Grade 3 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: *Flexibility with composing and decomposing base 10 numbers and understanding the structure to build relationships among numbers allows us to quantify, measure and make decisions in life.*
- Read, write, and determine the place and value of each digit in a whole number, up to six digits
- Compare and order whole numbers up to 9,999
- Represent and compare fractions (proper, improper, or mixed numbers with denominators of 2, 3, 4, 5, 6, 8, and 10)
- Count, compare, represent, and make change for money amounts up to $5.00

Computation and Estimation: *The operations of addition, subtraction, multiplication, and division are used to represent and solve many different types of problems.*
- Represent, solve, and justify solutions to single-step and multistep problems, including those in context, using addition and subtraction with whole numbers where addends and minuends do not exceed 1,000
- Represent, solve, and justify solutions to single-step problems using multiplication and division
- Recall with automaticity multiplication facts through 10×10 and the corresponding division facts

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.*
- Estimate and measure objects by length, weight, and liquid volume to the nearest half or whole unit (U.S. Customary and metric)
- Solve problems involving area and perimeter (in both U.S. Customary and metric units)
- Demonstrate an understanding of the concept of time to the nearest minute and solve elapsed time problems in one-hour increments
- Identify, describe, classify, and compare polygons (triangles, quadrilaterals, pentagons, hexagons, octagons)
- Combine and subdivide triangles and quadrilaterals to create new polygons

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 pictographs and bar graphs

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 3 Mathematics *Standards of Learning* – 2016 to 2023

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Number and Number Sense**	2023 *Standards of Learning* Knowledge and Skills (KS) **Number and Number Sense (NS)**
3.1 The student will **a) read, write, and identify the place and value of each digit in a six-digit whole number, with and without models;** ● Read six-digit numerals orally. (a) ● Write six-digit numerals in standard form that are stated verbally or written in words. (a) ● Determine the value of each digit in a six-digit whole number (e.g., in 165,724, the 7 represents 7 hundreds and its value is 700). (a) ● Represent numbers up to 9,999 in multiple ways, according to place value (e.g., 256 can be 1 hundred, 14 tens, and 16 ones, but also 25 tens and 6 ones), with and without models. (a)	**3.NS.1 The student will use place value understanding to read, write, and determine the place and value of each digit in a whole number, up to six digits, with and without models.** a) Read and write six-digit whole numbers in standard form, expanded form, and word form. b) 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 six-digit whole number (e.g., in 165,724, the 5 represents 5 thousands and its value is 5,000). c) Compose, decompose, and represent numbers up to 9,999 in multiple ways, according to place value (e.g., 256 can be 1 hundred, 14 tens, 16 ones, but also 25 tens, 6 ones), with and without models.
3.1 The student will **b) round whole numbers, 9,999 or less, to the nearest ten, hundred, and thousand;** ● Round a given whole number, 9,999 or less, to the nearest ten, hundred, and thousand. (b) ● Solve problems, using rounding of numbers, 9,999 or less, to the nearest ten, hundred, and thousand. (b)	**[Included in 3.CE.1]**
3.1 The student will **c) compare and order whole numbers, each 9,999 or less.**	**3.NS.2 The student will demonstrate an understanding of the base 10 system to compare and order whole numbers up to 9,999.**

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Number and Number Sense**	2023 *Standards of Learning* Knowledge and Skills (KS) **Number and Number Sense (NS)**
• Compare two whole numbers, each 9,999 or less, using symbols ($>, <, =,$ or $\neq$) and/or words (*greater than, less than, equal to,* and *not equal to*). (c) • Order up to three whole numbers, each 9,999 or less, represented with concrete objects, pictorially, or symbolically from least to greatest and greatest to least. (c)	a) Compare two whole numbers, each 9,999 or less, using symbols ($>, <, =, \neq$) and/or words (*greater than*, *less than*, *equal to*, *not equal to*), with and without models. b) Order up to three whole numbers, each 9,999 or less, represented with and without models, from least to greatest and greatest to least.

3.2 The student will
a) name and write fractions and mixed numbers represented by a model;
b) represent fractions and mixed numbers, with models and symbols; and
c) compare fractions having like and unlike denominators, using words and symbols ($>, <, =,$ or $\neq$), with models.
 	
• Name and write fractions (proper and improper) and mixed numbers with denominators of 12 or less in symbols represented by concrete and/or pictorial models. (a)
• Represent a given fraction (proper or improper) and mixed numbers, using concrete or pictorial set, area/region, length/measurement models and symbols. (b)
• Identify a fraction represented by a model as the sum of unit fractions. (b)
• Using a model of a fraction greater than one, count the fractional parts to name and write it as an improper fraction and as a mixed number (e.g., $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}, \frac{4}{4}, \frac{5}{4} = 1\frac{1}{4}$, or $2\frac{1}{3} = \frac{7}{3}$). (b)
• Compare a model of a fraction, less than or equal to one, to the benchmarks of 0, $\frac{1}{2}$, and 1. (c)
	3.NS.3 The student will use mathematical reasoning and justification to represent and compare fractions (proper and improper) and mixed numbers with denominators of 2, 3, 4, 5, 6, 8, and 10), including those in context.
	
	a) Represent, name, and write a given fraction (proper or improper) or mixed number with denominators of 2, 3, 4, 5, 6, 8, and 10 using:
	  i) region/area models (e.g., pie pieces, pattern blocks, geoboards);
	  ii) length models (e.g., paper fraction strips, fraction bars, rods, number lines); and
	  iii) set models (e.g., chips, counters, cubes).
	b) Identify a fraction represented by a model as the sum of unit fractions.
	c) Using a model of a fraction greater than one, count the fractional parts to name and write it as an improper fraction and as a mixed number (e.g., $\frac{1}{4}, \frac{2}{4}, \frac{3}{4}, \frac{4}{4}, \frac{5}{4} = 1\frac{1}{4}$).
	d) Compose and decompose fractions (proper and improper) with denominators of 2, 3, 4, 5, 6, 8, and 10 in multiple ways (e.g., $\frac{7}{4} = \frac{4}{4} + \frac{3}{4}$ or $\frac{4}{6} = \frac{3}{6} + \frac{1}{6} = \frac{2}{6} + \frac{2}{6}$) with models.

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Number and Number Sense**	2023 *Standards of Learning* Knowledge and Skills (KS) **Number and Number Sense (NS)**
• Compare proper fractions using the terms *greater than, less than, equal to, or not equal to* and the symbols ($<, >, =,$ and $\neq$). Comparisons are made between fractions with both like and unlike denominators, with concrete or pictorial models. (c)	e) Compare a fraction, less than or equal to one, to the benchmarks of $0, \frac{1}{2}$, and 1 using area/region models, length models, and without models. f) Compare two fractions (proper or improper) and/or mixed numbers with like numerators of 2, 3, 4, 5, 6, 8, and 10 (e.g., $\frac{2}{3} > \frac{2}{8}$) using words (*greater than, less than, equal to*) and/or symbols ($>, <, =$) using area/region models, length models, and without models. g) Compare two fractions (proper or improper) and/or mixed numbers with like denominators of 2, 3, 4, 5, 6, 8, and 10 (e.g., $\frac{3}{6} < \frac{4}{6}$) using words (*greater than, less than, equal to*) and/or symbols ($>, <, =$), using area/region models, length models, and without models. h) Represent equivalent fractions with denominators of 2, 3, 4, 5, 6, 8, or 10, using region/area models and length models.
[Previously 3.6]	**3.NS.4 The student will solve problems, including those in context, that involve counting, comparing, representing, and making change for money amounts up to $5.00.** a) Determine the value of a collection of bills and coins whose total is $5.00 or less. b) Construct a set of bills and coins to total a given amount of money whose value is $5.00 or less. c) Compare the values of two sets of coins or two sets of bills and coins, up to $5.00, with words (*greater than, less than, equal to)* and/or symbols ($>, <, =$), using concrete or pictorial models.

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Number and Number Sense**	2023 *Standards of Learning* Knowledge and Skills (KS) **Number and Number Sense (NS)**
	d) Solve contextual problems to make change from $5.00 or less by using counting on or counting back strategies with concrete or pictorial models.

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Computation and Estimation**	2023 *Standards of Learning* Knowledge and Skills (KS) **Computation and Estimation (CE)**
3.3 The student will **a) estimate and determine the sum or difference of two whole numbers; and** **b) create and solve single-step and multistep practical problems involving sums or differences of two whole numbers, each 9,999 or less.** ● Determine whether an estimate or an exact answer is an appropriate solution for practical addition and subtraction problems involving single-step and multistep problems. (a, b) ● Estimate the sum of two whole numbers with sums to 9,999. (a) ● Estimate the difference of two whole numbers, each 9,999 or less. (a) ● Apply strategies, including place value and the properties of addition, to add two whole numbers with sums to 9,999. (a, b) ● Apply strategies, including place value and the properties of addition, to subtract two whole numbers, each 9,999 or less. (a, b)	**3.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 where addends and minuends do not exceed 1,000.** a) Determine and justify whether an estimate or an exact answer is appropriate when solving single-step and multistep contextual problems involving addition and subtraction, where addends and minuends do not exceed 1,000. b) Apply strategies (e.g., rounding to the nearest 10 or 100, using compatible numbers, using other number relationships) to estimate a solution for single-step or multistep addition or subtraction problems, including those in context, where addends or minuends do not exceed 1,000. 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 1,000.

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Computation and Estimation**	2023 *Standards of Learning* Knowledge and Skills (KS) **Computation and Estimation (CE)**
• Use inverse relationships between addition and subtraction facts to solve practical problems. (b) • Create and solve single-step and multistep practical problems involving the sum or difference of two whole numbers, each 9,999 or less. (b)	d) Identify and use the appropriate symbol to distinguish between expressions that are equal and expressions that are not equal (e.g., 256 - 13 = 220 + 23; 457 + 100 ≠ 557 + 100). e) 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.
3.4 The student will a) **represent multiplication and division through 10×10, using a variety of approaches and models;** b) **create and solve single-step practical problems that involve multiplication and division through 10×10;** c) **demonstrate fluency with multiplication facts of 0, 1, 2, 5, and 10; and** • Represent multiplication using a variety of approaches and models (e.g., repeated addition, equal-sized groups, arrays, equal jumps on a number line, skip counting). (a) • Represent division using a variety of approaches and models (e.g., repeated subtraction, equal sharing, equal groups). (a) • Write three related equations (fact sentences) when given one equation (fact sentence) for multiplication or division (e.g., given $6 \times 7 = 42$, write $7 \times 6 = 42$, $42 \div 7 = 6$, and $42 \div 6 = 7$. (a) • Create practical problems to represent a multiplication or division fact. (b) • Use multiplication and division basic facts to represent a given situation, using a number sentence. (b)	**3.CE.2 The student will recall with automaticity multiplication and division facts, through 10×10; and represent, solve, and justify solutions to single-step contextual problems using multiplication and division with whole numbers.** a) Represent multiplication and division of whole numbers through 10×10, including in a contextual situation, using a variety of approaches and models (e.g., repeated addition/subtraction, equal-sized groups/sharing, arrays, equal jumps on a number line, using multiples to skip count). b) Use inverse relationships to write the related facts connected to a given model for multiplication and division of whole numbers through 10×10. c) Apply strategies (e.g., place value, the properties of multiplication and/or addition) when multiplying and dividing whole numbers. d) Demonstrate fluency with multiplication facts through 10×10 by applying reasoning strategies (e.g., doubling, add-a-group, subtract-a-group, near squares, and inverse relationships).

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Computation and Estimation**	2023 *Standards of Learning* Knowledge and Skills (KS) **Computation and Estimation (CE)**
• Recognize and use the inverse relationship between multiplication and division to solve practical problems. (b) • Solve single-step practical problems that involve multiplication and division of whole numbers through 10×10. (b) • Demonstrate fluency with multiplication facts of 0, 1, 2, 5, and 10. (c) • Apply strategies, including place value and the properties of multiplication and/or addition when multiplying and dividing whole numbers. (a, b, c, d)	e) Represent, solve, and justify solutions to single-step contextual problems that involve multiplication and division of whole numbers through 10×10. f) Recall with automaticity the multiplication facts through 10×10 and the corresponding division facts. g) Create an equation to represent the mathematical relationship between equivalent expressions using multiplication and/or division facts through 10×10 (e.g., $4 \times 3 = 14 - 2$, $35 \div 5 = 1 \times 7$).
3.4 The student will **d) solve single-step practical problems involving multiplication of whole numbers, where one factor is 99 or less and the second factor is 5 or less.** • Solve single-step practical problems involving multiplication of whole numbers, where one factor is 99 or less and the second factor is 5 or less. (d)	**[Included in Grade 4]**
3.5 The student will solve practical problems that involve addition and subtraction with proper fractions having like denominators of 12 or less. • Solve practical problems that involve addition and subtraction with proper fractions having like denominators of 12 or less, using concrete and pictorial models representing area/regions (e.g., circles, squares, and rectangles), length/measurements (e.g., fraction bars and strips), and sets (e.g., counters).	**[Included in Grade 4]**

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Measurement and Geometry**	2023 *Standards of Learning* Knowledge and Skills (KS) **Measurement and Geometry (MG)**
3.6 The student will **a) determine the value of a collection of bills and coins whose total value is $5.00 or less;** **b) compare the value of two sets of coins or two sets of coins and bills; and** **c) make change from $5.00 or less.** ● Determine the value of a collection of coins and bills whose total value is $5.00 or less. (a) ● Compare the values of two sets of coins or two sets of coins and bills, up to $5.00, using the terms *greater than, less than*, and *equal to*. (b) ● Make change from $5.00 or less. (c)	**[Moved to 3.NS.4]**

3.7 The student will estimate and use U.S. Customary and metric units to measure
a) length to the nearest $\frac{1}{2}$ inch, inch, foot, yard, centimeter, and meter; and
b) liquid volume in cups, pints, quarts, gallons, and liters.
 	
● Estimate and use U.S. Customary and metric units to measure lengths of objects to the nearest $\frac{1}{2}$ inch, inch, foot, yard, centimeter, and meter. (a)
● Determine the actual measure of length using U.S. Customary and metric units to measure objects to the nearest $\frac{1}{2}$ inch, foot, yard, centimeter, and meter. (a)
	3.MG.1 The student will reason mathematically using standard units (U.S. Customary and metric) with appropriate tools to estimate and measure objects by length, weight/mass, and liquid volume to the nearest half or whole unit.
	
	a) Justify whether an estimate or an exact measurement is needed for a contextual situation and choose an appropriate unit.
	b) Estimate and measure:
	  i) length of an object to the nearest U.S. Customary unit ($\frac{1}{2}$ inch, inch, foot, yard) and metric unit (centimeter, meter);
	  ii) weight/mass of an object to the nearest U.S. Customary unit (pound) and metric unit (kilogram); and
	  iii) liquid volume to the nearest U.S. Customary unit (cup, pint, quart, gallon) and metric unit (liter).

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Measurement and Geometry**	2023 *Standards of Learning* Knowledge and Skills (KS) **Measurement and Geometry (MG)**
• Estimate and use U.S. Customary and metric units to measure liquid volume to the nearest cup, pint, quart, gallon, and liter. (b) • Determine the actual measure of liquid volume using U.S. Customary and metric units to measure to the nearest cup, pint, quart, gallon, and liter. (b)	c) Compare estimates of length, weight/mass, or liquid volume with the actual measurements.

3.8 The student will estimate and
a) measure the distance around a polygon in order to determine its perimeter using U.S. Customary and metric units; and
b) count the number of square units needed to cover a given surface in order to determine its area.
 	
• Estimate and use U.S. Customary and metric units to measure the distance around a polygon with no more than six sides to determine the perimeter. (a)
• Determine the area of a given surface by estimating and then counting the number of square units needed to cover the surface. (b)
	3.MG.2 The student will use multiple representations to estimate and solve problems, including those in context, involving area and perimeter (in both U.S. Customary and metric units).
	
	a) Solve problems, including those in context, involving area:
	   i) describe and give examples of area as a measurement in contextual situations; and
	   ii) estimate and determine the area of a given surface by counting the number of square units, describe the measurement (using the number and unit) and justify the measurement.
	b) Solve problems, including those in context, involving perimeter:
	   i) describe and give examples of perimeter as a measurement in contextual situations;
	   ii) estimate and measure the distance around a polygon (with no more than six sides) to determine the perimeter and justify the measurement; and
	   iii) given the lengths of all sides of a polygon (with no more than six sides), determine its perimeter and justify the measurement.

3.9 The student will **a) tell time to the nearest minute, using analog and digital clocks;**	**3.MG.3 The student will demonstrate an understanding of the concept of time to the nearest minute and solve single-step**

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Measurement and Geometry**	2023 *Standards of Learning* Knowledge and Skills (KS) **Measurement and Geometry (MG)**
b) solve practical problems related to elapsed time in one-hour increments within a 12-hour period; and ● Tell time to the nearest minute, using analog and digital clocks. (a) ● Match a written time (e.g., 4:38, 7:09, 12:51) to the time shown on analog and digital clocks to the nearest minute. (a) ● Solve practical problems related to elapsed time in one-hour increments, within a 12-hour period (within a.m. or within p.m.): 　o when given the beginning time and the ending time, determine the time that has elapsed; (b) 　o when given the beginning time and amount of elapsed time in one-hour increments, determine the ending time; or (b) 　o when given the ending time and the elapsed time in one-hour increments, determine the beginning time. (b)	**contextual problems involving elapsed time in one-hour increments within a 12-hour period.** a) Tell and write time to the nearest minute, using analog and digital clocks. b) Match a written time (e.g., 4:38, 7:09, 12:51) to the time shown on analog and digital clocks to the nearest minute. c) Solve single-step contextual problems involving elapsed time in one-hour increments, within a 12-hour period (within a.m. or within p.m.) when given: 　i) the starting time and the ending time, determine the amount of time that has elapsed; 　ii) the starting time and amount of elapsed time in one-hour increments, determine the ending time; or 　iii) the ending time and the amount of elapsed time in one-hour increments, determine the starting time.
3.9 The student will **c) identify equivalent periods of time and solve practical problems related to equivalent periods of time.** ● Identify the number of minutes in an hour and the number of hours in a day. (c) ● Identify equivalent relationships observed in a calendar, including the approximate number of days in a given month (about 30), the number of days in a week, the number of days in a year (about 365 $\frac{1}{4}$), and the number of months in a year. (c)	**[Minutes in an hour and hours in a day moved to Grade 2]** **[Equivalent relationships and practical problems related to equivalent periods of time deleted]**

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Measurement and Geometry**	2023 *Standards of Learning* Knowledge and Skills (KS) **Measurement and Geometry (MG)**

● Solve practical problems related to equivalent periods of time to include:
  o approximate days in five or fewer months;
  o days in five or fewer weeks;
  o months in five or fewer years;
  o minutes in five or fewer hours; and
  o hours in five or fewer days. (c)	

3.10 The student will read temperature to the nearest degree. ● Read Celsius and Fahrenheit temperatures to the nearest degree using real thermometers, physical models, or pictorial representations.	**[Included in Grade 3 Science standards]**
3.11 The student will identify and draw representations of points, lines, line segments, rays, and angles. ● Identify examples of points, lines, line segments, rays, and angles. ● Describe endpoints and vertices as they relate to lines, line segments, rays, and angles. ● Draw representations of points, line segments, rays, angles, and lines, using a ruler or straightedge.	**[Included in Grade 4]**
3.12 The student will **a) define polygon;** **b) identify and name polygons with 10 or fewer sides; and** **c) combine and subdivide polygons with three or four sides and name the resulting polygon(s).**	**3.MG.4 The student will identify, describe, classify, compare, combine, and subdivide polygons.** a) Describe a polygon as a closed plane figure composed of at least three line segments that do not cross. b) Classify figures as polygons or not polygons and justify reasoning.

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Measurement and Geometry**	2023 *Standards of Learning* Knowledge and Skills (KS) **Measurement and Geometry (MG)**
• Define polygon. (a) • Classify figures as polygons or not polygons. (a) • Identify and name polygons with 10 or fewer sides in various orientations: triangle is a three-sided polygon; quadrilateral is a four-sided polygon; pentagon is a five-sided polygon; hexagon is a six-sided polygon; heptagon is a seven-sided polygon; octagon is an eight-sided polygon; nonagon is a nine-sided polygon; and decagon is a ten-sided polygon. (b) • Combine no more than three polygons, where each has three or four sides, and name the resulting polygon. (c) • Subdivide a three-sided or four-sided polygon into no more than three parts and name the resulting polygon(s). (c)	c) Identify and describe triangles, quadrilaterals, pentagons, hexagons, and octagons in various orientations, with and without contexts. d) Identify and name examples of polygons (triangles, quadrilaterals, pentagons, hexagons, octagons) in the environment. e) Classify and compare polygons (triangles, quadrilaterals, pentagons, hexagons, octagons). f) Combine no more than three polygons, where each has three or four sides, and name the resulting polygon (triangles, quadrilaterals, pentagons, hexagons, octagons). g) Subdivide a three-sided or four-sided polygon into no more than three parts and name the resulting polygon(s).
3.13 The student will identify and describe congruent and noncongruent figures. • Identify examples of congruent and noncongruent figures. • Determine and explain why plane figures are congruent or noncongruent.	**[Moved to Grade 2]**

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Probability and Statistics**	2023 *Standards of Learning* Knowledge and Skills (KS) **Probability and Statistics (PS)**
3.14 The student will investigate and describe the concept of probability as a measurement of chance and list possible outcomes for a single event. ● Define probability as the measurement of chance that an event will happen. ● List all possible outcomes for a single event (e.g., heads and tails are the two possible outcomes of flipping a coin). Limit the number of outcomes to 12 or fewer. ● Describe the degree of likelihood of an outcome occurring using terms such as *impossible, unlikely, equally likely, likely,* and *certain*.	**[Included in Grade 4]**
3.15 The student will **a) collect, organize, and represent data in pictographs or bar graphs; and** **b) read and interpret data represented in pictographs and bar graphs.** ● Formulate questions to investigate. (a) ● Design data investigations to answer formulated questions, limiting the number of categories for data collection to four. (a) ● Collect and organize data, using various forms of data collections (e.g., surveys, polls, questionnaires, scientific experiments, observations). (a) ● Represent data in a pictograph (limited to 16 or fewer data points for no more than four categories). (a) ● Represent data in a bar graph (limited to 16 or fewer data points for no more than four categories). (a)	**3.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 pictographs and bar graphs.** a) Formulate questions that require the collection or acquisition of data. b) Determine the data needed to answer a formulated question and collect or acquire existing data (limited to 30 or fewer data points for no more than eight categories) using various methods (e.g., polls, observations, tallies). c) Organize and represent a data set using pictographs that include an appropriate title, labeled axes, and key. Each pictograph symbol should represent 1, 2, 5 or 10 data points. d) Organize and represent a data set using bar graphs with a title and labeled axes, with and without the use of technology tools.

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Probability and Statistics**	2023 *Standards of Learning* Knowledge and Skills (KS) **Probability and Statistics (PS)**

o   label each axis on a bar graph and give the bar graph a title. Limit increments on the numerical axis to whole numbers representing multiples of 1, 2, 5, or 10. (a)
 	
● Analyze data represented in pictographs and bar graphs, orally and in writing. (b)
   o   read the information presented on a bar or pictograph (e.g., the title, the categories, the description of the two axes). (b)
● Interpret information from pictographs and bar graphs, with up to 30 data points and up to eight categories, describe interpretation orally and by writing at least one sentence. (b)
   o   describe the categories of data and the data as a whole (e.g., data were collected on preferred ways to cook or prepare eggs — scrambled, fried, hard boiled, and egg salad); (b)
   o   identify parts of the data that have special characteristics, including categories with the greatest, the least, or the same (e.g., most students prefer scrambled eggs); and (b)
   o   select a correct interpretation of a graph from a set of interpretations, where one is correct and the remaining are incorrect. (b)
	Determine and use an appropriate scale (increments limited to multiples of 1, 2, 5 or 10).
	
	e) Analyze data represented in pictographs and bar graphs, and communicate results orally and in writing:
	  i) describe the categories of data and the data as a whole (e.g., data were collected on preferred ways to cook or prepare eggs - scrambled, fried, hard boiled, and egg salad);
	  ii) identify parts of the data that have special characteristics, including categories with the greatest, the least, or the same (e.g., most students prefer scrambled eggs);
	  iii) make inferences about data represented in pictographs and bar graphs;
	  iv) use characteristics of the data to draw conclusions about the data and make predictions based on the data (e.g., it is unlikely that a third grader would like hard boiled eggs); and
	  v) solve one- and two-step addition and subtraction problems using data from pictographs and bar graphs.

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Patterns, Functions, and Algebra**	2023 *Standards of Learning* Knowledge and Skills (KS) **Patterns, Functions, and Algebra (PFA)**
3.16 The student will identify, describe, create, and extend patterns found in objects, pictures, numbers, and tables.	**3.PFA.1 The student will identify, describe, extend, and create increasing and decreasing patterns (limited to addition and**

2016 *Standards of Learning* Essential Knowledge and Skills (EKS) **Patterns, Functions, and Algebra**	2023 *Standards of Learning* Knowledge and Skills (KS) **Patterns, Functions, and Algebra (PFA)**
- Identify and describe repeating and growing patterns using words, objects, pictures, numbers, and tables. - Identify a missing term in a pattern (e.g., 4, 6, _, 10, 12, 14). - Create repeating and growing patterns using objects, pictures, numbers, and tables. - Extend or identify missing parts in repeating and growing patterns using objects, pictures, numbers, and tables. - Solve problems that involve the application of input and output rules limited to addition and subtraction of whole numbers. - When given the rule, determine the missing values in a list or table. (Rules will be limited to addition and subtraction of whole numbers.)	**subtraction of whole numbers), including those in context, using various representations.** a) Identify and describe increasing and decreasing patterns using various representations (e.g., objects, pictures, numbers, number lines). b) Analyze an increasing or decreasing pattern and generalize the change to extend the pattern or identify missing terms using various representations. c) Solve contextual problems that involve identifying, describing, and extending patterns. d) Create increasing and decreasing patterns using objects, pictures, numbers, and number lines. e) Investigate and explain the connection between two different representations of the same increasing or decreasing pattern.
3.17 The student will create equations to represent equivalent mathematical relationships. - Identify and use the appropriate symbol to distinguish between expressions that are equal and expressions that are not equal (e.g., 256 - 13 = 220 + 23; 143 + 17 = 140 + 20; 457 + 100 ≠ 557 +100). - Create equations to represent equivalent mathematical relationships (e.g., $4 \times 3 = 14 - 2$).	**[Included in 3.CE.1 and 3.CE.2]**

2023 Grade 3 Mathematics SOL – Summary of Changes

Grade 3 (2016 SOL to 2023 SOL Numbering)	Parameter Changes/Clarifications (2023 SOL)
3.1a → 3.NS.1 3.1b → [Included in 3.CE.1] 3.1c → 3.NS.2 3.2a-c → 3.NS.3 3.3a-b → 3.CE.1 3.4a-c → 3.CE.2 3.4d → [Included in Grade 4] 3.5 → [Included in Grade 4] 3.6a-c → 3.NS.4 3.7a-b → 3.MG.1 3.8a-b → 3.MG.2 3.9a-b → 3.MG.3 3.9c → [Minutes in an hour/hours in a day -Moved to Grade 2; Remaining content deleted] 3.10 → [Included in Science standards] 3.11 → [Included in Grade 4] 3.12a-c → 3.MG.4 3.13 → [Moved to Grade 2] 3.14 → [Included in Grade 4] 3.15a-b → 3.PS.1 3.16 → 3.PFA.1 3.17 → [Included in 3.CE.1 and 3.CE.2]	3.NS.1a – Read and write six-digit whole numbers includes expanded form (previously only standard and word form) 3.NS.1c – Compose, decompose, and represent numbers up to 9,999 in multiple ways (previously only represent) 3.NS.3a-h - Denominators limited to 2, 3, 4, 5, 6, 8, 10 (previously 12 or less); comparison of two fractions includes proper fractions, improper fractions, and mixed numbers (previously limited to proper fractions) 3.NS.3e,f,g - Fraction comparison strategies clarified to include comparing fractions with like numerators or like denominators 3.CE.1 - "Create and solve…" reworded to "Estimate, represent, solve, and justify solutions to…" problems 3.CE.1a-e - Addends and minuends do not exceed 1,000 (previously each 9,999 or less) 3.CE.1b - Rounding included as an estimation strategy 3.CE.2d,f - "Recall with automaticity the multiplication facts through 10×10 and the corresponding division facts" included along with "Demonstrate fluency with multiplication facts through 10×10 by applying reasoning strategies" 3.MG.2b - Determine the perimeter of a polygon, given the lengths of all sides (with no more than six sides) and justify 3.MG.4c-f - Polygons limited to triangles, quadrilaterals, pentagons, hexagons, octagons (heptagons, nonagons, decagons deleted) 3.PS.1b - Data collection increased to 30 or fewer data points for no more than eight categories (previously 16 or fewer data points for no more than four categories)

Deletions from Grade 3 (2016 SOL)	Additions to Grade 3 (2023 SOL)
3.3 - Create single-step and multistep practical problems involving the sum or difference of two whole numbers, each 9,999 or less 3.4 - Create practical problems to represent a multiplication or division fact 3.4 - Solve single-step practical problems involving multiplication of whole numbers, where one factor is 99 or less and the second factor is 5 or less [Moved to Grade 4] 3.5 - Solve practical problems that involve addition and subtraction with proper fractions having like denominators of 12 or less, using concrete and pictorial models [Moved to Grade 4] 3.9c - Identify the number of minutes in an hour and the number of hours in a day [Moved to Grade 2] 3.9c - Identify equivalent relationships observed in a calendar, including the approximate number of days in a given month, the number of days in a week, the number of days in a year, and the number of months in a year 3.9c - Solve practical problems related to equivalent periods of time to include approximate days in five or fewer months; days in five or fewer weeks; months in five or fewer years; minutes in five or fewer hours; and hours in five or fewer days 3.10 - Read Celsius and Fahrenheit temperatures to the nearest degree [Included in Science standards] 3.11 - Identify examples of points, lines, line segments, rays, and angles; describe endpoints and vertices as they relate to lines, line segments, rays, and angles; draw representations of points, line segments, rays, angles, and lines, using a ruler or straightedge [Included in Grade 4] 3.13 - Identify examples of congruent and noncongruent figures; determine and explain why plane figures are congruent or noncongruent [Moved to Grade 2]	3.NS.3d - Compose and decompose fractions (proper and improper) with denominators of 2, 3, 4, 5, 6, 8, or 10 in multiple ways with models 3.NS.3h – Represent equivalent fractions with denominators of 2, 3, 4, 5, 6, 8, and 10 using region/area and length models 3.NS.4b - Construct a set of bills and coins to total a given amount of money whose value is $5.00 or less 3.MG.1a - Justify whether an estimate or an exact measurement is needed for a contextual situation and choose an appropriate unit 3.MG.1b - Estimate and measure the weight/mass of an object to the nearest U.S. Customary unit (pound) and metric unit (kilogram) 3.MG.1c - Compare estimates of length, weight/mass, or liquid volume with the actual measurements 3.MG.2a-b - Describe and give examples of area and perimeter as measurements in contextual situations 3.MG.4e - Classify and compare polygons (triangles, quadrilaterals, pentagons, hexagons, octagons) 3.PS.1a-e - Additional data analysis knowledge and skills representing the data cycle have been included 3.PFA.1e – Investigate and explain connection between two different representations of the same increasing or decreasing pattern

Deletions from Grade 3 (2016 SOL)	Additions to Grade 3 (2023 SOL)
3.14 - Investigate and describe the concept of probability as a measurement of chance and list possible outcomes [Included in Grade 4] 3.16 - Identify, describe, create, extend repeating patterns. [Included in Grades 1 and 2] 3.16 - Patterns in tables, including solving problems that involve the application of input and output rules limited to addition and subtraction of whole numbers and determining the missing values in a table [Included in Grade 4]	

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