

## CCSU Comprehensive Curriculum for Math

# Grade Level 4

**Power Standard #1 – Numbers and Operations:** Students understand value and apply properties and operations of numbers. (Aligns with Vermont Standard 7.6)

**Power Standard #2 – Geometric Figures:** Students know and apply the attributes of geometric figures. (Aligns with Vermont Standard 7.7)

**Power Standard #3 – Units of Measure:** Students know and use units of measure. (Aligns with Vermont Standard 7.7)

**Power Standard #4 – Patterns, Equations, and Inequalities:** Students identify and extend patterns to express relationships between and among variables, and solve equations and inequalities. (Aligns with Vermont Standard 7.8)

**Power Standard #5 – Data:** Students represent, interpret, and predict using data. (Aligns with Vermont Standard 7.9)

**Power Standard #6 – Probability:** Students find probability theoretically and experimentally. (Aligns with Vermont Standard 7.9)

**Power Standard #7 – Problem Solving:** Students use a variety of approaches to solve problems and communicate solutions. (Aligns with Vermont Standard 7.10)

## Grade Level 4, Power Standard 1

**CCSU Power Standard #1:** Students understand value and apply properties and operations of numbers. (Aligns with Vermont Standard 7.6)

**Concepts to Emphasize:** Decimals ( tenths, hundredths), numerator/denominator, factor/multiple, product

Aligns with Vermont Standards	Vermont Grade Expectations Competency Focus	Focus and Learning Opportunities	CCSU Power Indicators Proficiency Focus
7.6	<p><b>M4:1: Demonstrates conceptual understanding of rational numbers with respect to:</b>  <b>whole numbers</b> from 0 to 99,999 through equivalency, composition, decomposition, or place value <b>using models, explanations, or other representations;</b> and</p> <p><b>positive fractional numbers</b> (benchmark fractions: <math>a/2</math>, <math>a/3</math>, <math>a/4</math>, <math>a/5</math>, <math>a/6</math>, <math>a/8</math>, or <math>a/10</math>, where <math>a</math> is a whole number greater than 0 and less than or equal to the denominator) as a part to whole relationship in area, set, or <b>linear models</b> where the number of parts in the whole are equal to, and a <b>multiple or factor of the denominator;</b> and <b>decimals</b> as <math>100^{\text{th}}</math> within the context of money, or <math>10^{\text{th}}</math> within the context of metric measurements (e.g., 2.3 cm) <b>using models, explanations, or other representations.</b></p> <p style="text-align: right;">M(N&amp;O)–4–1</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• read and write numbers to hundred-million; give the value of the digits in numerals to hundred-millions</li> <li>• decimals to hundredths/thousandths</li> <li>• fractional parts of collection of objects, fractional parts of region</li> <li>• rename fractions with denominators of 10 and 100.</li> <li>• find equivalent fractions (<math>a/4, a/5</math> and <math>a/10</math>), decimals, and percents</li> <li>• read/write numbers to billions; name value of digits in numerals to billions</li> <li>• give equivalencies between easy fractions, decimals and percents</li> </ul> <p><b>Learning Opportunities:</b>            Everyday Mathematics: 2.2, 2.3, 4.1, 4.6, 5.8, 7.1, 7.2, 7.3, 7.5, 7.6, 7.7, 7.8, 7.9, 7.10, 9.1, 9.2, 9.3</p>	<p>Regroup across place values, including decimals, to solve addition and subtraction problems (1a)</p>

7.6	<p><b>M4:2: Demonstrates understanding of the relative magnitude of numbers</b> from 0 to 99,999 by ordering or comparing whole numbers; and ordering, comparing, or identifying equivalent <u>proper positive fractional numbers; or decimals</u> using models, number lines, or explanations.</p> <p>M(N&amp;O)–4–2</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• have a successful strategy for adding/subtracting multi-digit numbers</li> <li>• compare and order decimals</li> <li>• compare large numbers</li> <li>• compare and order fractions</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 2.7, 2.9, 4.2, 5.8, 7.9</p>	<p>Compare and order fractions (1/2, 1/3, 1/4, 1/5, 1/6, 1/8, 1/10) (1d)</p> <p>Compare and order decimals (tenths and hundredths)(1e)</p>
7.6	<p><b>M4:3: Demonstrates conceptual understanding of mathematical operations</b> by describing or illustrating <u>the relationship between repeated subtraction and division (no remainders); the inverse relationship between multiplication and division of whole numbers; or the addition or subtraction of positive fractional numbers with like denominators</u> using models, number lines, or explanations.</p> <p>M(N&amp;O)–4–3</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• relationship between multiplication and division</li> <li>• strategies for solving addition and subtraction number stories</li> <li>• basic multiplications/division facts</li> <li>• exponential notation to represent powers of ten</li> <li>• remainders</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 5.9, 6.4</p>	<p>Estimate and solve 2-digit by 2-digit multiplication problems (1b)</p>

7.6	<p><b>M4:4: Accurately solves problems involving multiple operations on whole numbers or the use of the properties of factors and multiples; and addition or subtraction of decimals and positive proper fractions with like denominators. (Multiplication limited to 2 digits by 2 digits, and division limited to 1 digit divisors.)</b></p> <p><i>(IMPORTANT: Applies the conventions of order of operations where the left to right computations are modified only by the use of parentheses.)</i></p> <p>M(N&amp;O)–4–4</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• parentheses</li> <li>• addition/subtraction with decimals</li> <li>• multi-digit multiplication problems</li> <li>• solving division problems</li> <li>• add/subtract fractions</li> <li>• percents or fraction of a number</li> <li>• estimation strategies to divide decimals by whole numbers</li> <li>• estimation strategies to multiply decimals by whole numbers</li> <li>• add/subtract positive and negative integers</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 3.9, 4.4, 5.2, 5.7, 6.3, 7.4, 7.5, 9.1, 9.2, 9.3, 9.6, 9.8, 9.9, 10.6, 11.5, 11.6,</p>	<p>Estimate and solve division problems with 1-digit divisors with no remainder(1c)</p> <p>Add and subtract fractions with like denominators(1f)</p>
7.6	<p><b>M4:5 No expectation</b> at this grade level.</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• dollar and cents notating</li> <li>• equivalences between hundredth-fractions, decimals and percents</li> <li>• fractions to decimals or percents</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 4.5, 9.1, 9.2, 9.3, 9.4, 9.5, 9.7</p>	

7.6	<b>M4:6: Mentally adds and subtracts</b> whole numbers through twenty and <u>multiplies whole numbers through twelve</u> <b>with accuracy</b>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• addition/subtraction facts</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 1.1</p>	
7.6	<b>M4:7: Estimates and evaluates the reasonableness of solutions appropriate to grade level.</b>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• estimate sums</li> <li>• magnitude estimates for products of multi-digit numbers</li> <li>• round whole numbers to a given place</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 5.1, 5.3, 5.10, 5.11</p>	
7.6	<b>M4:8: Applies properties of numbers (odd, even, <u>factor, multiple, remainders, composition/decomposition</u>) to solve problems and to simplify computations.</b>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• simplify computations</li> <li>• extended multiplication facts</li> <li>• interpret remainder in division problems</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 5.5, 5.6, 6.4</p>	Know multiplication facts, 0-12(1g)

## Grade Level 4, Power Standard 2

**CCSU Power Standard #2:** Students know and apply the attributes of geometric figures. (Aligns with Vermont Standard 7.7)

**Concepts to Emphasize:** Symmetry, Rotate / Slide / Flip

Aligns with Vermont Standards	Vermont Grade Cluster Expectations Competency Focus	Focus and Learning Opportunities	CCSU Power Indicators Proficiency Focus
7.6	<p><b>M4:9: Uses properties or attributes of angles</b> (number of angles) <b>or sides</b> (number of sides, length of sides, <u>parallelism</u>, or <u>perpendicularity</u>) <b>to identify, describe, or distinguish among</b> triangles, squares, rectangles, rhombi, trapezoids, hexagons, or <u>octagons</u>; or <u>classify angles relative to 90°</u> as more than, less than, or equal to.</p> <p style="text-align: right;">M(G&amp;M)–4–1</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• name and draw line segments, and rays</li> <li>• identify acute, right, obtuse, straight and reflex angles</li> <li>• identify/classify properties of polygons</li> <li>• construct geometric figures</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 1.2,1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 6.8</p>	<p>Classify acute, right, and obtuse angles (2a)</p> <p>Classify polygons (2g)</p>
7.6	<p><b>M4:10 No expectation</b> at this grade level</p>		
7.6	<p><b>M4:11: Uses properties or attributes</b> (shape of bases or number of lateral faces) <b>to identify, compare, or describe three-dimensional shapes</b> (rectangular prisms, triangular prisms, cylinders, or spheres).</p> <p style="text-align: right;">M(G&amp;M)–4–3</p> <p><b>Identifies</b> components (<u>faces, edges, and vertices</u>) of three-dimensional shapes (<u>cubes and rectangular prisms</u>).</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• describes properties of geometric solids</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 11.2, 11.3</p>	<p>Identify faces, edges, and vertices of 3-dimensional figures (2b)</p>

7.6	<p><b>M4:12: Demonstrates conceptual understanding of congruency</b> using transformations (flips and slides and turns), and shape and size of polygons.</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• identify lines of symmetry lines of reflection, reflected figures and figures with line of symmetry</li> <li>• rotate figures to find congruency</li> <li>• use a mirror to draw the reflection of a figure</li> <li>• translate figures to find congruency</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 10.1, 10.2, 10.3, 10.4, 10.5,10.6</p>	Identify congruent figures (2c)
7.6	<p><b>M4:13: Demonstrates conceptual understanding of similarity</b> by applying scales on maps, or applying characteristics of similar figures (same shape but different proportional size) to identify similar figures, or to solve problems involving similar figures. Describes relationships using models or explanations.</p> <p style="text-align: right;">M(G&amp;M)–4–5</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• uses map scale to estimate distances</li> <li>• make and interpret scale drawings</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 3.6, 8.2, 8.3, 8.5,</p>	Identify and use scales on a map (2d)
7.6	<p><b>M4:14: Demonstrates conceptual understanding of perimeter of polygons, and the area of rectangles, <u>polygons or irregular shapes</u> on grids using a variety of models, manipulatives, or <u>formulas</u>. Expresses all measures using appropriate units.</b></p> <p style="text-align: right;">M(G&amp;M)–4–6</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• uses formulas to find area of rectangles, parallelograms, and triangles</li> <li>• find the perimeter of a polygon</li> <li>• estimate the area of a figure by counting units squares and fractions of unit squares inside the figure</li> <li>• solve cube-stacking volume of rectangular prism</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 11.5</p>	Determine area of polygons as they relate to rectangles (2f)

7.6	<b>M4: 17</b> No <b>M4: 17</b> at this grade level		
7.6	<b>M4: 18 Solves problems using the Cartesian coordinate system</b> (Quadrant 1) to locate coordinates and to represent data from tables.	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• Name and locate points specified by ordered number pairs on a coordinate grid</li> <li>• Identify/find locations on Earth given latitude and longitude</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 6.5, 6.7, 6.10</p>	

## Grade Level 4, Power Standard 3

CCSU Power Standard #3: Students know and use units of measure (See Appendix B). (Aligns with Vermont Standard 7.7)

Concepts to Emphasize: Time Zone

Aligns with Vermont Standards	Vermont Grade Cluster Expectations Competency Focus	Focus and Learning Opportunities	CCSU Power Indicators Proficiency Focus
7.7	<p><b>M4: 15 Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems</b> across the content strands. (Benchmarks in Appendix B.)</p> <p>M(G&amp;M)–4–7</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• Draw/ measure line segments to the nearest millimeter, centimeter</li> <li>• Draw/measure line segments to the nearest <math>\frac{1}{4}</math> inch and foot</li> <li>• Determine equivalences between lengths</li> <li>• Express metric measures with decimals</li> <li>• Convert between metric measures</li> <li>• Use personal reference estimates</li> <li>• Determine equivalents related to time</li> <li>• Make turns and fractions of turns; relate turns and angles</li> <li>• Use a circular /half-circle protractor to measure and draw angles</li> <li>• Determine temperature to 1 degree</li> <li>• Measures capacity, mass and weight</li> <li>• Estimates weight of objects in ounces or grams; weighs objects in ounces or grams</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 4.7, 4.8, 4.9, 6.6, 6.7, 6.8, 11.1, 11.7,</p>	Convert linear measurements within the metric system (mm, cm, m, km) (3b)

7.7	<b>M4: 16 Determines elapsed and accrued time to the <math>\frac{1}{4}</math> hour.</b>	<p><b>Focus</b></p> <ul style="list-style-type: none"> <li>Determine elapsed time</li> </ul> <p><b>Learning Opportunities</b> Everyday Mathematics: 3.8</p>	Determine elapsed time (3a)
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## Grade Level 4, Power Standard 4

**CCSU Power Standard #4:** Students identify and extend patterns to express relationships between and among variables, and solve equations and inequalities. (Aligns with Vermont Standard 7.8)

**Concepts to Emphasize:** Open Sentence, Variable, Equalities / Inequalities

Aligns with Vermont Standards	Vermont Grade Cluster Expectations Competency Focus	Focus and Learning Opportunities	CCSU Power Indicators Proficiency Focus
7.8	<p><b>M4: 19 Identifies and extends to specific cases a variety of patterns</b> (linear and <u>nonlinear</u>) represented in models, tables or sequences; and <u>writes a rule in words or symbols to find the next case.</u></p> <p style="text-align: right;">M(F&amp;A)–4–1</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>Identifies and extends non-linear and non=linear patterns by finding a rule</li> </ul>	Write a rule to find the next term in a pattern using words and/or algebraic notation (4a)
7.8	<p><b>M4: 20 Demonstrates a conceptual understanding of linear relationships</b> (<math>y = kx</math>) as a constant rate of change by identifying, describing, or comparing situations that represent constant rates of change.</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>Demonstrates understanding of linear relationships</li> <li>Solve rate problems, using rate table as necessary</li> <li>Find unit rates</li> <li>Calculate unit prices to find 'best buy'</li> <li>Evaluate the reasonableness of rate data</li> <li>Collect and compare rate data</li> </ul> <p><b>Learning Opportunities:</b> Everyday Mathematics: 12.1, 12.2, 12.3, 12.4, 12.5, 12.6,</p>	

7.8	<p><b>M4: 21 Demonstrates conceptual understanding of algebraic expressions</b> by using letters or symbols to represent unknown quantities to write simple linear algebraic expressions involving any one of the four operations; or by evaluating simple linear algebraic expressions using whole numbers.</p> <p style="text-align: right;">M(F&amp;A)–4–3</p>		Identify equivalences between two expressions involving variables and parentheses (4b)
7.8	<p><b>M4: 22 Demonstrates conceptual understanding of equality</b> by showing equivalence between two expressions using models or different representations of the expressions, by <u>simplifying numerical expressions where left to right computations may be modified only by the use of parentheses [e.g., <math>14 - (2 \times 5)</math>]</u> (expressions consistent with the parameters of M(F&amp;A)–4–3), and by <u>solving one-step linear equations of the form <math>ax = c</math>, <math>x \pm b = c</math>, where <math>a</math>, <math>b</math>, and <math>c</math> are whole numbers with <math>a \neq 0</math></u></p> <p style="text-align: right;">M(F&amp;A)–4–4</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• Solves open sentences</li> <li>• Determine whether sentences are true or false</li> </ul> <p><b>Learning Opportunities</b> Everyday Mathematics: 3.8, 3.9, 3.10</p>	

## Grade Level 4, Power Standard 5

**CCSU Power Standard #5:** Students represent, interpret, and predict using data. (Aligns with Vermont Standard 7.9)

**Concepts to Emphasize:** Data Set, Mode / Median / Range / Maximum / Minimum

Aligns with Vermont Standards	Vermont Grade Cluster Expectations Competency Focus	Focus and Learning Opportunities	CCSU Power Indicators Proficiency Focus
7.9	<p><b>M4: 23 Interprets a given representation</b> (line plots, tables, bar graphs, <u>pictographs</u>, or <u>circle graphs</u>) to answer questions related to the data, to analyze the data to formulate or <u>justify</u> conclusions, to make predictions, or to <u>solve problems</u>.</p> <p>(IMPORTANT: <i>Analyzes data consistent with concepts and skills in M4: 24.</i>)</p> <p style="text-align: right;">M(DSP)–4–1</p> <p><u>And (tally charts, frequency charts, line graphs, Venn diagrams).</u></p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>Interprets a given representation to answer a question</li> </ul> <p><b>Learning Opportunities</b> Everyday Mathematics: 2.5</p>	Interpret data on a circle graph and line plot (5c)
7.9	<p><b>M4: 24 Analyzes patterns, trends, or distributions in data in a variety of contexts by determining or using <u>measures of central tendency</u> (median or mode), or <u>range</u>.</b></p> <p style="text-align: right;">M(DSP)–4–2</p>	<p><b>Focus</b></p> <ul style="list-style-type: none"> <li>Interprets a given statistical landmarks</li> </ul> <p><b>Learning Opportunities</b> Everyday Mathematics: 2.5, 2.6</p>	Identify the range and median of a data set (5a)

7.9	<p><b>M4: 25 Organizes and displays data using <u>line plots</u>, bar graphs, tally charts and frequency charts, or tables to answer question related to the data, to analyze the data to formulate or <u>justify</u> conclusions, or to make predictions.</b></p> <p><i>(IMPORTANT: Analyzes data consistent with concepts and skills in M4: 24.)</i></p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• Display data with a line plot, bar graph, or tally chart</li> </ul>	<p>Analyze data to predict an outcome (5b)</p>
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## Grade Level 4, Power Standard 6

**CCSU Power Standard #6:** Students find probability theoretically and experimentally. (Aligns with Vermont Standard 7.9)

**Concepts to Emphasize:** Chance, Outcome, Probability

Aligns with Vermont Standards	Vermont Grade Cluster Expectations Competency Focus	Focus and Learning Opportunities	CCSU Power Indicators Proficiency Focus
7.9	<p><b>M4: 26 Uses counting techniques to solve problems</b> in context involving combinations or <u>simple permutations</u> (e.g., given a map, determines the number of paths from point A to point B) using a variety of strategies (e.g., organized lists, tables, tree diagrams, or others). M(DSP)–4–4</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• Uses counting techniques to solve problems</li> </ul>	Find combinations using counting techniques (tree diagram, organized list, and table) (6b)
7.9	<p><b>M4: 27 For a probability event in which the sample space may or may not contain equally likely outcomes, determines the <u>theoretical probability of an event and expresses the result as part to whole</u> (e.g., two out of five).</b> M(DSP)–4–5</p>	<p><b>Focus:</b></p> <ul style="list-style-type: none"> <li>• Apply basic vocabulary and concepts associated with chance events</li> </ul> <p><b>Learning Opportunities</b> Everyday Mathematics: 7.11, 7.12</p>	Find theoretical probability as a part to a whole (6a)
7.9	<p><b>M4: 28 In response to a teacher - or student-generated question or hypothesis, collects appropriate data, organizes the data, displays/represents the data, <u>analyzes the data to draw</u> conclusions about the questions or hypothesis being tested.</b></p> <p>(IMPORTANT: <i>Analyzes data consistent with concepts and skills in M4: 24.</i>)</p>	<p><b>Focus</b></p> <ul style="list-style-type: none"> <li>• Collects, organizes and displays data in response to a given question</li> </ul> <p><b>Learning Opportunities</b> Everyday Mathematics: 2.8</p>	

7.9	<p><b>M4: 29 <u>Uses experimental probability, records the outcomes, and describes the likelihood of an event</u> as a value from 0 through 1 (for events that are certain to occur) written as either a ratio or as part to whole (e.g., 7 out of 10).</b></p>	<p><b>Focus</b></p> <ul style="list-style-type: none"> <li>• Use and explain strategies for solving multiplication/division number stories</li> <li>• Uses experimental probability, records outcomes and describes likelihood of events</li> </ul> <p><b>Learning Opportunities</b> Everyday Mathematics: 6.4</p>	
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## Grade Level 4, Power Standard 7

**CCSU Power Standard #7:** Students use a variety of approaches to solve problems and to communicate solutions. (Aligns with Vermont Standard 7.9)

**Concepts to Emphasize:** Reasonableness

Aligns with Vermont Standards	Vermont Grade Cluster Expectations Competency Focus	Focus and Learning Opportunities	CCSU Power Indicators Proficiency Focus
7.9	<p><b>M2:30: Demonstrate understanding of mathematical problem solving and communication through:</b></p> <ul style="list-style-type: none"> <li>• <b>Approach &amp; Reasoning</b> -- The reasoning, strategies, and skills used to solve the problem;</li> <li>• <b>Connections</b> -- Demonstration of observations, applications, extensions, and generalizations;</li> <li>• <b>Solution</b> -- All of the work that was done to solve the problem, including the answer;</li> <li>• <b>Mathematical Language</b> -- The use of mathematical language in communicating the solution;</li> <li>• <b>Mathematical Representation</b> -- The use of mathematical representation to communicate the solution; and</li> <li>• <b>Documentation</b> -- Presentation of the solution.</li> </ul>	<p><b>Learning Opportunities:</b> Everyday Mathematics Open Response (unit assessments)</p>	<p>Approach a problem correctly (7a)</p> <p>Provide solution with evidence (7b)</p> <p>Communicate mathematically (7c)</p>