

## Grade 4 – Crosswalk (Summary of Revisions): 2016 Mathematics Standards of Learning and Curriculum Framework

Additions (2016 SOL)	Deletions from Grade 4 (2009 SOL)
<ul style="list-style-type: none"> <li>• 4.1a – Read, write, and identify nine-digit numbers in standard form and written form</li> <li>• 4.1b – Order whole numbers expressed through millions (limited to four)</li> <li>• 4.1 EKS – Identify the range of numbers that round to a given place</li> <li>• 4.4a – Fluency with multiplication facts through 12 x 12, and corresponding division facts [Moved from 3.5; representation of facts through 10 x 10 and fluency with facts for 0, 1, 2, 5, 10 included in 3.4]</li> <li>• 4.4 EKS – Apply strategies, including place value and the properties of multiplication and/or addition, to +, -, ×, and ÷; use context in practical problems to interpret the quotient and remainder</li> <li>• 4.4d – Create single-step and multistep practical problems for addition, subtraction and multiplication; create and solve single-step practical problems involving division</li> <li>• 4.7 – Solve practical problems that involve determining perimeter and area [Moved from 5.8 EKS]</li> <li>• 4.10 EKS – Use symbolic notations to name points, lines, line segments, rays, and angles; use symbolic notation to describe parallel lines and perpendicular lines</li> <li>• 4.11 – Identify, describe, compare, and contrast plane and solid figures [Moved from 3.14]</li> <li>• 4.12 – Classify quadrilaterals; EKS – define quadrilaterals; compare, and contrast properties of quadrilaterals; use geometric markings to denote properties of quadrilaterals</li> <li>• 4.13c – Create a model or practical problem to represent a given probability</li> </ul>	<ul style="list-style-type: none"> <li>• 4.3b – Round decimals to nearest tenth and hundredth [Included in 5.1]</li> <li>• 4.5c – Solve multistep problems with fractions [Included in 5.6a]</li> <li>• 4.6b – Identify equivalent metric measurements for mass [Included in 5.9a]</li> <li>• 4.7b – Identify equivalent metric measurements for length [Included in 5.9a]</li> <li>• 4.8a – Estimate and measure liquid volume [Included in 3.7b]</li> <li>• 4.11 – Investigate congruence and recognize transformations [Moved to 5.14]</li> <li>• 4.12 – Identify polygons with 10 or fewer sides [Moved to 3.12 – except for quadrilaterals]</li> </ul>
Parameter Changes/Clarifications (2016 SOL)	Moves within Grade 4 (2009 SOL to 2016 SOL)
<ul style="list-style-type: none"> <li>• 4.1 EKS – Compare numbers using words <i>greater than</i>, <i>less than</i>, <i>equal to</i>, and <i>not equal to</i></li> <li>• 4.2 EKS – Compare and order limited to no more than four fractions; Identify the division statement that represents a fraction with models and in context</li> <li>• 4.3 EKS – Compare two decimals expressed through thousandths using words <i>greater than</i>, <i>less than</i>, <i>equal to</i>, and <i>not equal to</i>; order a set of up to four decimals expressed through thousandths</li> <li>• 4.4 EKS – Determine the product of two whole numbers <i>limited to</i> two digits each</li> <li>• 4.5b – Add and subtract fractions and mixed numbers; EKS - estimate sum or difference of two fractions; subtraction with fractions limited to problems that do not require regrouping</li> <li>• 4.5c – Solve practical problems with fractions and mixed numbers limited to single-step</li> <li>• 4.5 EKS – Determine common denominators limited to 60 or less</li> <li>• 4.8c – Given the equivalent measure of one unit, identify equivalent measures of length, weight/mass, and liquid volume between units within the U.S. Customary system</li> <li>• 4.8d – Solve practical problems that involve length, weight/mass, and liquid volume</li> <li>• 4.13 EKS – Determine the outcome of an event that is least likely to occur or most likely to occur where there are no more than 24 possible outcomes</li> <li>• 4.14c – Compare two different representations of the same data</li> <li>• 4.15 EKS – Solve practical problems that involve single-operation input/output rules, limited to +, -, × of whole numbers and +, - of fractions; identify a numerical pattern found in a list or table</li> </ul>	<ul style="list-style-type: none"> <li>• 4.5c – [Moved to 4.6a]</li> <li>• 4.5d – Single-step and multistep problems with decimals [Moved to 4.6b]</li> <li>• 4.6ab – [Moved to 4.8bc]</li> <li>• 4.7ab – [Moved to 4.8ac]</li> <li>• 4.16 – [Application of properties moved to 4.4 EKS]</li> </ul>

EKS = Essential Knowledge and Skills, referring to the column on the right side of the Curriculum Framework

US = Understanding the Standard, referring to the column on the left side of the Curriculum Framework

## Comparison of Mathematics Standards of Learning – 2009 to 2016

2009	2016
<b>Number and Number Sense</b>	
*On the state assessment, items measuring this objective are assessed without the use of a calculator.	
<p>4.1 The student will</p> <ul style="list-style-type: none"> <li>a) identify orally and in writing the place value for each digit in a whole number expressed through millions;</li> <li>b) compare two whole numbers expressed through millions, using symbols (&gt;, &lt;, or = ); and [Symbols included in EKS]</li> <li>c) round whole numbers expressed through millions to the nearest thousand, ten thousand, and hundred thousand.</li> </ul>	<p>4.1 The student will</p> <ul style="list-style-type: none"> <li>a) read, write, and identify the place and value of each digit in a nine-digit whole number;</li> <li>b) compare and order whole numbers expressed through millions; and</li> <li>c) round whole numbers expressed through millions to the nearest thousand, ten thousand, and hundred thousand.</li> </ul>
<p>4.2 The student will</p> <ul style="list-style-type: none"> <li>a) compare and order fractions and mixed numbers;</li> <li>b) represent equivalent fractions; and</li> <li>c) identify the division statement that represents a fraction.</li> </ul>	<p>4.2 The student will</p> <ul style="list-style-type: none"> <li>a) compare and order fractions and mixed numbers, with and without models;*</li> <li>b) represent equivalent fractions;* and</li> <li>c) identify the division statement that represents a fraction, with models and in context.</li> </ul>
<p>4.3 The student will</p> <ul style="list-style-type: none"> <li>a) read, write, represent, and identify decimals expressed through thousandths;</li> <li>b) round decimals to the nearest whole number, tenth, and hundredth; [Rounding to tenth and hundredth included in 5.1]</li> <li>c) compare and order decimals; and</li> <li>d) given a model, write the decimal and fraction equivalents.</li> </ul>	<p>4.3 The student will</p> <ul style="list-style-type: none"> <li>a) read, write, represent, and identify decimals expressed through thousandths;</li> <li>b) round decimals to the nearest whole number; [Round to tenth and hundredth included in 5.1]</li> <li>c) compare and order decimals; and</li> <li>d) given a model, write the decimal and fraction equivalents.*</li> </ul>
<b>Computation and Estimation</b>	
*On the state assessment, items measuring this objective are assessed without the use of a calculator.	
<p>4.4 The student will</p> <ul style="list-style-type: none"> <li>a) estimate sums, differences, products, and quotients of whole numbers;*</li> <li>b) add, subtract, and multiply whole numbers;*</li> <li>c) divide whole numbers, finding quotients with and without remainders;* and</li> <li>d) solve single-step and multistep addition, subtraction, and multiplication problems with whole numbers.*</li> </ul>	<p>4.4 The student will</p> <ul style="list-style-type: none"> <li>a) demonstrate fluency with multiplication facts through 12 x 12, and the corresponding division facts;* [Moved from 3.5]</li> <li>b) estimate and determine sums, differences, and products of whole numbers;*</li> <li>c) estimate and determine quotients of whole numbers, with and without remainders;* and</li> <li>d) create and solve single-step and multistep practical problems involving addition, subtraction, and multiplication, and single-step practical problems involving division with whole numbers.</li> </ul>

2009 SOL	2016 SOL
<b>Computation and Estimation</b>	
*On the state assessment, items measuring this objective are assessed without the use of a calculator.	
<p>4.5 The student will</p> <ul style="list-style-type: none"> <li>a) determine common multiples and factors, including least common multiple and greatest common factor;*</li> <li>b) add and subtract fractions having like and unlike denominators that are limited to 2, 3, 4, 5, 6, 8, 10, and 12, and simplify the resulting fractions, using common multiples and factors;* [Denominators and simplify included in EKS]</li> <li>c) add and subtract with decimals;* and [Moved to 4.6a]</li> <li>d) solve single-step and multistep practical problems involving addition and subtraction with fractions and with decimals.* [Decimals moved to 4.6b; solve multistep problems with fractions included in 5.6a]</li> </ul>	<p>4.5 The student will</p> <ul style="list-style-type: none"> <li>a) determine common multiples and factors, including least common multiple and greatest common factor;</li> <li>b) add and subtract fractions and mixed numbers having like and unlike denominators;* and</li> <li>c) solve single-step practical problems involving addition and subtraction with fractions and mixed numbers.</li> </ul>
	<p>4.6 The student will</p> <ul style="list-style-type: none"> <li>a) add and subtract decimals;* and [Moved from 4.5c]</li> <li>b) solve single-step and multistep practical problems involving addition and subtraction with decimals. [Moved from 4.5d]</li> </ul>
<b>Measurement and Geometry</b>	
<p>4.6 The student will</p> <ul style="list-style-type: none"> <li>a) estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; [Moved to 4.8b]and</li> <li>b) identify equivalent measurements between units within the U.S. Customary system (ounces, pounds, and tons) and between units within the metric system (grams and kilograms). [Metric equivalencies included in 5.9a; U.S. Customary equivalencies moved to 4.8c]</li> </ul>	
<p>4.7 The student will</p> <ul style="list-style-type: none"> <li>a) estimate and measure length, and describe the result in both metric and U.S. Customary units; and [Moved to 4.8a]</li> <li>b) identify equivalent measurements between units within the U.S. Customary system (inches and feet; feet and yards; inches and yards; yards and miles) and between units within the metric system (millimeters and centimeters; centimeters and meters; and millimeters and meters). [Moved U.S. Customary to 4.8c; Metric included in 5.9a]</li> </ul>	
	<p>4.7 The student will solve practical problems that involve determining perimeter and area in U.S. Customary and metric units. [Moved from 5.8 EKS]</p>

2009 SOL	2016 SOL
Measurement and Geometry	
<p>4.8 The student will</p> <ul style="list-style-type: none"> <li>a) estimate and measure liquid volume and describe the results in U.S. Customary units; and [Included in 3.7b]</li> <li>b) identify equivalent measurements between units within the U.S. Customary system (cups, pints, quarts, and gallons).</li> </ul>	<p>4.8 The student will</p> <ul style="list-style-type: none"> <li>a) estimate and measure length and describe the result in U.S. Customary and metric units; [Moved from 4.7a]</li> <li>b) estimate and measure weight/mass and describe the results in U.S. Customary and metric units [Moved from 4.6a];</li> <li>c) given the equivalent measure of one unit, identify equivalent measures of length, weight/mass, and liquid volume between units within the U.S. Customary system; and</li> <li>d) solve practical problems that involve length, weight/mass, and liquid volume in U.S. Customary units.</li> </ul>
<p>4.9 The student will determine elapsed time in hours and minutes within a 12-hour period.</p>	<p>4.9 The student will solve practical problems related to elapsed time in hours and minutes within a 12-hour period.</p>
<p>4.10 The student will</p> <ul style="list-style-type: none"> <li>a) identify and describe representations of points, lines, line segments, rays, and angles, including endpoints and vertices; and</li> <li>b) identify representations of lines that illustrate intersection, parallelism, and perpendicularity.</li> </ul>	<p>4.10 The student will</p> <ul style="list-style-type: none"> <li>a) identify and describe points, lines, line segments, rays, and angles, including endpoints and vertices; and</li> <li>b) identify and describe intersecting, parallel, and perpendicular lines.</li> </ul>
<p>4.11 The student will</p> <ul style="list-style-type: none"> <li>a) investigate congruence of plane figures after geometric transformations, such as reflection, translation, and rotation, using mirrors, paper folding, and tracing; and</li> <li>b) recognize the images of figures resulting from geometric transformations, such as translation, reflection, and rotation. [Moved to 5.14]</li> </ul>	
	<p>4.11 The student will identify, describe, compare, and contrast plane and solid figures according to their characteristics (number of angles, vertices, edges, and the number and shape of faces), using concrete models and pictorial representations. [Moved from 3.14]</p>
<p>4.12 The student will</p> <ul style="list-style-type: none"> <li>a) define polygon; and</li> <li>b) identify polygons with 10 or fewer sides. [All polygons excepts quadrilaterals moved to 3.12]</li> </ul>	<p>4.12 The student will classify quadrilaterals as a parallelograms, rectangles, squares, rhombi, and/or trapezoids.</p>

2009 SOL	2016 SOL
<b>Probability and Statistics</b>	
<p>4.13 The student will</p> <ul style="list-style-type: none"> <li>a) predict the likelihood of an outcome of a simple event; and</li> <li>b) represent probability as a number between 0 and 1, inclusive.</li> </ul>	<p>4.13 The student will</p> <ul style="list-style-type: none"> <li>a) determine the likelihood of an outcome of a simple event;</li> <li>b) represent probability as a number between 0 and 1, inclusive; and</li> <li>c) create a model or practical problem to represent a given probability.</li> </ul>
<p>4.14 The student will collect, organize, display, and interpret data from a variety of graphs.</p>	<p>4.14 The student will</p> <ul style="list-style-type: none"> <li>a) collect, organize, and represent data in bar graphs and line graphs;</li> <li>b) interpret data represented in bar graphs and line graphs; and</li> <li>c) compare two different representations of the same data (e.g., a set of data displayed on a chart and a bar graph, a chart and a line graph, or a pictograph and a bar graph).</li> </ul>
<b>Patterns, Functions, and Algebra</b>	
<p>4.15 The student will recognize, create, and extend numerical and geometric patterns.</p>	<p>4.15 The student will identify, describe, create, and extend patterns found in objects, pictures, numbers, and tables.</p>
<p>4.16 The student will</p> <ul style="list-style-type: none"> <li>a) recognize and demonstrate the meaning of equality in an equation; and</li> <li>b) investigate and describe the associative property for addition and multiplication. [Application of properties moved to 4.4 EKS]</li> </ul>	<p>4.16 The student will recognize and demonstrate the meaning of equality in an equation.</p>