



Greenwich Public Schools Curriculum Overview

Grade 3: Mathematics

Families as Partners in Learning

In Grade 3, instructional time is focused on four areas; developing an understanding of multiplication and division strategies and multiplication and division within 100; developing an understanding of fractions, specifically unit fractions (fractions with a numerator); developing an understanding of the structure of rectangular arrays and of area; and describing and analyzing two-dimensional shapes.

All grade 3 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 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>Unit 1: Strategies for Addition and Subtraction within 1,000</p> <p>Enduring Understandings:</p> <ul style="list-style-type: none">• I learn best when I can learn from others.• Practice makes permanence.• Being mathematically proficient can determine my future.	<p>Students will Do:</p> <ul style="list-style-type: none">• Round whole numbers to the nearest 10.• Round whole numbers to the nearest 100.• Add within 1000 by using an algorithm or strategy based on place value.• Subtract within 1000 by using an algorithm or strategy based on place value.• Choose the correct operation to perform the first computation, and choose the correct operation to perform the second computation in order to solve two-step word problems.• Write equations using a letter for the unknown number.• Decide if my answers are reasonable using mental math and estimation strategies including rounding.



- Identify and describe arithmetic patterns in number charts, addition tables, and multiplication tables.
- Explain arithmetic patterns using properties of operations.

Unit 2: Understanding Multiplication and Division

Enduring Understandings:

- Multiplication is finding an unknown product.
- Division is finding an unknown factor.

Students will Do:

- Multiply one-digit numbers by 10.
- Multiply one-digit numbers by multiples of 10 using strategies based on place value and operation properties (e.g., $9 \times 80 = 9 \times (8 \times 10) = (9 \times 8) \times 10$; or $9 \times 80 = (9 \times 50) + (9 \times 30)$)
- Interpret products in multiplication (so $28 = 4 \times 7$ as groups of seven, an array with four rows and 7 columns and an area of 4 by 7 rectangle or 4 rows of 7 objects).
- Explain division as a set of objects partitioned into an equal numbers of shares.
- Identify parts of division equations (dividend, divisor, and quotient).
- Interpret quotients in division ($32 \div 4 = 8$ can be 4 groups with 8 items in each group or 8 groups with 4 items).
- Determine the unknown number in multiplication and division problems such as in the following examples: $8 \times 9 = ?$, $8 \times ? = 48$, $? \times 3 = 27$, $28 \div 7 = ?$, $? \div 6 = 3$, and $35 \div ? = 7$.
- Explain the commutative, associative, and distributive property of multiplication.
- Apply the commutative, associative, and distributive properties to decompose, regroup, and/or reorder factors to make it easier to multiply two or more factors.
- Explain how the operation properties can and cannot apply to division and use those properties that can apply to make it easier to find the quotient.
- Explain the relationship between multiplication and division.
- Turn a division problem into a multiplication problem with an unknown factor.
- Multiply any two numbers with a product within 100 with ease by picking and using strategies that will get to the answer fairly quickly.
- Divide whole numbers with a divisor within 100 and with a whole number quotient with ease by picking and using strategies that will get to the answer fairly quickly.



	<ul style="list-style-type: none">● Instantly recall from memory the product of any two one-digit numbers.
<p>Unit 3: Connecting and Using Multiplication and Division</p> <p>Enduring Understandings:</p> <ul style="list-style-type: none">● Multiplication and division are related/inverse (opposite) operations.● The number is 10 times larger than the basic fact● Use the situation to recognize when to take a whole apart; or put groups together.	<p>Students will Do:</p> <ul style="list-style-type: none">● Determine when to multiply and divide in word problems.● Represent multiplication and division word problems using drawings, and equations with unknowns in all positions.● Choose the correct operation to perform the first computation, and choose the correct operation to perform the second computation in order to solve two-step word problems.● Write equations using a letter for the unknown number.● Decide if my answers are reasonable using mental math and estimation strategies including rounding.● Define a unit square.● Define area as the measure of space within a plane figure and explain why area is measured in square units.● Measure the area of a shape or flat surface by covering it with unit square - with no gaps or overlaps - and counting the number of unit squares used.● Use tiles to find the area of rectangles.● Explain the relationship between tiling and multiplying side lengths to find the area of rectangles.● Multiply adjacent side lengths of rectangles to solve word problems.● Use area models to explain the distributive property.● Decompose an irregular figure into non-overlapping rectangles.● Explain area as additive and use this understanding to solve word problems.● Identify polygons.● Define perimeter.● Find the perimeter of polygons when given the lengths of all sides.● Find the unknown side lengths of polygons when given the perimeter.● Show how rectangles with the same perimeter can have different areas and show rectangles with the same area can have different perimeters.● Solve word problems
<p>Unit 4: Understanding and Reasoning About Fractions</p>	<p>Students will Do:</p>



Enduring Understandings:

- Fractions can be expressed as equal parts of a whole.
- A number line can be partitioned into equal parts between two whole numbers (0 to 1).
- Models can be used to explain equivalent fractions and whole numbers as fractions.

- Explain any fraction ($1/b$) as one part of a whole.
- Explain any fraction (a/b) as “a” (numerator) being the numbers of parts and “b” (denominator) as the total number equal parts in the whole.
- Explain and show how $1/b$ can be represented on a number-line in two ways (1) as a number that is located a distance of $1/b$ to the right of 0, and (2) as the size of each of the parts when a whole is partitioned into b equal parts.
- Represent a unit fraction ($1/b$) on a number line between 0 and 1.
- Represent any fraction (a/b) on a number line.
- Use models to show and explain equivalent fractions.
- Locate equivalent fractions on a number line.
- Use models to show and explain whole numbers as fractions.
- Locate whole numbers as fractions on a number line.
- Use models to compare two fractions and record the comparison using $<$, $>$, or $=$.
- Explain how the size of equal parts can be used to compare two fractions with the same numerator, and explain how the number of equal parts can be used to compare two fractions with the same denominator.
- Use a ruler to measure lengths in whole, half, and quarter inches
- Gather and record measurement data using whole, half, and quarter inches.
- Make a line plot with horizontal scale marked off in whole number, half, or quarter units.

Unit 5: Shapes and Time

Enduring Understandings:

- The use of mathematical reasoning can help to compare fractions.
- Comparisons are valid only when the two

Students will Do:

- Use attributes to identify shapes.
- Use attributes to classify shapes into categories.
- Define quadrilaterals.
- Recognize rhombuses, rectangles, and squares as being examples of quadrilaterals.
- Draw quadrilaterals other than rhombuses, rectangles, and squares.
- Partition shapes into equal parts.
- Explain any unit fraction as one part of a whole divided into equal parts.



<p>fractions refer to the same whole.</p> <ul style="list-style-type: none">• When comparing fractions it is important is to look at the size of the parts and the number of the parts.	<ul style="list-style-type: none">• Say and write time to the nearest minute.• Measure the duration of time in minutes.• Solve addition and subtraction word problems involving durations of time measured in minutes..
<p>Unit 6: Exploring Measurement and Data</p> <p><i>Enduring Understandings:</i></p> <ul style="list-style-type: none">• Measuring is approximate.• Graphs help to display data.• Data tells a story.	<p>Students will Do:</p> <ul style="list-style-type: none">• Estimate liquid volumes and masses of objects using standard units of measure (grams, kilograms, and liters)• Measure liquid volumes and masses of objects using standard units of measure (grams, kilograms, and liters)• Use a drawing to represent one-step word problems involving masses or volumes.• Solve one-step word problems involving masses or volumes using addition, subtraction, multiplication, and division.• Make a scaled picture graph or bar graph with several categories to represent data (e.g., one square or picture represents 5 objects).• Read and interpret scaled bar graphs in order to solve one- and two-step "how many more" and "how many less" problems.