



## Clinton Township Public School District 5th Grade Mathematics Curriculum

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Unit 5

### Unit 1

<b>Subject:</b> Mathematics	<b>Grade:</b> 5	<b>Unit Name:</b> Unit 1: Whole Number Applications: Volume, Multiplication and Division
<b>Total Number of Lessons:</b> 6	<b>Unit Time Frame (days):</b> 31	
<b>NJSLS</b> 4.MD.A.3; 4.NBT.B.5; 5.MD.C.3; 5.MD.C.4; 5.MD.C.5; 5.NBT.B.5; 5.NBT.B.6		
<b>Students will be able to independently use their learning to:</b> <ul style="list-style-type: none"><li>• Find the volume of a solid figure by counting unit cubes.</li><li>• Find the volume by using a formula.</li><li>• Break apart a solid figure into rectangular prisms to find its volume.</li><li>• Multiply multi-digit whole numbers for example, <math>410 \times 16 = 6,560</math>.</li><li>• Divide a multi-digit whole number by a two digit number, for example: <math>2,812 \div 38 = 74</math>.</li></ul>		
<b>Understandings:</b> <ul style="list-style-type: none"><li>• Volume is the amount of space inside a three-dimensional figure.</li><li>• Knowledge about finding the area of rectangles is the first step in calculating the volume of rectangular prisms.</li><li>• Place value, area models, and other strategies can be used to multiply multi-digit numbers and divide by two-digit divisors.</li></ul>		
<b>Performance Tasks:</b> <ul style="list-style-type: none"><li>• Apply the area and perimeter formulas for rectangles in real world and mathematical problems</li></ul>		

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Admin Approval: Carl Blanchard  
Board Approved 9/11/23

- Multiply a whole number of up to four digits by a one digit whole number, and multiply two digit numbers using strategies based on place value and the properties of multiplication.
- Recognize volume as an attribute of solid figure and understand concepts of volume measurement
- Measure volume by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume
- Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume
- Fluently multiply multi-digit whole numbers using the standard algorithm
- 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.

**Core Instructional and Supplemental Materials, Assessments, Pacing Guide**

Materials and assessments are provided by i-Ready.

[Unit 1: 5th Grade Math Curriculum CTSD 2023 - 24](#)

**Interdisciplinary Connections:**

- 5-PS1-3 - Make observations and measurements to identify materials based on their properties. Students could measure volume and mass of materials.

**[Computer Science & Design Thinking](#)** (8.1 or 8.2)

- 8.2.5.ED.2: Collaborate with peers to illustrate components of a designed product or system. Students could work together to design 3D models or blueprints applying volume, area, and perimeter.

**[Career Readiness, Life Literacies & Key Skills](#)** (9.1, 9.2 or 9.4)

- 9.4.5.IML.2: Create a visual representation to organize information about a problem or issue

**Accommodations:**

[CTSD Accommodations](#)

**UNIT 2**

<b>Subject:</b> Mathematics	<b>Grade:</b> 5	<b>Unit Name:</b> Unit 2 -Decimals and Fractions: Place Value, Addition, and Subtraction
<b>Total Number of Lessons:</b> 8	<b>Unit Time Frame (days):</b> 35	
<b>NJSLS</b> 5.NBT.A.1; 5.NBT.A.2; 5.NBT.A.3; 5.NBT.A.4; 5.NBT.B.7; 5.NF.A.1; 5.NF.A.2		

**Students will be able to independently use their learning to:**

- Recognize that 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.
- Use patterns to understand multiplying and dividing whole numbers and decimals to powers of 10.
- Read and write decimals in different forms, For example;  $80.63 = (8 \times 10) + (6 \times 1/10) + (3 \times 1/100)$
- Compare decimals, for example  $3.47 > 3.096$
- Round decimals, for example, 6.274 rounded to the nearest tenth is 6.3
- Add and subtract decimals, for example:  $20.08 + 5.15 = 25.23$
- Add and subtract fractions with unlike denominators.
- Estimate sums and differences of fractions or decimals.

**Understandings:**

- Place value in decimals follows the same base-ten patterns as whole numbers.
- Knowledge of patterns when multiplying by 10, can be used to understand multiplying and dividing by powers of 10.
- Understanding adding and subtracting whole numbers help in adding and subtracting decimals.
- Understanding equivalent fractions helps to add and subtract fractions with unlike denominators.

**Performance Tasks:**

- 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.
- 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 decimals multiplied or divided by a power of 10. Use whole number exponents to denote powers of 10.
- Read, write, and compare decimals to the thousandths.
- Use place value understanding to round decimals to any place.
- Add, subtract, multiply and divide decimals to the 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.
- 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.
- 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.

**Core Instructional and Supplemental Materials, Assessments, Pacing Guide**

Materials and assessments are provided by i-Ready

[Math 5 Unit 2](#)

<p><b>Interdisciplinary Connections:</b></p> <ul style="list-style-type: none"> <li>5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. Graph decimal weight measurements on a coordinate plane or bar graph.</li> </ul>
<p><b>Computer Science &amp; Design Thinking</b> (8.1 or 8.2)</p> <ul style="list-style-type: none"> <li>8.2.5.ED.2: Collaborate with peers to illustrate components of a designed product or system. Students could work together to design visual models or representations of decimal concepts.</li> </ul>
<p><b>Career Readiness, Life Literacies &amp; Key Skills</b> (9.1, 9.2 or 9.4)</p> <ul style="list-style-type: none"> <li>9.4.5.CT.3 - Devise a step-by-step plan to solve an authentic, real-world problem.</li> <li>9.4.5.IML.8 - Apply deliberate and thoughtful search strategies to access high-quality information on climate change. Students could research and discuss real-world issues involving decimals, like earnings or measurement data related to climate change.</li> </ul>
<p><b>Accommodations:</b>  <a href="#">CTSD Accommodations</a></p>

## UNIT 3

<b>Subject:</b> Mathematics	<b>Grade:</b> 5	<b>Unit Name:</b> Unit 3: More Decimals and Fractions: Multiplication and Division
<b>Total Number of Lessons:</b> 10	<b>Unit Time Frame (days):</b> 52	

**NJSLS**  
 5.NBT.B.7; 5.NF.B.3; 5.NF.B.4a; 5.NF.B.4b; 5.NF.B.5a; 5.NF.B.5b; 5.NF.B.6; 5.NF.B.7a; 5.NF.B.7b; 5.NF.B.7c

**Students will be able to independently use their learning to:**

- Multiply decimals, for example;  $7.25 \times 9.4 = 68.15$
- Divide decimals, for example:  $1.2 \div 0.6 = 2$
- Understand fractions as division, for example:  $\frac{3}{4} = 3 \div 4$
- Multiply fractions, for example:  $\frac{2}{3} \times \frac{5}{6} = \frac{10}{18}$  or  $\frac{5}{9}$
- Find the area of a rectangle with fractional side lengths by tiling and by multiplying.
- Understand multiplication as scaling, for example; will  $\frac{2}{3} \times \frac{1}{3}$  be greater than or less than  $\frac{1}{3}$ ?
- Multiply fractions and divide with unit fractions in word problems.
- Divide with unit fractions, for example:  $4 \div \frac{1}{7} = 28$

**Understandings:**

- Knowledge about multiplying whole numbers can help with multiplying decimals and fractions.

- Think of fractions as division expressions where the numerator is divided by the denominator.
- Reasoning about the size of the factors helps to reason about the size of a product: how does a factor greater or less than 1 affect a product?
- Use relationships between multiplication and division to help divide whole numbers by unit fractions and unit fractions by whole numbers.

#### Performance Tasks:

- Add, subtract, multiply and divide decimals to hundredths, using concrete models or drawings and strategies based on place value properties of operations and/or relationships between addition and subtraction, relate the strategy to a written method and explain the reasoning used.
- Interpret a fraction as division of a numerator by the denominator. ( $a/b = a \div b$ ). Solve word problems involving division of whole numbers 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  $3/4$  as the result of dividing 3 by 4, noting that  $3/4$  multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size  $3/4$ . 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?
- Interpret the product  $(a/b) \times q$  as a parts of a partition of  $q$  into  $b$  equal parts; equivalently, as the result of a sequence of operations  $a \times q \div b$ . For example, use a visual fraction model to show  $(2/3) \times 4 = 8/3$ , and create a story context for this equation. Do the same with  $(2/3) \times (4/5) = 8/15$ . (In general,  $(a/b) \times (c/d) = ac/bd$ .)
- 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.
- 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.
- 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.
- Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for  $(1/3) \div 4$ , and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that  $(1/3) \div 4 = 1/12$  because  $(1/12) \times 4 = 1/3$ .
- Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for  $4 \div (1/5)$ , and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that  $4 \div (1/5) = 20$  because  $20 \times (1/5) = 4$ .
- 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  $1/2$  lb of chocolate equally? How many  $1/3$ -cup servings are in 2 cups of raisins?

<p><b>Core Instructional and Supplemental Materials, Assessments, Pacing Guide</b></p> <p>Materials and assessments are provided by i-Ready</p> <p><a href="#">Math 5 Unit 3</a></p>
<p><b>Interdisciplinary Connections:</b></p> <ul style="list-style-type: none"> <li>5-PS1-1. Develop a model to describe that matter is made of particles too small to be seen. Use rectangles with fractional side lengths to represent the particles and empty space in each phase of matter. Calculate and compare the fractional areas representing particle spacing in solids, liquids, and gasses.</li> </ul>
<p><b><a href="#">Computer Science &amp; Design Thinking</a></b> (8.1 or 8.2)</p> <ul style="list-style-type: none"> <li>8.2.5.ED.2: Collaborate with peers to illustrate components of a designed product or system. Students could work together to design models of rectangular areas with fractional sides.</li> <li>8.2.5.ED.5: Evaluate and test alternative solutions to identify the best outcome, using predetermined criteria. Students could build different rectangular containers with set volume or area goals based on fractional dimensions.</li> </ul>
<p><b><a href="#">Career Readiness, Life Literacies &amp; Key Skills</a></b> (9.1, 9.2 or 9.4)</p> <ul style="list-style-type: none"> <li>9.4.5.CT.1 - Identify and gather relevant data that will aid in the problem-solving process. Students could collect real-world examples of rectangles with fractional side lengths.</li> </ul>
<p><b>Accommodations:</b></p> <p><a href="#">CTSD Accommodations</a></p>

## UNIT 4

<b>Subject:</b> Mathematics	<b>Grade:</b> 5	<b>Unit Name:</b> Unit 4: Measurement, Data, and Geometry: Converting Units, Using Data, and Classifying Figures
<b>Total Number of Lessons:</b> 5	<b>Unit Time Frame (days):</b> 27	
<p><b>NJSLS</b></p> <p>5.MD.A.1; 5.MD.B.2; 5.G.B.3; 5.G.B.4</p>		
<p><b>Students will be able to independently use their learning to:</b></p> <ul style="list-style-type: none"> <li>Convert from one measurement unit to another, for example 48 inches = 4 feet</li> <li>Solve multi-digit problems involving conversions between measurements.</li> <li>Make a line plot of measurement data expressed in fractions of a unit.</li> <li>Solve problems based on data shown in a line plot.</li> </ul>		

- Classify two dimensional figures based on their attributes, for example; a square is also a rhombus and a rectangle, but not all rhombuses and rectangles are squares.
- Use a Venn diagram and tree diagram to organize two dimensional figures based on shared properties.

**Understandings:**

- Division can be used to convert from smaller to larger units of measurement within the same measurement system.
- Understanding operations on fractions can be used to help solve problems about data presented in line plots.
- Two dimensional figures can be classified into categories and subcategories based on their properties.

**Performance Tasks:**

- 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.
- Make a line plot to display a data set of measurements in fractions of a unit ( $\frac{1}{2}$ ,  $\frac{1}{4}$ ,  $\frac{1}{8}$ ). Use operations on fractions for this grade to solve problems involving information presented in 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.
- 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.
- Classify two-dimensional figures in a hierarchy based on properties

**Core Instructional and Supplemental Materials, Assessments, Pacing Guide**

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[Math 5 Unit 4](#)

**Interdisciplinary Connections:**

- 5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. Convert between grams and kilograms using multiplication and division to find total weights.
- 5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.

**[Computer Science & Design Thinking](#) (8.1 or 8.2)**

- 8.1.5.DA.1 Collect, organize, and display data in order to highlight relationships or support a claim. Students could use CS tools to generate line plots showing fractional data.

**[Career Readiness, Life Literacies & Key Skills](#) (9.1, 9.2 or 9.4)**

- 9.4.5.TL.3 Select appropriate tools to organize and present information digitally. Students could use spreadsheet or data visualization software to create fractional data line plots.

**Accommodations:**  
[CTSD Accommodations](#)

## UNIT 5

<b>Subject:</b> Mathematics	<b>Grade:</b> 5	<b>Unit Name:</b> Unit 5: Algebraic Thinking and the Coordinate Plane: Expressions, Graphing Points, Patterns and Relationships
<b>Total Number of Lessons:</b> 4	<b>Unit Time Frame (days):</b> 17	
<b>NJSLS</b> 5.OA.A.1; 5.OA.A.2; 5.G.A.1; 5.G.A.2; 5.OA.B.3		
<b>Students will be able to independently use their learning to:</b> <ul style="list-style-type: none"><li>• Evaluate expressions, for example <math>48 \div (6 + 10)</math> has a value of 3.</li><li>• Write a numerical expression to represent a phrase, for example: subtract 5 from 12, then multiply by 4 can be written as <math>(12 - 5) \times 4</math></li><li>• Write ordered pairs for points in the coordinate plane.</li><li>• Graph points in the coordinate plane.</li><li>• Find the vertical and horizontal distance between two points in the coordinate plane.</li><li>• Graph quantities that represent real-world situations in the coordinate planes and interpret the coordinates of a point in terms of a real world context.</li><li>• Generate a numerical pattern using a rule.</li><li>• Describe the relationship between corresponding terms of two numerical patterns.</li></ul>		
<b>Understandings:</b> <ul style="list-style-type: none"><li>• Grouping symbols such as braces, brackets and parentheses, show the order in which parts of an expression should be evaluated.</li><li>• The coordinate plane is a two-dimensional space formed by two perpendicular number lines.</li></ul>		
<b>Performance Tasks:</b> <ul style="list-style-type: none"><li>• Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.</li><li>• Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.</li><li>• Use a pair of perpendicular number lines, called axes, to define a coordinate system, with 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 coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, with the convention that the names of the two axes and the coordinate correspond.</li></ul>		



- 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
- Generate two numerical patterns using given rules. Identify apparent relationships between corresponding terms. From ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

**Core Instructional and Supplemental Materials, Assessments, Pacing Guide**

Materials and assessments are provided by i-Ready

[Math 5 Unit 5](#)

**Interdisciplinary Connections:**

- 5-PS1-1. Support an argument with evidence, data, or a model. (graph)
- W.5.2. Write informative/explanatory texts to examine a topic and convey ideas and information clearly. Students could write about graphs they create.

**[Computer Science & Design Thinking](#)** (8.1 or 8.2)

- 8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim. Students could use computer programs to graph coordinate points or patterns.
- 8.2.5.ED.1: Collaborate with peers to illustrate components of a designed product or system. Students could collaboratively design a computer program or graph.

**[Career Readiness, Life Literacies & Key Skills](#)** (9.1, 9.2 or 9.4)

- 9.4.5.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive). Students could use different types of thinking to evaluate expressions.
- 9.4.5.TL.3: Select appropriate tools to organize and present information digitally. Students could use spreadsheet or graphing software to chart points or patterns.

**Accommodations:**

[CTSD Accommodations](#)