA (Concrete, Pictorial, Abstract). In the concrete stage, students use manipulatives to explore new concepts. In the pictorial stage, ideas are represented as models to help demonstrate the relationships between numbers. In the abstract stage, students connect their concrete experiences and pictorial representations to abstract symbols and numbers.

Unit	Student Learning Expectations
<p><b>Unit 1: Understanding the Place Value System</b></p> <p><b>Enduring Understandings:</b></p> <ul style="list-style-type: none"> <li>Understanding numbers, their representations, properties, and relationships assist in higher level thinking.</li> <li>Connections exist within mathematical concepts and can broaden</li> </ul>	<p><b>Students will Do:</b></p> <p>I can show that each place value to the left is 10 times larger in a multi-digit number.</p> <ul style="list-style-type: none"> <li>I can show that each place value to the right is 10 times smaller in a multi-digit number.</li> <li>I can express powers of 10 using exponents.</li> <li>I can explain the pattern for the number of zeros in a product relates to the power of 10.</li> <li>I can illustrate and explain a pattern for how multiplying/dividing by any decimal by a power of 10 relates to the placement of the decimal point.</li> <li>I can read and write decimals to the thousandths place in word form, base-ten form, and expanded form.</li> <li>I can compare two decimals to the thousandths.</li> <li>I can explain how decimals can be rounded and why it's useful.</li> <li>I can round decimals to any place.</li> </ul>



<p>Understanding of the world.</p> <ul style="list-style-type: none"> <li>• Patterns, relations, and functions are mathematical ways to describe connectedness and dependence.</li> <li>• Mathematical ideas must be communicated clearly in written, visual, or oral form.</li> </ul>	<ul style="list-style-type: none"> <li>• I understand why the value of the digit to the right of a number determines whether to round up or down.</li> <li>• I can convert measurement units.</li> <li>• I can solve problems using measurement conversions.</li> </ul>
<p><b>Unit 2: Whole Numbers, Decimals and Volumes</b></p> <p><b>Enduring Understandings:</b></p> <ul style="list-style-type: none"> <li>• Every numerical operation has an inverse.</li> <li>• Computational fluency requires efficient, accurate and flexible methods for computing.</li> <li>• Extending understanding of Base-10 notation is the basis for our number system.</li> <li>• Measurement processes are used in everyday life to describe and quantify the world.</li> <li>• Changes and relationships in the</li> </ul>	<p><b>Students will Do:</b></p> <p>I can explain the standard algorithm for multiplication of multi-digit numbers.</p> <ul style="list-style-type: none"> <li>• I can use the standard algorithm.</li> <li>• I can show division of whole numbers with one and two-digit divisors using place value, arrays, area models, and other strategies.</li> <li>• I can explain my computation.</li> <li>• I can add, subtract, multiply, and divide decimals.</li> <li>• I can explain how I computed with decimals using concrete models or drawings.</li> <li>• I can identify volume as an attribute of a solid figure.</li> <li>• I can recognize that a cube with 1 unit side length is “one cubic unit” of volume.</li> <li>• I can explain how to find the volume of a figure.</li> <li>• I can measure the volume of a solid figure by filling it with cubes and counting the number.</li> <li>• I can use unit cubes to determine the volume of a rectangular prism.</li> <li>• I can explain multiplication of the area of the base x the height will result in the volume.</li> <li>• I can relate finding the product of three numbers to finding volume and explain how it is related to the associative property.</li> <li>• I can use a formula for finding the volume of a rectangular prism.</li> <li>• I can decompose irregular figures into rectangular prisms.</li> </ul>



Physical world can be understood through measurement.

### Unit 3: Algebraic Connections and Geometry

#### **Enduring Understandings:**

- Algebraic representations are used to communicate and generalize patterns in mathematics.
- There is an order of operations that must be followed in all mathematical expressions.
- Graphical representations can be used to make predictions and interpretations about real world situations.
- The coordinate plane can be used to model and compare numerical patterns.
- Two-dimensional shapes can be described and classified by their properties.

#### **Students will Do:**

- I can use parentheses and brackets to group an expression within a multi-step expression.
- I can evaluate expressions with parentheses and brackets.
- I can use an expression to show a calculation described verbally.
- I can analyze expressions.
- I can make 2 numerical patterns with the same starting number for 2 different given rules.
- I can explain the relationship between each of the corresponding terms from a pattern.
- I can make ordered pairs with the corresponding terms in a pattern.
- I can graph ordered pairs on a coordinate plane.
- I can construct a coordinate system and recognize the origin.
- I can recognize the x-axis and y-axis.
- I can identify an ordered pair.
- I can explain the relationship of an ordered pair and the location on the coordinate plane.
- I can determine when a mathematical problem has a set of ordered pairs.
- I can graph points in the first quadrant of a coordinate plane.
- I can classify two-dimensional figures by their attributes
- I can explain two-dimensional attributes can belong to several two-dimensional figures.
- I can identify subcategories using two-dimensional attributes.
- I can group shapes that share a single property, and then among these shapes group those that share a second property, etc.

### Unit 4: Addition and Subtraction of Fractions

#### **Enduring Understandings:**

#### **Students will Do:**

- I can create equivalent fractions with common denominators.
- I can add and subtract fractions including mixed numbers.
- I can solve addition and subtraction word problems with fractions.



the number system is based on a well-defined system.

- Every numerical operation has an inverse.
- Computational fluency requires efficient, accurate and flexible methods for computing.
- Rational numbers can be represented in multiple ways.
- Tools and strategies are strategically selected and used to solve particular applications.
- Reflection on the process and reasonableness of the solution moves students from the symbolic to the practical.

- I can estimate fractions to make sense of my answer.
- I can create line plots with fraction measurements.
- I can solve problems using data from line plots.

### **Unit 5: Making Sense of Multiplication and Fractions**

#### ***Enduring Understandings:***

- Mathematics is used to make informed decisions about problems in everyday life.
- There are multiple representations for any number.

#### **Students will Do:**

- I can explain that fractions represent division.
- I can solve word problems that involve division of whole numbers and interpret the quotient in the context of the problem.
- I can explain or illustrate my solution using visual fraction models or equations.
- I can create story contexts for problems involving multiplication of fractions and whole numbers or multiplication of two fractions.
- I can tell about the size of a product based on the factors (relative to 1).
- I can solve problems that multiply fractions and mixed numbers.
- I can explain or illustrate my solution using fraction models or equations.



<p>Rational numbers can be presented in multiple ways.</p> <ul style="list-style-type: none"><li>• Estimates help determine the reasonableness of an answer.</li><li>• Various mathematical representations are useful for problem solving and communicating a solution.</li><li>• Understanding numbers, their representations, properties, and relationships assist in higher level thinking.</li></ul>	
<p><b>Unit 6: Understanding Division of a unit fraction and a whole number</b></p> <p><b><i>Enduring Understandings:</i></b></p> <ul style="list-style-type: none"><li>• Mathematics is used to make informed decisions about problems in everyday life.</li><li>• There are multiple representations for any number.</li><li>• Rational numbers can be represented in multiple ways.</li><li>• Various mathematical representations are useful</li></ul>	<p><b>Students will Do:</b></p> <ul style="list-style-type: none"><li>• I can create story contexts for problems involving division of a fraction.</li><li>• I can solve problems involving division of fractions.</li><li>• I can explain or illustrate my solution using visual fraction models or equations.</li></ul>



problem solving and communicating a solution.

- Understanding numbers, their representations, properties, and relationships assist in higher level thinking.