

## Grade 4 Mathematics *Standards of Learning* - 2023 Overview of Revisions

This overview includes a summary of the content embedded in five content strands.

**Number and Number Sense:** *Exploring relationships between whole numbers, fractions, and decimals and their representations provides meaning and structure and allows us to quantify, measure and make decisions in life.*

- Read, write, and identify the place and value of each digit in a nine-digit whole number
- Compare and order numbers up to seven digits
- Represent, compare, and order fractions (proper, improper, or mixed numbers with denominators 12 or less)
- Represent, compare, and order decimals through thousandths
- Identify and represent fraction and decimal equivalencies (limited to halves, fourths, fifths, tenths, and hundredths)

**Computation and Estimation:** *The operations of addition, subtraction, multiplication, and division, and estimation, allow us to model, represent, and solve different types of problems with whole numbers and rational numbers (not including integers).*

- Represent, solve, and justify solutions to single-step and multistep problems, using addition, subtraction, and multiplication with whole numbers, and single-step contextual problems using division
- Recall with automaticity multiplication facts through  $12 \times 12$  and the corresponding division facts
- Solve addition and subtraction problems involving fractions with like denominators
- Solve problems involving multiplication of a whole number and a unit fraction with models
- Solve addition and subtraction problems involving decimals through the thousandths

**Measurement and Geometry:** *Analyzing and describing geometric objects, the relationships and structures among them, or the space that they occupy can be used to classify, quantify, measure, or count one or more attributes.*

- Solve problems that involve length, weight, and liquid volume using U.S. Customary and metric units
- Solve problems to determine equivalent measures of length, weight, and liquid volume within the U.S. Customary system
- Solve single-step contextual problems involving elapsed time (limited to hours and minutes within a 12-hour period)
- Solve problems involving area and perimeter of rectangles and squares
- Identify, describe, and draw points, rays, line segments, angles, and lines, including intersecting, parallel, and perpendicular lines
- Classify and describe quadrilaterals (parallelograms, rectangles, squares, rhombi, and/or trapezoids)
- Identify, describe, compare, and contrast plane and solid figures

**Probability and Statistics:** *The world can be investigated through posing questions and collecting, representing, analyzing, and interpreting data to describe and predict events and real-world phenomena.*

- Apply the data cycle (formulate questions; collect or acquire data; organize and represent data; and analyze data and communicate results) with a focus on line graphs
- Determine the probability of an outcome of a simple event and model, predict, and justify what might occur in the future.

**Patterns, Functions, and Algebra:** *Relationships can be described and generalizations can be made using patterns and relations.*

- Identify, describe, extend, and create increasing and decreasing patterns using various representations

## Comparison of Grade 4 Mathematics *Standards of Learning* – 2016 to 2023

<b>2016 <i>Standards of Learning</i></b> Essential Knowledge and Skills (EKS) <b>Number and Number Sense</b>	<b>2023 <i>Standards of Learning</i></b> Knowledge and Skills (KS) <b>Number and Number Sense (NS)</b>
* On the state assessment, items measuring this objective are assessed without the use of a calculator.	*On the state assessment, items measuring this objective are assessed without the use of a calculator.
<p><b>4.1 The student will</b>  <b>a) read, write, and identify the place and value of each digit in a nine-digit whole number;</b></p> <ul style="list-style-type: none"> <li>● Read nine-digit whole numbers, presented in standard form, and represent the same number in written form. (a)</li> <li>● Write nine-digit whole numbers in standard form when the numbers are presented orally or in written form. (a)</li> <li>● Identify and communicate, orally and in written form, the place and value for each digit in a nine-digit whole number. (a)</li> </ul>	<p><b>4.NS.1 The student will use place value understanding to read, write, and identify the place and value of each digit in a nine-digit whole number.</b></p> <ul style="list-style-type: none"> <li>a) Read nine-digit whole numbers, presented in standard form, and represent the same number in written form.</li> <li>b) Write nine-digit whole numbers in standard form when the numbers are presented orally or in written form.</li> <li>c) Apply patterns within the base 10 system to determine and communicate, orally and in written form, the place and value of each digit in a nine-digit whole number (e.g., in 568,165,724, the 8 represents 8 millions and its value is 8,000,000).</li> </ul>
<p><b>4.1 The student will</b>  <b>b) compare and order whole numbers expressed through millions; and</b></p> <ul style="list-style-type: none"> <li>● Compare two whole numbers expressed through millions, using the words <i>greater than</i>, <i>less than</i>, <i>equal to</i>, and <i>not equal to</i> or using the symbols <math>&gt;</math>, <math>&lt;</math>, <math>=</math>, or <math>\neq</math>. (b)</li> <li>● Order up to four whole numbers expressed through millions. (b)</li> </ul>	<p><b>4.NS.2 The student will demonstrate an understanding of the base 10 system to compare and order whole numbers up to seven digits.</b></p> <ul style="list-style-type: none"> <li>a) Compare two whole numbers up to seven digits each, using words (<i>greater than</i>, <i>less than</i>, <i>equal to</i>, <i>not equal to</i>) and/or using symbols (<math>&gt;</math>, <math>&lt;</math>, <math>=</math>, <math>\neq</math>).</li> <li>b) Order up to four whole numbers up to seven digits each, from least to greatest or greatest to least.</li> </ul>
<p><b>4.1 The student will</b></p>	<p><b>[Included in 4.CE.1]</b></p>

<p style="text-align: center;"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Number and Number Sense</b></p> <p style="text-align: center;">* On the state assessment, items measuring this objective are assessed without the use of a calculator.</p>	<p style="text-align: center;"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Number and Number Sense (NS)</b></p> <p style="text-align: center;">*On the state assessment, items measuring this objective are assessed without the use of a calculator.</p>
<p><b>c) round whole numbers expressed through millions to the nearest thousand, ten thousand, and hundred thousand.</b></p> <ul style="list-style-type: none"> <li>● Round whole numbers expressed through millions to the nearest thousand, ten thousand, and hundred thousand place. (c)</li> <li>● Identify the range of numbers that round to a given thousand, ten thousand, and hundred thousand. (c)</li> </ul>	
<p><b>4.2 The student will</b></p> <p><b>a) compare and order fractions and mixed numbers, with and without models;*</b></p> <p><b>b) represent equivalent fractions;* and</b></p> <p><b>c) identify the division statement that represents a fraction, with models and in context.</b></p> <ul style="list-style-type: none"> <li>● Compare and order no more than four fractions having like and unlike denominators of 12 or less, using concrete and pictorial models. (a)</li> <li>● Use benchmarks (e.g., 0, <math>\frac{1}{2}</math> or 1) to compare and order no more than four fractions having unlike denominators of 12 or less. (a)</li> <li>● Compare and order no more than four fractions with like denominators of 12 or less by comparing the number of parts (numerators) (e.g., <math>\frac{1}{5} &lt; \frac{3}{5}</math>). (a)</li> </ul>	<p><b>4.NS.3 The student will use mathematical reasoning and justification to represent, compare, and order fractions (proper, improper, and mixed numbers with denominators 12 or less), with and without models.</b></p> <ul style="list-style-type: none"> <li>a) Compare and order no more than four fractions (proper or improper), and/or mixed numbers, with like denominators by comparing the number of parts (numerators) using fractions with denominators of 12 or less (e.g., <math>\frac{1}{5} &lt; \frac{3}{5}</math>). Justify solutions orally, in writing, or with a model.*</li> <li>b) Compare and order no more than four fractions (proper or improper), and/or mixed numbers, with like numerators and unlike denominators by comparing the size of the parts using fractions with denominators of 12 or less (e.g., <math>\frac{3}{8} &lt; \frac{3}{5}</math>). Justify solutions orally, in writing, or with a model.*</li> </ul>

<p style="text-align: center;"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Number and Number Sense</b></p> <p>* On the state assessment, items measuring this objective are assessed without the use of a calculator.</p>	<p style="text-align: center;"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Number and Number Sense (NS)</b></p> <p>*On the state assessment, items measuring this objective are assessed without the use of a calculator.</p>
<ul style="list-style-type: none"> <li>● Compare and order no more than four fractions with like numerators and unlike denominators of 12 or less by comparing the size of the parts (e.g., <math>\frac{3}{9} &lt; \frac{3}{5}</math>). (a)</li> <li>● Compare and order no more than four fractions (proper or improper), and/or mixed numbers, having denominators of 12 or less. (a)</li> <li>● Use the symbols <math>&gt;</math>, <math>&lt;</math>, <math>=</math>, and <math>\neq</math> to compare fractions (proper or improper) and/or mixed numbers having denominators of 12 or less. (a)</li> <li>● Represent equivalent fractions through twelfths, using region/area models, set models, and measurement/length models. (b)</li> <li>● Identify the division statement that represents a fraction with models and in context (e.g., <math>\frac{3}{5}</math> means the same as 3 divided by 5 or <math>\frac{3}{5}</math> represents the amount of muffin each of five children will receive when sharing 3 muffins equally). (c)</li> </ul>	<ul style="list-style-type: none"> <li>c) Use benchmarks (e.g., 0, <math>\frac{1}{2}</math>, or 1) to compare and order no more than four fractions (proper or improper), and/or mixed numbers, with like and unlike denominators of 12 or less.*</li> <li>d) Compare two fractions (proper or improper) and/or mixed numbers using fractions with denominators of 12 or less using the symbols <math>&gt;</math>, <math>&lt;</math>, and <math>=</math> (e.g., <math>\frac{2}{3} &gt; \frac{1}{7}</math>). Justify solutions orally, in writing, or with a model.*</li> <li>e) Represent equivalent fractions with denominators of 12 or less, with and without models.*</li> <li>f) Compose and decompose fractions (proper and improper) and/or mixed numbers with denominators of 12 or less, in multiple ways, with and without models.*</li> <li>g) Represent the division of two whole numbers as a fraction given a contextual situation and a model (e.g., <math>\frac{3}{5}</math> means the same as 3 divided by 5 or <math>\frac{3}{5}</math> represents the amount of muffin each of five children will receive when sharing three muffins equally).</li> </ul>
<p><b>4.3 The student will</b></p> <p><b>a) read, write, represent, and identify decimals expressed through thousandths;</b></p> <p><b>c) compare and order decimals; and</b></p> <ul style="list-style-type: none"> <li>● Read and write decimals expressed through thousandths, using base-ten manipulatives, drawings, and numerical symbols. (a)</li> </ul>	<p><b>4.NS.4 The student will use mathematical reasoning and justification to represent, compare, and order decimals through thousandths with and without models.</b></p> <ul style="list-style-type: none"> <li>a) Investigate and describe the ten-to-one place value relationship for decimals through thousandths, using concrete models (e.g., place value mats/charts, decimal squares, base 10 blocks).</li> </ul>

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<ul style="list-style-type: none"> <li>● Represent and identify decimals expressed through thousandths, using base-ten manipulatives, pictorial representations, and numerical symbols (e.g., relate the appropriate drawing to 0.05). (a)</li> <li>● Investigate the ten-to-one place value relationship for decimals through thousandths, using base-ten manipulatives (e.g., place value mats/charts, decimal squares, and base-ten blocks). (a)</li> <li>● Identify and communicate, both orally and in written form, the position and value of a decimal through thousandths (e.g., given 0.385, the 8 is in the hundredths place and has a value of 0.08). (a)</li> <li>● Compare two decimals expressed through thousandths, using symbols (<math>&gt;</math>, <math>&lt;</math>, <math>=</math>, and <math>\neq</math>) and/or words (<i>greater than</i>, <i>less than</i>, <i>equal to</i>, and <i>not equal to</i>). (c)</li> <li>● Order a set of up to four decimals, expressed through thousandths, from least to greatest or greatest to least. (c)</li> </ul>	<ul style="list-style-type: none"> <li>b) Represent and identify decimals expressed through thousandths, using concrete, pictorial, and numerical representations.</li> <li>c) Read and write decimals expressed through thousandths, using concrete, pictorial, and numerical representations.</li> <li>d) Identify and communicate, both orally and in written form, the place and value of each digit in a decimal through thousandths (e.g., given 0.385, the 8 is in the hundredths place and has a value of 0.08).</li> <li>e) Compare using symbols (<math>&lt;</math>, <math>&gt;</math>, <math>=</math>) and/or words (<i>greater than</i>, <i>less than</i>, <i>equal to</i>) and order (least to greatest and greatest to least), a set of no more than four decimals expressed through thousandths, using multiple strategies (e.g., benchmarks, place value, number lines). Justify solutions with a model, orally, and in writing.</li> </ul>
<p><b>4.3 The student will</b> <b>b) round decimals to the nearest whole number;</b></p> <ul style="list-style-type: none"> <li>● Round decimals expressed through thousandths to the nearest whole number. (b)</li> </ul>	<p><b>[Included in 4.CE.4]</b></p>
<p><b>4.3 The student will</b> <b>d) given a model, write the decimal and fraction equivalents. *</b></p>	<p><b>4.NS.5 The student will reason about the relationship between fractions and decimals (limited to halves, fourths, fifths, tenths, and hundredths) to identify and represent equivalencies.</b></p>

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<ul style="list-style-type: none"> <li>● Represent fractions for halves, fourths, fifths, and tenths as decimals through hundredths, using concrete objects. (d)</li> <li>● Relate fractions to decimals, using concrete objects (e.g., 10-by10 grids, meter sticks, number lines, decimal squares, decimal circles, money). (d)</li> <li>● Write the decimal and fraction equivalent for a given model (e.g., <math>\frac{1}{4} = 0.25</math> or <math>0.25 = \frac{1}{4}</math>; <math>1.25 = \frac{5}{4}</math> or <math>1\frac{1}{4}</math>). (d)</li> </ul>	<ul style="list-style-type: none"> <li>a) Represent fractions (proper or improper) and/or mixed numbers as decimals through hundredths, using multiple representations, limited to halves, fourths, fifths, tenths, and hundredths.*</li> <li>b) Identify and model equivalent relationships between fractions (proper or improper) and/or mixed numbers and decimals, using halves, fourths, fifths, tenths, and hundredths.*</li> <li>c) Write the decimal and fraction equivalent for a given model (e.g., <math>\frac{1}{4} = 0.25</math> or <math>0.25 = \frac{1}{4}</math>; <math>1.25 = \frac{5}{4}</math> or <math>1\frac{1}{4}</math>; <math>1.02 = \frac{102}{100}</math> or <math>1\frac{2}{100}</math>).*</li> </ul>

<p align="center"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Computation and Estimation</b></p> <p>* On the state assessment, items measuring this objective are assessed without the use of a calculator.</p>	<p align="center"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Computation and Estimation (CE)</b></p> <p>*On the state assessment, items measuring this objective are assessed without the use of a calculator.</p>
<p><b>4.4 The student will</b></p> <ul style="list-style-type: none"> <li>a) <b>demonstrate fluency with multiplication facts through <math>12 \times 12</math>, and the corresponding division facts;*</b></li> <li>b) <b>estimate and determine sums, differences, and products of whole numbers;*</b></li> <li>c) <b>estimate and determine quotients of whole numbers, with and without remainders;*</b> and</li> </ul>	<p><b>4.CE.2 The student will estimate, represent, solve, and justify solutions to single-step and multistep problems, including those in context, using multiplication with whole numbers, and single-step problems, including those in context, using division with whole numbers; and recall with automaticity the multiplication facts through <math>12 \times 12</math> and the corresponding division facts.</b></p> <ul style="list-style-type: none"> <li>a) Determine and justify whether an estimate or an exact answer is appropriate when solving contextual problems involving</li> </ul>

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<p><b>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.</b></p> <ul style="list-style-type: none"> <li>● Demonstrate fluency with multiplication through <math>12 \times 12</math>, and the corresponding division facts. (a)</li> <li>● Estimate whole number sums, differences, products, and quotients, with and without context. (b, c)</li> <li>● Apply strategies, including place value and the properties of multiplication and/or addition, to determine the product of two whole numbers when both factors have two digits or fewer. (b)</li> <li>● Apply strategies, including place value and the properties of multiplication and/or addition, to determine the quotient of two whole numbers, given a one-digit divisor and a two- or three-digit dividend, with and without remainders. (c)</li> <li>● Refine estimates by adjusting the final amount, using terms such as <i>closer to</i>, <i>between</i>, and <i>a little more than</i>. (b, c)</li> <li>● Create and solve single-step and multistep practical problems involving addition, subtraction, and multiplication with whole numbers. (d)</li> <li>● Create and solve single-step practical problems involving division with whole numbers. (d)</li> <li>● Use the context in which a practical problem is situated to interpret the quotient and remainder. (d)</li> </ul>	<p>multiplication, and division of whole numbers. Refine estimates by adjusting the final amount, using terms such as <i>closer to</i>, <i>between</i>, and <i>a little more than</i>.</p> <ul style="list-style-type: none"> <li>b) Recall with automaticity the multiplication facts through <math>12 \times 12</math> and the corresponding division facts.*</li> <li>c) Create an equation using addition, subtraction, multiplication, and division to represent the relationship between equivalent mathematical expressions (e.g., <math>4 \times 3 = 2 \times 6</math>; <math>10 + 8 = 36 \div 2</math>; <math>12 \times 4 = 60 - 12</math>).</li> <li>d) Identify and use the appropriate symbol to distinguish between expressions that are equal and expressions that are not equal, using addition, subtraction, multiplication, and division (e.g., <math>4 \times 12 = 8 \times 6</math> and <math>64 \div 8 \neq 8 \times 8</math>).</li> <li>e) Determine all factor pairs for a whole number 1 to 100, using concrete, pictorial, and numerical representations.</li> <li>f) Determine common factors and the greatest common factor of no more than three numbers.</li> <li>g) Apply strategies (e.g., rounding, place value, properties of multiplication and/or addition) and algorithms, including the standard algorithm, to estimate and determine the product of two whole numbers when given: <ul style="list-style-type: none"> <li>i) a two-digit factor and a one-digit factor;*</li> <li>ii) a three-digit factor and a one-digit factor;* or</li> <li>iii) a two-digit factor and a two-digit factor.*</li> </ul> </li> </ul>



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	<p>h) Estimate, represent, solve, and justify solutions to single-step and multistep contextual problems that involve multiplication with whole numbers.</p> <p>i) Apply strategies (e.g., rounding, compatible numbers, place value) and algorithms, including the standard algorithm, to estimate and determine the quotient of two whole numbers, given a one-digit divisor and a two- or three-digit dividend, with and without remainders.*</p> <p>j) Estimate, represent, solve, and justify solutions to single-step contextual problems involving division with whole numbers.</p> <p>k) Interpret the quotient and remainder when solving a contextual problem.</p>
<p><b>4.4 The student will</b></p> <p><b>b) estimate and determine sums, differences, and products of whole numbers;*</b></p> <p><b>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.</b></p> <ul style="list-style-type: none"> <li>● Estimate whole number sums, differences, products, and quotients, with and without context. (b, c)</li> <li>● Apply strategies, including place value and the properties of addition to determine the sum or difference of two whole numbers, each 999,999 or less. (b)</li> </ul>	<p><b>4.CE.1 The student will estimate, represent, solve, and justify solutions to single-step and multistep problems, including those in context, using addition and subtraction with whole numbers.</b></p> <p>a) Determine and justify whether an estimate or an exact answer is appropriate when solving contextual problems involving addition and subtraction with whole numbers. Refine estimates by adjusting the final amount, using terms such as <i>closer to</i>, <i>between</i>, and <i>a little more than</i>.</p> <p>b) Apply strategies (e.g., rounding to the nearest 100 or 1,000, using compatible numbers, other number relationships) to estimate a solution for single-step or multistep addition or subtraction problems with whole numbers, where addends or minuends do not exceed 10,000.*</p>

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<ul style="list-style-type: none"> <li>● Refine estimates by adjusting the final amount, using terms such as <i>closer to</i>, <i>between</i>, and <i>a little more than</i>. (b, c)</li> <li>● Create and solve single-step and multistep practical problems involving addition, subtraction, and multiplication with whole numbers. (d)</li> </ul>	<ul style="list-style-type: none"> <li>c) Apply strategies (e.g., place value, properties of addition, other number relationships) and algorithms, including the standard algorithm, to determine the sum or difference of two whole numbers, where addends and minuends do not exceed 10,000.*</li> <li>d) Estimate, represent, solve, and justify solutions to single-step and multistep contextual problems involving addition and subtraction with whole numbers, where addends and minuends do not exceed 1,000,000.</li> </ul>
<p><b>4.5 The student will</b></p> <p><b>a) determine common multiples and factors, including least common multiple and greatest common factor;</b></p> <ul style="list-style-type: none"> <li>● Determine common multiples and common factors of numbers. (a)</li> <li>● Determine the least common multiple and greatest common factor of no more than three numbers. (a)</li> </ul>	<p><b>[Common factors included in 4.CE.2; Common multiples moved to Grade 5]</b></p>
<p><b>4.5 The student will</b></p> <p><b>b) add and subtract fractions and mixed numbers having like and unlike denominators; * and</b></p> <p><b>c) solve single-step practical problems involving addition and subtraction with fractions and mixed numbers.</b></p> <ul style="list-style-type: none"> <li>● Determine a common denominator for fractions, using common multiples. Common denominators should not exceed 60. (b)</li> <li>● Estimate the sum or difference of two fractions. (b, c)</li> </ul>	<p><b>4.CE.3 The student will estimate, represent, solve, and justify solutions to single-step problems, including those in context, using addition and subtraction of fractions (proper, improper, and mixed numbers with like denominators of 2, 3, 4, 5, 6, 8, 10, and 12), with and without models; and solve single-step contextual problems involving multiplication of a whole number (12 or less) and a unit fraction, with models.</b></p> <ul style="list-style-type: none"> <li>a) Estimate and determine the sum or difference of two fractions (proper or improper) and/or mixed numbers, having like</li> </ul>

<p style="text-align: center;"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Computation and Estimation</b></p> <p style="text-align: center;">* On the state assessment, items measuring this objective are assessed without the use of a calculator.</p>	<p style="text-align: center;"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Computation and Estimation (CE)</b></p> <p style="text-align: center;">*On the state assessment, items measuring this objective are assessed without the use of a calculator.</p>
<ul style="list-style-type: none"> <li>● Add and subtract fractions (proper or improper) and/or mixed numbers, having like and unlike denominators limited to 2, 3, 4, 5, 6, 8, 10, and 12, and simplify the resulting fraction. (Subtraction with fractions will be limited to problems that do not require regrouping). (b)</li> <li>● Solve single-step practical problems that involve addition and subtraction with fractions (proper or improper) and/or mixed numbers, having like and unlike denominators limited to 2, 3, 4, 5, 6, 8, 10, and 12, and simplify the resulting fraction. (Subtraction with fractions will be limited to problems that do not require regrouping). (c)</li> </ul>	<p>denominators limited to 2, 3, 4, 5, 6, 8, 10, and 12 (e.g., <math>\frac{3}{8} + \frac{3}{8}</math>, <math>2\frac{1}{5} + \frac{4}{5}</math>, <math>\frac{7}{4} - \frac{5}{4}</math>) and simplify the resulting fraction. Addition and subtraction with fractions may include regrouping.*</p> <ul style="list-style-type: none"> <li>b) Estimate, represent, solve, and justify solutions to single-step contextual problems using addition and subtraction with fractions (proper or improper) and/or mixed numbers, having like denominators limited to 2, 3, 4, 5, 6, 8, 10, and 12, and simplify the resulting fraction. Addition and subtraction with fractions may include regrouping.</li> <li>c) Solve single-step contextual problems involving multiplication of a whole number, limited to 12 or less, and a unit fraction (e.g., <math>6 \times \frac{1}{3}</math>, <math>\frac{1}{5} \times 8</math>, <math>2 \times \frac{1}{10}</math>), with models.*</li> <li>d) Apply the inverse property of multiplication in models (e.g., use a visual fraction model to represent <math>\frac{4}{4}</math> or 1 as the product of <math>4 \times \frac{1}{4}</math>).</li> </ul>
<p><b>4.6 The student will</b></p> <p><b>a) add and subtract decimals;* and</b></p> <p><b>b) solve single-step and multistep practical problems involving addition and subtraction with decimals.</b></p> <ul style="list-style-type: none"> <li>● Estimate sums and differences of decimals. (a)</li> <li>● Add and subtract decimals through thousandths, using concrete materials, pictorial representations, and paper and pencil. (a)</li> </ul>	<p><b>4.CE.4 The student will estimate, represent, solve, and justify solutions to single-step and multistep problems, including those in context, using addition and subtraction of decimals through the thousandths, with and without models.</b></p> <ul style="list-style-type: none"> <li>a) Apply strategies (e.g., rounding to the nearest whole number, using compatible numbers) and algorithms, including the standard algorithm, to estimate and determine the sum or</li> </ul>

<p align="center"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Computation and Estimation</b></p> <p align="center">* On the state assessment, items measuring this objective are assessed without the use of a calculator.</p>	<p align="center"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Computation and Estimation (CE)</b></p> <p align="center">*On the state assessment, items measuring this objective are assessed without the use of a calculator.</p>
<ul style="list-style-type: none"> <li>● Solve single-step and multistep practical problems that involve adding and subtracting with decimals through thousandths. (b)</li> </ul>	<p>difference of two decimals through the thousandths, with and without models, in which:*</p> <ul style="list-style-type: none"> <li>i) decimals do not exceed the thousandths; and</li> <li>ii) addends, subtrahends, and minuends are limited to four digits.</li> </ul> <p>b) Estimate, represent, solve, and justify solutions to single-step and multistep contextual problems using addition and subtraction of decimals through the thousandths.</p>

<p align="center"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Measurement and Geometry</b></p>	<p align="center"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Measurement and Geometry (MG)</b></p>
<p><b>4.7 The student will solve practical problems that involve determining perimeter and area in U.S. Customary and metric units.</b></p> <ul style="list-style-type: none"> <li>● Determine the perimeter of a polygon with no more than eight sides, when the lengths of the sides are given, with diagrams.</li> <li>● Determine the perimeter and area of a rectangle when given the measure of two adjacent sides, with and without diagrams.</li> <li>● Determine the perimeter and area of a square when the measure of one side is given, with and without diagrams.</li> </ul>	<p><b>4.MG.3 The student will use multiple representations to develop and use formulas to solve problems, including those in context, involving area and perimeter limited to rectangles and squares (in both U.S. Customary and metric units).</b></p> <ul style="list-style-type: none"> <li>a) Use concrete materials and pictorial models to develop a formula for the area and perimeter of a rectangle (including a square).</li> <li>b) Determine the area and perimeter of a rectangle when given the measure of two adjacent sides (in whole number units), with and without models.</li> </ul>

<p style="text-align: center;"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Measurement and Geometry</b></p>	<p style="text-align: center;"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Measurement and Geometry (MG)</b></p>
<ul style="list-style-type: none"> <li>● Solve practical problems that involve determining perimeter and area in U.S. Customary and metric units.</li> </ul>	<ul style="list-style-type: none"> <li>c) Determine the area and perimeter of a square when given the measure of one side (in whole number units), with and without models.</li> <li>d) Use concrete materials and pictorial models to explore the relationship between area and perimeter of rectangles.</li> <li>e) Identify and represent rectangles with the same perimeter and different areas or with the same area and different perimeters.</li> <li>f) Solve contextual problems involving area and perimeter of rectangles and squares.</li> </ul>
<p><b>4.8 The student will</b></p> <ul style="list-style-type: none"> <li>a) estimate and measure length and describe the result in U.S. Customary and metric units;</li> <li>b) estimate and measure weight/mass and describe the result in U.S. Customary and metric units;</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> <ul style="list-style-type: none"> <li>● Determine an appropriate unit of measure (inch, foot, yard, mile, millimeter, centimeter, and meter) to use when measuring length in both U.S. Customary and metric units. (a)</li> <li>● Estimate and measure length in U.S. Customary and metric units, measuring to the nearest part of an inch (<math>\frac{1}{2}</math>, <math>\frac{1}{4}</math>, <math>\frac{1}{8}</math>), and to the nearest foot, yard, millimeter, centimeter, or meter, and record the length including the unit of measure (e.g., 24 inches). (a)</li> </ul>	<p><b>4.MG.1 The student will reason mathematically to solve problems, including those in context, that involve length, weight/mass, and liquid volume using U.S. Customary and metric units.</b></p> <ul style="list-style-type: none"> <li>a) Determine an appropriate unit of measure to use when measuring: <ul style="list-style-type: none"> <li>i) length in both U.S. Customary (inch, foot, yard, mile) and metric units (millimeter, centimeter, meter);</li> <li>ii) weight/mass in both U.S. Customary (ounce, pound) and metric units (gram, kilogram); and</li> <li>iii) liquid volume in both U.S. Customary (cup, pint, quart, gallon) and metric unit (milliliter, liter).</li> </ul> </li> <li>b) Estimate and measure: <ul style="list-style-type: none"> <li>i) length of an object to the nearest U.S. Customary unit (<math>\frac{1}{2}</math> inch, <math>\frac{1}{4}</math> inch, <math>\frac{1}{8}</math> inch, foot, yard) and nearest metric unit (millimeter, centimeter, or meter);</li> <li>ii) weight/mass of an object to the nearest U.S. Customary unit (ounce, pound) and nearest metric unit (gram, kilogram); and</li> </ul> </li> </ul>

<p style="text-align: center;"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Measurement and Geometry</b></p>	<p style="text-align: center;"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Measurement and Geometry (MG)</b></p>
<ul style="list-style-type: none"> <li>● Compare estimates of the length with the actual measurement of the length. (a)</li> <li>● Determine an appropriate unit of measure (ounce, pound, gram, and kilogram) to use when measuring the weight/mass of everyday objects in both U.S. Customary and metric units. (b)</li> <li>● Estimate and measure the weight/mass of objects in both U.S. Customary and metric units (ounce, pound, gram, or kilogram) to the nearest appropriate measure, using a variety of measuring instruments. (b)</li> <li>● Record the weight/mass of an object with the unit of measure (e.g., 24 grams). (b)</li> <li>● Given the equivalent measure of one unit, identify equivalent measures between units within the U.S. Customary system for: <ul style="list-style-type: none"> <li>○ length (inches and feet, feet and yards, inches, and yards); yards and miles;</li> <li>○ weight/mass (ounces and pounds); and</li> <li>○ liquid volume (cups, pints, quarts, and gallons). (c)</li> </ul> </li> <li>● Solve practical problems that involve length, weight/mass, and liquid volume in U.S. Customary units. (d)</li> </ul>	<ul style="list-style-type: none"> <li>iii) liquid volume to the nearest U.S. Customary unit (cup, pint, quart, gallon) and nearest metric unit (milliliter, liter).</li> <li>c) Compare estimates of length, weight/mass, or liquid volume with the actual measurements.</li> <li>d) Given the equivalent measure of one unit, solve problems, including those in context, by determining the equivalent measures within the U.S. Customary system for: <ul style="list-style-type: none"> <li>i) length (inches and feet, feet and yards, inches and yards);</li> <li>ii) weight/mass (ounces and pounds); and</li> <li>iii) liquid volume (cups, pints, quarts, and gallons).</li> </ul> </li> </ul>
<p><b>4.9 The student will solve practical problems related to elapsed time in hours and minutes within a 12-hour period.</b></p> <ul style="list-style-type: none"> <li>● Solve practical problems related to elapsed time in hours and minutes, within a 12-hour period (within a.m., within p.m., and across a.m. and p.m.): <ul style="list-style-type: none"> <li>○ when given the beginning time and the ending time, determine the time that has elapsed;</li> </ul> </li> </ul>	<p><b>4.MG.2 The student will solve single-step and multistep contextual problems involving elapsed time (limited to hours and minutes within a 12-hour period).</b></p> <ul style="list-style-type: none"> <li>a) Solve single-step and multistep contextual problems involving elapsed time in hours and minutes, within a 12-hour period (within a.m., within p.m., and across a.m. and p.m.) when given:</li> </ul>

<p align="center"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Measurement and Geometry</b></p>	<p align="center"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Measurement and Geometry (MG)</b></p>
<ul style="list-style-type: none"> <li>o when given the beginning time and amount of elapsed time in hours and minutes, determine the ending time; and</li> <li>o when given the ending time and the elapsed time in hours and minutes, determine the beginning time.</li> </ul>	<ul style="list-style-type: none"> <li>i) the starting time and the ending time, determine the amount of time that has elapsed in hours and minutes;</li> <li>ii) the starting time and amount of elapsed time in hours and minutes, determine the ending time; or</li> <li>iii) the ending time and the amount of elapsed time in hours and minutes, determine the starting time.</li> </ul>
<p><b>4.10 The student will</b></p> <p><b>a) identify and describe points, lines, line segments, rays, and angles, including endpoints and vertices; and</b></p> <p><b>b) identify and describe intersecting, parallel, and perpendicular lines.</b></p> <ul style="list-style-type: none"> <li>● Identify and describe points, lines, line segments, rays, and angles, including endpoints and vertices. (a)</li> <li>● Use symbolic notation to name points, lines, line segments, rays, and angles. (a)</li> <li>● Identify parallel, perpendicular, and intersecting line segments in plane and solid figures. (b)</li> <li>● Identify practical situations that illustrate parallel, intersecting, and perpendicular lines. (b)</li> <li>● Use symbolic notation to describe parallel lines and perpendicular lines. (b)</li> </ul>	<p><b>4.MG.4 The student will identify, describe, and draw points, rays, line segments, angles, and lines, including intersecting, parallel, and perpendicular lines.</b></p> <ul style="list-style-type: none"> <li>a) Identify and describe points, lines, line segments, rays, and angles, including endpoints and vertices.</li> <li>b) Describe endpoints and vertices in relation to lines, line segments, rays, and angles.</li> <li>c) Draw representations of points, line segments, rays, angles, and lines, using a ruler or straightedge.</li> <li>d) Identify parallel, perpendicular, and intersecting lines and line segments in plane and solid figures, including those in context.</li> <li>e) Use symbolic notation to name points, lines, line segments, rays, angles, and to describe parallel and perpendicular lines.</li> </ul>
<p><b>4.11 The student will identify, describe, compare, and contrast plane and solid figures according to their characteristics (number of</b></p>	<p><b>4.MG.6 The student will identify, describe, compare, and contrast plane and solid figures according to their characteristics (number of</b></p>

<p align="center"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Measurement and Geometry</b></p>	<p align="center"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Measurement and Geometry (MG)</b></p>
<p><b>angles, vertices, edges, and the number and shape of faces) using concrete models and pictorial representations.</b></p> <ul style="list-style-type: none"> <li>● Identify concrete models and pictorial representations of solid figures (cube, rectangular prism, square pyramid, sphere, cone, and cylinder).</li> <li>● Identify and describe solid figures (cube, rectangular prism, square pyramid, and sphere) according to their characteristics (number of angles, vertices, edges, and by the number and shape of faces).</li> <li>● Compare and contrast plane and solid figures (circle/sphere, square/cube, triangle/square pyramid, and rectangle/ rectangular prism) according to their characteristics (number of sides, angles, vertices, edges, and the number and shape of faces).</li> </ul>	<p><b>angles, vertices, edges, and the number and shape of faces), with and without models.</b></p> <ol style="list-style-type: none"> <li>a) Identify concrete models and pictorial representations of solid figures (cube, rectangular prism, square pyramid, sphere, cone, and cylinder).</li> <li>b) Identify and describe solid figures (cube, rectangular prism, square pyramid, and sphere) according to their characteristics (number of angles, vertices, edges, and the number and shape of faces).</li> <li>c) Compare and contrast plane and solid figures (limited to circles, squares, triangles, rectangles, spheres, cubes, square pyramids, and rectangular prisms) according to their characteristics (number of sides, angles, vertices, edges, and the number and shape of faces).</li> </ol>
<p><b>4.12 The student will classify quadrilaterals as parallelograms, rectangles, squares, rhombi, and/or trapezoids.</b></p> <ul style="list-style-type: none"> <li>● Develop definitions for parallelograms, rectangles, squares, rhombi, and trapezoids.</li> <li>● Identify properties of quadrilaterals including parallel, perpendicular, and congruent sides.</li> <li>● Classify quadrilaterals as parallelograms, rectangles, squares, rhombi, and/or trapezoids.</li> <li>● Compare and contrast the properties of quadrilaterals.</li> <li>● Identify parallel sides, congruent sides, and right angles using geometric markings to denote properties of quadrilaterals.</li> </ul>	<p><b>4.MG.5 The student will classify and describe quadrilaterals (parallelograms, rectangles, squares, rhombi, and/or trapezoids) using specific properties and attributes.</b></p> <ol style="list-style-type: none"> <li>a) Develop definitions for parallelograms, rectangles, squares, rhombi, and trapezoids through the exploration of properties and attributes.</li> <li>b) Identify and describe points, line segments, angles, and vertices in quadrilaterals.</li> <li>c) Identify and describe parallel, intersecting, perpendicular, and congruent sides in quadrilaterals.</li> </ol>



<p align="center"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Measurement and Geometry</b></p>	<p align="center"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Measurement and Geometry (MG)</b></p>
	<p>d) Compare, contrast, and classify quadrilaterals (parallelograms, rectangles, squares, rhombi, and/or trapezoids) based on the following properties and attributes:</p> <ul style="list-style-type: none"> <li>i) parallel sides;</li> <li>ii) perpendicular sides;</li> <li>iii) congruence of sides; and</li> <li>iv) number of right angles.</li> </ul> <p>e) Denote properties of quadrilaterals and identify parallel sides, congruent sides, and right angles by using geometric markings.</p> <p>f) Use symbolic notation to name line segments and angles in quadrilaterals.</p>

<p align="center"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Probability and Statistics</b></p>	<p align="center"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Probability and Statistics (PS)</b></p>
<p><b>4.13 The student will</b></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> <ul style="list-style-type: none"> <li>● Model and determine all possible outcomes of a given simple event where there are no more than 24 possible outcomes, using a</li> </ul>	<p><b>4.PS.2 The student will model and determine the probability of an outcome of a simple event.</b></p> <ul style="list-style-type: none"> <li>a) Describe probability as the degree of likelihood of an outcome occurring using terms such as <i>impossible</i>, <i>unlikely</i>, <i>equally likely</i>, <i>likely</i>, and <i>certain</i>.</li> <li>b) Model and determine all possible outcomes of a given simple event where there are no more than 24 possible outcomes, using a variety of manipulatives (e.g., coins, two-sided counters, number cubes, spinners).</li> </ul>

<p style="text-align: center;"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Probability and Statistics</b></p>	<p style="text-align: center;"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Probability and Statistics (PS)</b></p>
<p>variety of manipulatives (e.g., coins, number cubes, and spinners). (a)</p> <ul style="list-style-type: none"> <li>● 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. (a)</li> <li>● Write the probability of a given simple event as a fraction, where there are no more than 24 possible outcomes. (b)</li> <li>● Determine the likelihood of an event occurring and relate it to its whole number or fractional representation (e.g., impossible or zero; equally likely; certain or one). (a, b)</li> <li>● Create a model or practical problem to represent a given probability. (c)</li> </ul>	<ul style="list-style-type: none"> <li>c) Write the probability of a given simple event as a fraction between 0 and 1, where there are no more than 24 possible outcomes.</li> <li>d) Determine the likelihood of an event occurring and relate it to its whole number or fractional representation (e.g., impossible or zero; equally likely; certain or one).</li> <li>e) Create a model or contextual problem to represent a given probability.</li> </ul>
<p><b>4.14 The student will</b></p> <p><b>a) collect, organize, and represent data in bar graphs and line graphs;</b></p> <p><b>b) interpret data represented in bar graphs and line graphs; and</b></p> <p><b>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).</b></p> <ul style="list-style-type: none"> <li>● Collect data, using, for example, observations, measurement, surveys, scientific experiments, polls, or questionnaires. (a)</li> <li>● Organize data into a chart or table. (a)</li> <li>● Represent data in bar graphs, labeling one axis with equal whole number increments of one or more (numerical data) (e.g., 2, 5, 10, or 100) and the other axis with categories related to the title of the</li> </ul>	<p><b>4.PS.1 The student will apply the data cycle (formulate questions; collect or acquire data; organize and represent data; and analyze data and communicate results) with a focus on line graphs.</b></p> <ul style="list-style-type: none"> <li>a) Formulate questions that require the collection or acquisition of data.</li> <li>b) Determine the data needed to answer a formulated question and collect or acquire existing data (limited to 10 or fewer data points) using various methods (e.g., observations, measurements, experiments).</li> <li>c) Organize and represent a data set using line graphs with a title and labeled axes with whole number increments, with and without the use of technology tools.</li> <li>d) Analyze data represented in line graphs and communicate results orally and in writing:</li> </ul>

<p style="text-align: center;"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Probability and Statistics</b></p>	<p style="text-align: center;"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Probability and Statistics (PS)</b></p>
<p>graph (categorical data) (e.g., swimming, fishing, boating, and water skiing as the categories of “Favorite Summer Sports”). (a)</p> <ul style="list-style-type: none"> <li>● Represent data in line graphs, labeling the vertical axis with equal whole number increments of one or more and the horizontal axis with continuous data commonly related to time (e.g., hours, days, months, years. Line graphs will have no more than 10 identified points along a continuum for continuous data. (a)</li> <li>● Title the graph or identify an appropriate title. Label the axes or identify the appropriate labels. (a)</li> <li>● Interpret data by making observations from bar graphs and line graphs by describing the characteristics of the data and the data as a whole (e.g., the time period when the temperature increased the most, the category with the greatest/least, categories with the same number of responses, similarities and differences, the total number). One set of data will be represented on a graph. (b)</li> <li>● Interpret data by making inferences from bar graphs and line graphs. (b)</li> <li>● Interpret the data to answer the question posed, and compare the answer to the prediction (e.g., “The summer sport preferred by most is swimming, which is what I predicted before collecting the data.”). (b)</li> <li>● Write at least one sentence to describe the analysis and interpretation of the data, identifying parts of the data that have special characteristics, including categories with the greatest, the least, or the same. (b)</li> <li>● 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; a pictograph and a bar graph). (c)</li> </ul>	<ul style="list-style-type: none"> <li>i) describe the characteristics of the data represented in a line graph and the data as a whole (e.g., the time period when the temperature increased the most);</li> <li>ii) identify parts of the data that have special characteristics and explain the meaning of the greatest, the least, or the same (e.g., the highest temperature shows the warmest day);</li> <li>iii) make inferences about data represented in line graphs;</li> <li>iv) draw conclusions about the data and make predictions based on the data to answer questions; and</li> <li>v) solve single-step and multistep addition and subtraction problems using data from line graphs.</li> </ul>

<p style="text-align: center;"><b>2016 Standards of Learning</b> Essential Knowledge and Skills (EKS) <b>Patterns, Functions, and Algebra</b></p>	<p style="text-align: center;"><b>2023 Standards of Learning</b> Knowledge and Skills (KS) <b>Patterns, Functions, and Algebra (PFA)</b></p>
<p><b>4.15 The student will identify, describe, create, and extend patterns found in objects, pictures, numbers, and tables.</b></p> <ul style="list-style-type: none"> <li>● Identify and describe patterns, using words, objects, pictures, numbers, and tables.</li> <li>● Create patterns using objects, pictures, numbers, and tables.</li> <li>● Extend patterns, using objects, pictures, numbers, and tables.</li> <li>● Solve practical problems that involve identifying, describing, and extending single-operation input and output rules, limited to addition, subtraction, and multiplication of whole numbers and addition and subtraction of fractions with like denominators of 12 or less.</li> <li>● Identify the rule in a single-operation numerical pattern found in a list or table, limited to addition, subtraction, and multiplication of whole numbers.</li> </ul>	<p><b>4.PFA.1 The student will identify, describe, extend, and create increasing and decreasing patterns (limited to addition, subtraction, and multiplication of whole numbers), including those in context, using various representations.</b></p> <ol style="list-style-type: none"> <li>a) Identify, describe, extend, and create increasing and decreasing patterns using various representations (e.g., objects, pictures, numbers, number lines, input/output tables, and function machines).</li> <li>b) Analyze an increasing or decreasing single-operation numerical pattern found in lists, input/output tables, or function machines and generalize the change to identify the rule, extend the pattern, or identify missing terms.</li> <li>c) Given a rule, create increasing and decreasing patterns using numbers and input/output tables (including function machines).</li> <li>d) Solve contextual problems that involve identifying, describing, and extending increasing and decreasing patterns using single-operation input and output rules.</li> </ol>
<p><b>4.16 The student will recognize and demonstrate the meaning of equality in an equation.</b></p> <ul style="list-style-type: none"> <li>● Write an equation to represent the relationship between equivalent mathematical expressions (e.g., <math>4 \times 3 = 2 \times 6</math>; <math>10 + 8 = 36 \div 2</math>; <math>12 \times 4 = 60 - 12</math>).</li> <li>● Identify and use the appropriate symbol to distinguish between expressions that are equal and expressions that are not equal, using</li> </ul>	<p><b>[Included in 4.CE.2]</b></p>

<p style="text-align: center;"><b>2016 <i>Standards of Learning</i></b> Essential Knowledge and Skills (EKS) <b>Patterns, Functions, and Algebra</b></p>	<p style="text-align: center;"><b>2023 <i>Standards of Learning</i></b> Knowledge and Skills (KS) <b>Patterns, Functions, and Algebra (PFA)</b></p>
<p>addition, subtraction, multiplication, and division (e.g., <math>4 \times 12 = 8 \times 6</math> and <math>64 \div 8 \neq 8 \times 8</math>).</p>	

## 2023 Grade 4 Mathematics SOL – Summary of Changes

Grade 4 (2016 SOL to 2023 SOL Numbering)	Parameter Changes/Clarification (2023 SOL)
<ul style="list-style-type: none"> <li>● 4.1a → 4.NS.1</li> <li>● 4.1b → 4.NS.2</li> <li>● 4.1c → [Included in 4.CE.1]</li> <li>● 4.2a-c → 4.NS.3</li> <li>● 4.3a,c → 4.NS.4</li> <li>● 4.3b → [Included in 4.CE.3]</li> <li>● 4.3d → 4.NS.5</li> <li>● 4.4a-d → 4.CE.1 and 4.CE.2</li> <li>● 4.5a → [Common factors included in 4.CE.2; Common multiples moved to Grade 5]</li> <li>● 4.5b-c → 4.CE.3</li> <li>● 4.6a-b → 4.CE.4</li> <li>● 4.7 → 4.MG.3</li> <li>● 4.8a-d → 4.MG.1</li> <li>● 4.9 → 4.MG.2</li> <li>● 4.10a-b → 4.MG.4</li> <li>● 4.11 → 4.MG.6</li> <li>● 4.12 → 4.MG.5</li> <li>● 4.13a-c → 4.PS.2</li> <li>● 4.14a-c → 4.PS.1</li> <li>● 4.15 → 4.PFA.1</li> <li>● 4.16 → [Included in 4.CE.2]</li> </ul>	<ul style="list-style-type: none"> <li>● 4.NS.1c Apply patterns within the base 10 system to determine and communicate, orally and in written form, the place and value of each digit in a nine-digit whole number</li> <li>● 4.NS.3a – Represent equivalent fractions with and without models (previously required a model)</li> <li>● 4.NS.5a,b - Hundredths included when identifying and representing fractions as decimals</li> <li>● 4.CE.1 and 4.CE.2 - “Create and solve...” reworded to “Estimate, represent, solve, and justify...”</li> <li>● 4.CE.1b - Rounding numbers included as a strategy for estimation</li> <li>● 4.CE.1b,c,d - Addition and subtraction problems (without access to a calculator) involve addends and minuends that do not exceed 10,000; contextual addition and subtraction problems (with access to a calculator) involve addends and minuends that do not exceed 1,000,000</li> <li>● 4.CE.2a - “Demonstrate fluency with...” expanded to include “Recall with automaticity” the multiplication facts through <math>12 \times 12</math> and the corresponding division facts</li> <li>● 4.CE.3a,b - Add and subtract two fractions (proper and improper) and/or mixed numbers, having like denominators limited to 2, 3, 4, 5, 6, 8, 10, and 12, and simplify the resulting fraction; problems may include regrouping (previously add or subtract two fractions with like or unlike denominators of 12 or less; subtraction problems did not include regrouping)</li> <li>● 4.CE.4a – Rounding decimals to the nearest whole number included as an estimation strategy</li> <li>● 4.MG.1c - Compare estimates with actual measurements expanded from only length to also include weight/mass, or liquid volume</li> </ul>

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	<ul style="list-style-type: none"> <li>● 4.MG.2 – Clarified to include single-step and multistep contextual problems for elapsed time</li> <li>● 4.MG.5 – Classify and describe quadrilaterals including points, line segments, angles, vertices, parallel, intersecting, perpendicular, and congruent sides</li> <li>● 4.MG.5f - Use symbolic notation to name line segments and angles in quadrilaterals</li> <li>● 4.MG.6 – Identify, describe, compare, and contrast plane and solid figures with and without models (previously using concrete materials and pictorial representations)</li> <li>● 4.PFA.1c - Given a rule, create patterns using numbers and input/output tables (including function machines)</li> </ul>

Deletions from Grade 4 (2016 SOL)	Additions to Grade 4 (2023 SOL)
<ul style="list-style-type: none"> <li>● 4.1c [EKS] - Identify the range of numbers that round to a given thousand, ten thousand, and hundred thousand</li> <li>● 4.4d - Create single-step and multistep practical problems involving addition, subtraction, multiplication, and division with whole numbers</li> <li>● 4.5a - Determine common multiples and the least common multiple of no more than three numbers [Moved to Grade 5]</li> <li>● 4.5b - Add and subtract fractions with unlike denominators [Included in Grade 5]</li> <li>● 4.7 [EKS] - Determine the perimeter of a polygon with no more than eight sides</li> <li>● 4.14a-b - Collect, organize, represent, and interpret data in bar graphs</li> <li>● 4.14c - Compare two representations of the same data</li> <li>● 4.15 - Patterns that include the addition and subtraction of fractions with like denominators of 12 or less [Included in Grade 5]</li> </ul>	<ul style="list-style-type: none"> <li>● 4.NS.3f - Compose and decompose fractions (proper and improper) and mixed numbers with denominators of 12 or less, in multiple ways, with and without models</li> <li>● 4.CE.1a and 4.CE.2a - Determine and justify whether an estimate or an exact answer is appropriate when solving contextual problems</li> <li>● 4.CE.2e - Determine all factor pairs for a whole number 1 to 100, using concrete, pictorial, and numerical representations</li> <li>● 4.CE.2g - Estimate and determine the product of two whole numbers (a three-digit factor and a one-digit factor)</li> <li>● 4.CE.3c,d - Solve single-step contextual problems involving multiplication of a whole number, limited to 12 or less, and a unit fraction, with models; apply the inverse property of multiplication in models [Moved from Grade 5]</li> <li>● 4.MG.1a,b – Determine appropriate unit to measure liquid volume; estimate and measure liquid volume</li> <li>● 4.MG.3a,d - Use models to explore the relationship between area and perimeter of rectangles; develop a formula for the area and perimeter of rectangles (including squares)</li> <li>● 4.MG.3e - Identify and represent rectangles with the same perimeter and different areas or with the same area and different perimeters</li> <li>● 4.MG.4c - Draw representations of points, line segments, rays, angles, and lines [Moved from Grade 3]</li> <li>● 4.PS.1 - Additional data analysis knowledge and skills representing the data cycle have been included</li> <li>● 4.PS.2a - Describe probability as the degree of likelihood of an outcome occurring using terms such as <i>impossible</i>, <i>unlikely</i>, <i>equally likely</i>, <i>likely</i>, and <i>certain</i> [Moved from Grade 3]</li> </ul>

**KEY:** NS = Number and Number Sense; CE = Computation and Estimation; MG = Measurement and Geometry; PS = Probability and Statistics; PFA = Patterns, Functions, and Algebra; EKS = Essential Knowledge and Skills (2016); KS = Knowledge and Skills (2023); US = Understanding the Standard