

Comparison of the MLR and NECAP Expectations

Grade 4 Mathematics

Maine Learning Results	NECAP Grade Level Expectations	Differences/Comments
A. Number	Number and Operations	
1. Students <i>understand</i> and use number notation and place value to 10,000 in numerals.	<p>M(N&O)–4–1 Demonstrates conceptual understanding of rational numbers with respect to: whole numbers from 0 to 999,999 through equivalency, composition, decomposition, or place value using models, explanations, or other representations; and positive fractional numbers (benchmark fractions: $\frac{a}{2}$, $\frac{a}{3}$, $\frac{a}{4}$, $\frac{a}{5}$, $\frac{a}{6}$, $\frac{a}{8}$, or $\frac{a}{10}$, where a 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 <u>linear models</u> where the number of parts in the whole are equal to, and a <u>multiple or factor of the denominator</u>; and <u>decimals as hundredths</u> within the context of money, or tenths <u>within the context of metric measurements (e.g., 2.3 cm)</u> using models, explanations, or other representations.</p> <p>M(N&O)–4–2 Demonstrates understanding of the relative magnitude of numbers from 0 to 999,999 by ordering or comparing whole numbers; and ordering, comparing, or identifying equivalent proper positive <u>fractional numbers</u>; or <u>decimals</u> using models, number lines, or explanations.</p>	The highlighted portions of the NECAP GLEs relate to this MLR.
2. Students <i>understand</i> and use the concepts of factor and multiple.	<p>M(N&O)–4–4 Accurately solves problems involving <u>multiple operations on whole numbers</u> or the use of the properties of factors and multiples; and addition or subtraction of <u>decimals and positive proper fractions with like denominators</u>. (Multiplication limited to 2 digits by 2 digits, and division limited to 1 digit divisors.)</p>	The highlighted portion of the NECAP GLE relates to this MLR.

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3. Students <i>understand</i> and use procedures to multiply and divide whole numbers by two-digit numbers.	M(N&O)–4–4 Accurately solves problems involving <u>multiple operations on whole numbers or the use of the properties of factors and multiples</u> ; and addition or subtraction of <u>decimals and positive proper fractions with like denominators</u> . (Multiplication limited to 2 digits by 2 digits, and division limited to 1 digit divisors.) (IMPORTANT: <i>Applies the conventions of order of operations where the left to right computations are modified only by the use of parentheses.</i>)	NECAP limits divisions to one-digit divisors.
4. Students <i>understand</i> , name, compare, illustrate, combine, and use fractions.	M(N&O)–4–1 Demonstrates conceptual understanding of rational numbers with respect to: whole numbers <u>from 0 to 999,999</u> through equivalency, composition, decomposition, or place value using models, explanations, or other representations; <u>and positive fractional numbers (benchmark fractions: $a/2$, $a/3$, $a/4$, $a/5$, $a/6$, $a/8$, or $a/10$, where a 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 <u>linear models</u> where the number of parts in the whole are equal to, and a <u>multiple or factor of the denominator</u>; and <u>decimals as hundredths</u> within the context of money, or tenths <u>within the context of metric measurements (e.g., 2.3 cm)</u> using models, explanations, or other representations. M(N&O)–4–2 Demonstrates understanding of the relative magnitude of numbers from <u>0 to 999,999</u> by ordering or comparing whole numbers; and <u>ordering, comparing, or identifying equivalent proper positive fractional numbers; or decimals</u> using models, number lines, or explanations.</u>	The highlighted portions of the NECAP GLEs relates to this MLR.

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5. Students <i>understand</i> and use number notation and place value in numbers with two decimal places in real-world contexts including money.	<p>M(N&O)–4–1 Demonstrates conceptual understanding of rational numbers with respect to:</p> <p>whole numbers <u>from 0 to 999,999</u> through equivalency, composition, decomposition, or place value using models, explanations, or other representations; and positive fractional numbers (benchmark fractions: $\frac{a}{2}$, $\frac{a}{3}$, $\frac{a}{4}$, $\frac{a}{5}$, $\frac{a}{6}$, $\frac{a}{8}$, or $\frac{a}{10}$, where a 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 <u>linear models</u> where the number of parts in the whole are equal to, and a <u>multiple or factor of the denominator</u>; and <u>decimals as hundredths within the context of money, or tenths within the context of metric measurements (e.g., 2.3 cm)</u> using models, explanations, or other representations.</p>	<p>The highlighted portion of the NECAP GLE relates to this MLR.</p> <p>NECAP also includes the use of decimals in the context of metric units.</p>
No Corresponding MLR	<p>M(N&O)–4–3 Demonstrates conceptual understanding of mathematical operations by describing or illustrating <u>the relationship between repeated subtraction and division (no remainders)</u>; <u>the inverse relationship between multiplication and division of whole numbers</u>; or <u>the addition or subtraction of positive fractional numbers with like denominators</u> using models, number lines, or explanations.</p>	<p>This concept is implied, but not explicitly mentioned in the MLRs.</p>
B. Data	Data, Statistics, and Probability/Geometry & Measurement	
1. Students <i>understand</i> and use measurement of time, capacity, and temperature.	<p>M(G&M)–4–7 Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems across the content strands. Benchmarks in Appendix B.</p>	<p>NECAP includes length, time, temperature, capacity, mass, and weight. NECAP also includes conversions within systems. (See NECAP Appendix B for more detail.)</p>

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2. Students collect and represent data in tables, line plots, and bar graphs, and read and <i>interpret</i> these types of data displays.	<p>M(DSP)–4–1 Interprets a given representation (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 M(DSP)–4–2.</i>)</p> <p>M(DSP)–4–2 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>.</p>	NECAP includes additional types of graphs.
No corresponding MLR	M(DSP)–4–4 Uses counting techniques to solve problems in context involving combinations or <u>simple permutations</u> (e.g., Given a map – Determine the number of paths from point A to point B.) using a variety of strategies (e.g., organized lists, tables, tree diagrams, or others).	This concept is not included in the MLRs at this grade.
No corresponding MLR at this grade	M(DSP)–4–5 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).	The MLRs assess probability at grade 7.
C. Geometry	Geometry and Measurement	
1. Students identify and name angles, lines, relationships between lines, quadrilaterals, and triangles.	M(G&M)–4–1 Uses properties or attributes of angles (number of angles) or sides (number of sides, length of sides, <u>parallelism</u> , or <u>perpendicularity</u>) to identify, describe, or distinguish among 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.	NECAP also includes hexagons and octagons.

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2. Students <i>understand</i> the concept of area of a figure.	M(G&M)–4–6 Demonstrates conceptual understanding of perimeter of polygons, and the area of rectangles, <u>polygons or irregular shapes on grids</u> using a variety of models, manipulatives, or <u>formulas</u> . Expresses all measures using appropriate units.	NECAP also includes perimeter; perimeter is addressed at grade 3 in the MLRs.
3. Students recognize congruent figures and line symmetry in figures.	M(G&M)–4–4 Demonstrates conceptual understanding of congruency by matching congruent figures using reflections, translations, or rotations (flips, slides, or turns), or as the result of composing or decomposing shapes using models or explanations.	NECAP includes the use of simple transformations (MLR C5 at grade 5).
No corresponding MLR at this grade	M(G&M)–4–3 Uses properties or attributes (shape of bases or number of lateral faces) to identify, compare, or describe three-dimensional shapes (rectangular prisms, triangular prisms, <u>cylinders</u> , or <u>spheres</u>).	Solid figures are not included in the MLRs at this grade (MLR C1 at grade 5).
No corresponding MLR at this grade	M(G&M)–4–5 Demonstrates conceptual understanding of similarity by applying scales on maps, or applying characteristics of similar figures (same shape but not necessarily the same size) to identify similar figures, or to solve problems involving similar figures. Describes relationships using models or explanations.	Similarity is not included in the MLRs at this grade.
D. Algebra	Functions and Algebra	
1. Students <i>create</i> and <i>evaluate</i> simple expressions in the context of numbers and operations as described in <u>Standard 2.1: Number</u> * for this grade level.	M(F&A)–4–3 Demonstrates conceptual understanding of algebraic expressions 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.	

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<p>2. Students find the unknown in simple equations in the context of numbers and operations as described in <u>Standard 2.1: Number</u> * for this grade level such as: $3 * b = 12$ $3 + 4 = x + 5$ $6 \times 5 = 3 \times []$.</p>	<p>M(F&A)–4–4 Demonstrates conceptual understanding of equality 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., $14 - (2 \times 5)$]</u> (expressions consistent with the parameters of M(F&A)–4–3), and by <u>solving one-step linear equations of the form $ax = c$, $x \pm b = c$, where a, b, and c are whole numbers with $a \neq 0$.</u></p>	
<p>3. Students use tables, rules, diagrams, and patterns to represent the relationship between quantities and to extend sequences.</p>	<p>M(F&A)–4–1 Identifies and <u>extends to specific cases</u> a variety of patterns (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>	