

Kindergarten 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: *Developing a sense of quantity allows us to see relationships between numbers, think flexibly about numbers, and notice patterns that can emerge as we work with numbers to quantify, measure, and make decisions in life.*

- Use flexible counting strategies to determine and describe quantities up to 100
- Identify, represent, and compare quantities up to 30

Computation and Estimation: *The operations of addition and subtraction are used to represent and solve many different types of problems.*

- Model and solve single-step contextual problems using addition and subtraction with whole numbers within 10

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.*

- Reason mathematically by making direct comparisons between two objects or events using the attributes of length, height, weight, volume, and time
- Identify, describe, name, compare, and construct plane figures (circles, triangles, squares, and rectangles)
- Describe the units of time represented in a calendar

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 (pose questions; collect or acquire data; organize and represent data; and analyze data and communicate results) with a focus on object graphs and picture graphs

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

- Identify, describe, extend, and create simple repeating patterns using various representations

Comparison of Kindergarten Mathematics *Standards of Learning* – 2016 to 2023

2016 <i>Standards of Learning</i> Essential Knowledge and Skills (EKS) Number and Number Sense	2023 <i>Standards of Learning</i> Knowledge and Skills (KS) Number and Number Sense (NS)
<p>K.1 The student will</p> <p>a) tell how many are in a given set of 20 or fewer objects by counting orally; and</p> <ul style="list-style-type: none"> ● Count orally to tell how many are in a given set containing 20 or fewer concrete objects, using one-to-one correspondence, and identify the corresponding numeral. (a) 	<p>K.NS.1 The student will utilize flexible counting strategies to determine and describe quantities up to 100.</p> <ul style="list-style-type: none"> a) Use one-to-one correspondence to determine how many are in a given set containing 30 or fewer concrete objects (e.g., cubes, pennies, balls), and describe the last number named as the total number of objects counted. b) Recognize and explain that the number of objects remains the same regardless of the arrangement or the order in which the objects are counted. c) Represent forward counting by ones using a variety of tools, including five-frames, ten-frames, and number paths (a prelude to number lines). d) Count forward orally by ones from 0 to 100. e) Count forward orally by ones, within 100, starting at any given number. f) Count backward orally by ones when given any number between 1 and 20. g) State the number after, without counting, when given any number between 0 and 30. h) State the number before, without counting, when given any number between 1 and 20. i) Use objects, drawings, words, or numbers to compose and decompose numbers 11-19 into a ten and some ones.

<p align="center">2016 Standards of Learning Essential Knowledge and Skills (EKS) Number and Number Sense</p>	<p align="center">2023 Standards of Learning Knowledge and Skills (KS) Number and Number Sense (NS)</p>
	<p>j) Group a collection of up to 100 objects (e.g., counters, pennies, cubes) into sets of ten and count by tens to determine the total (e.g., there are 3 groups of ten and 6 leftovers, 36 total objects).</p>
<p>K.1 The student will b) read, write, and represent numbers from 0 through 20.</p> <ul style="list-style-type: none"> ● Read, write, and represent numbers from 0-20 to include: <ul style="list-style-type: none"> ○ construct a set of objects that corresponds to a given numeral, including an empty set; ○ read and write the numerals from 0 through 20; ○ identify written numerals from 0 through 20 represented in random order; ○ identify the numeral that corresponds to the total number of objects in a given set of 20 or fewer concrete objects; and ○ write a numeral that corresponds to a set of 20 or fewer concrete objects. (b) 	<p>K.NS.2 The student will identify, represent, and compare quantities up to 30.</p> <ul style="list-style-type: none"> a) Read, write, and identify the numerals 0 through 30. b) Construct a set of objects that corresponds to a given numeral within 30, including an empty set. c) Determine and write the numeral that corresponds to the total number of objects in a given set of 30 or fewer concrete objects or pictorial models. d) Given a set of up to 30 objects, construct another set which has more, fewer, or the same number of objects using concrete or pictorial models. e) Given a numeral up to 30, construct a set which has more, fewer, or the same number of objects using concrete or pictorial models. f) Compare two sets containing up to 30 concrete objects or pictorial models, using the terms more, fewer, or the same as (equal to). g) Compare numbers up to 30, to the benchmarks of 5 and 10 using various models (e.g., five frames, ten frames, number paths [a prelude to number lines], beaded racks, hands) using the terms greater than, less than, or the same as (equal to).

<p style="text-align: center;">2016 Standards of Learning Essential Knowledge and Skills (EKS) Number and Number Sense</p>	<p style="text-align: center;">2023 Standards of Learning Knowledge and Skills (KS) Number and Number Sense (NS)</p>
<p>K.2 The student, given no more than three sets, each set containing 10 or fewer concrete objects, will</p> <p>a) compare and describe one set as having more, fewer, or the same number of objects as the other set(s); and</p> <p>b) compare and order sets from least to greatest and greatest to least</p> <ul style="list-style-type: none"> ● Compare and describe no more than three sets of 10 or fewer objects, using the terms <i>more</i>, <i>fewer</i>, and <i>the same</i>. (a) ● Given a set of objects, construct a second set which has more, fewer, or the same number of objects. (a) ● Compare and order three or fewer sets, each set containing 10 or fewer concrete objects, from least to greatest and greatest to least. (b) 	<p>[Included in K.NS.2]</p>
<p>K.3 The student will</p> <p>a) count forward orally by ones from 0 to 100;</p> <p>b) count backward orally by ones when given any number between 1 and 10;</p> <p>c) identify the number after, without counting, when given any number between 0 and 100 and identify the number before, without counting, when given any number between 1 and 10; and</p> <p>d) count forward by tens to determine the total number of objects to 100.</p> <ul style="list-style-type: none"> ● Count forward orally by ones from 0 to 100. (a) 	<p>[Included in K.NS.1]</p>

<p style="text-align: center;">2016 Standards of Learning Essential Knowledge and Skills (EKS) Number and Number Sense</p>	<p style="text-align: center;">2023 Standards of Learning Knowledge and Skills (KS) Number and Number Sense (NS)</p>
<ul style="list-style-type: none"> ● Count backward orally by ones when given any number between 1 and 10. (b) ● Identify the number after, without counting, when given any number between 0 and 100. (c) ● Identify the number before, without counting, when given any number between 1 and 10. (c) ● Count forward orally by tens, starting at 0, to determine the total number of objects up to 100. (d) 	
<p>K.4 The student will</p> <p>a) recognize and describe with fluency part-whole relationships for numbers up to 5; and</p> <p>b) investigate and describe part-whole relationships for numbers up to 10.</p> <ul style="list-style-type: none"> ● Recognize and describe with fluency part-whole relationships for numbers up to 5 in a variety of configurations. (a) ● Investigate and describe part-whole relationships for numbers up to 10 using a variety of configurations. (b) 	<p>[Included in K.CE.1]</p>
<p>K.5 The student will investigate fractions by representing and solving practical problems involving equal sharing with two sharers.</p> <ul style="list-style-type: none"> ● Share a whole equally with two sharers, when given a practical situation. ● Represent fair shares concretely or pictorially, when given a practical situation. 	<p>[Included in Grade 1]</p>

<p align="center">2016 Standards of Learning Essential Knowledge and Skills (EKS) Number and Number Sense</p>	<p align="center">2023 Standards of Learning Knowledge and Skills (KS) Number and Number Sense (NS)</p>
<ul style="list-style-type: none"> Describe shares as equal pieces or parts of the whole (e.g., halves), when given a practical situation. 	

<p align="center">2016 Standards of Learning Essential Knowledge and Skills (EKS) Computation and Estimation</p>	<p align="center">2023 Standards of Learning Knowledge and Skills (KS) Computation and Estimation (CE)</p>
<p>K.6 The student will model and solve single-step story and picture problems with sums to 10 and differences within 10, using concrete objects.</p> <ul style="list-style-type: none"> Model and solve various types of story and picture problems using 10 or fewer concrete objects. (Types of problems should include joining, separating, and part-part-whole scenarios.) 	<p>K.CE.1 The student will model and solve single-step contextual problems using addition and subtraction with whole numbers within 10.</p> <ol style="list-style-type: none"> Use objects, drawings, words, or numbers to compose and decompose numbers less than or equal to 5 in multiple ways. Recognize and describe with fluency part-part-whole relationships for numbers up to 5 in a variety of configurations. Model and identify the number that makes 5 when added to a given number less than or equal to 5. Use objects, drawings, words, or numbers to compose and decompose numbers less than or equal to 10 in multiple ways. Model and identify the number that makes 10 when added to a given number less than or equal to 10.

<p align="center">2016 Standards of Learning Essential Knowledge and Skills (EKS) Computation and Estimation</p>	<p align="center">2023 Standards of Learning Knowledge and Skills (KS) Computation and Estimation (CE)</p>
	<p>f) Model and solve single-step contextual problems (join, separate, and part-part-whole) using 10 or fewer concrete objects.</p>

<p align="center">2016 Standards of Learning Essential Knowledge and Skills (EKS) Measurement and Geometry</p>	<p align="center">2023 Standards of Learning Knowledge and Skills (KS) Measurement and Geometry (MG)</p>
<p>K.7 The student will recognize the attributes of a penny, nickel, dime, and quarter and identify the number of pennies equivalent to a nickel, a dime, and a quarter.</p> <ul style="list-style-type: none"> ● Describe the attributes (e.g., color, relative size) of a penny, nickel, dime, and quarter. ● Identify a penny, nickel, dime, and quarter. ● Identify the number of pennies equivalent to a nickel, a dime, and a quarter (i.e., a nickel has the same value as five pennies). 	<p>[Attributes included in K.PS.1] [Equivalencies of nickels and dimes moved to Grade 1]</p>
<p>K.8 The student will investigate the passage of time by reading and interpreting a calendar.</p> <ul style="list-style-type: none"> ● Name the twelve months of the year. ● Name the seven days in a week. ● Determine the day before and after a given day (e.g., yesterday, today, tomorrow). 	<p>K.MG.3 The student will describe the units of time represented in a calendar.</p> <ul style="list-style-type: none"> a) Identify a calendar as a tool used to measure time. b) Name the days of the week and state that there are seven days in one week. c) Determine the day before and after a given day (e.g., yesterday, today, tomorrow).

<p style="text-align: center;">2016 Standards of Learning Essential Knowledge and Skills (EKS) Measurement and Geometry</p>	<p style="text-align: center;">2023 Standards of Learning Knowledge and Skills (KS) Measurement and Geometry (MG)</p>
	<p>d) Name the twelve months of the year and state that there are twelve months in one year.</p> <p>e) Distinguish between days of the week and months of the year.</p>
<p>K.9 The student will compare two objects or events, using direct comparisons, according to one or more of the following attributes: length (longer, shorter), height (taller, shorter), weight (heavier, lighter), temperature (hotter, colder), volume (more, less), and time (longer, shorter).</p> <ul style="list-style-type: none"> ● Compare and describe lengths of two objects as longer or shorter, using direct comparison (e.g., the bus is longer than the car). ● Compare and describe heights of two objects (as taller or shorter), using direct comparison. ● Compare and describe weights of two objects (as heavier or lighter), using direct comparison. ● Compare and describe temperatures of two objects or environment (as hotter or colder), using direct comparison. ● Compare and describe volumes of two containers (as more or less), using direct comparison. ● Compare and describe the amount of time spent on two events (as longer or shorter), using direct comparison. 	<p>K.MG.1 The student will reason mathematically by making direct comparisons between two objects or events using the attributes of length, height, weight, volume, and time.</p> <p>a) Use direct comparisons to compare, describe, and justify the:</p> <ul style="list-style-type: none"> i) lengths of two objects using the terms longer or shorter; ii) heights of two objects using the terms taller or shorter; iii) weights of two objects using the terms heavier or lighter; iv) volumes of two containers using the terms more or less; and v) amount of time spent on two events using the terms longer or shorter.

<p style="text-align: center;">2016 Standards of Learning Essential Knowledge and Skills (EKS) Measurement and Geometry</p>	<p style="text-align: center;">2023 Standards of Learning Knowledge and Skills (KS) Measurement and Geometry (MG)</p>
<p>K.10 The student will</p> <p>a) identify and describe plane figures (circle, triangle, square, and rectangle);</p> <p>b) compare the size (smaller, larger) and shape of plane figures (circle, triangle, square, and rectangle); and</p> <p>c) describe the location of one object relative to another (above, below, next to) and identify representations of plane figures (circle, triangle, square, and rectangle) regardless of their positions and orientations in space.</p> <ul style="list-style-type: none"> ● Identify a circle, triangle, square, and rectangle. (a) ● Describe the characteristics of triangles, squares, and rectangles, including number of sides and number of vertices. (a) ● Describe a circle using terms such as <i>round</i> and <i>curved</i>. (a) ● Compare and group plane figures (circle, triangle, square, and rectangle) according to their relative sizes (smaller, larger). (b) ● Compare and group plane figures (circle, triangle, square, and rectangle) according to their shapes. (b) ● Distinguish between examples and nonexamples of identified plane figures (circle, triangle, square, and rectangle). (b) ● Identify pictorial representations of a circle, triangle, square, and rectangle, regardless of their position and orientation in space. (c) ● Describe the location of one object relative to another, using the terms <i>above</i>, <i>below</i>, and <i>next to</i>. (c) 	<p>K.MG.2 The student will identify, describe, name, compare, and construct plane figures (circles, triangles, squares, and rectangles).</p> <ul style="list-style-type: none"> a) Identify and name concrete and pictorial representations of circles, triangles, squares, and rectangles regardless of their orientation in space. b) Describe triangles, squares, and rectangles to include the number of sides and number of vertices. c) Describe a circle using terms such as round and curved. d) Distinguish between examples and nonexamples of identified plane figures (circles, triangles, squares, and rectangles). e) Compare and contrast two plane figures using characteristics to describe similarities and differences. f) Construct plane figures (circles, triangles, squares, and rectangles) using a variety of materials (e.g., straws, sticks, pipe cleaners).

<p style="text-align: center;">2016 Standards of Learning Essential Knowledge and Skills (EKS) Probability and Statistics</p>	<p style="text-align: center;">2023 Standards of Learning Knowledge and Skills (KS) Probability and Statistics (PS)</p>
<p>K.11 The student will</p> <p>a) collect, organize, and represent data; and</p> <p>b) read and interpret data in object graphs, picture graphs, and tables.</p> <ul style="list-style-type: none"> ● Collect data on categories identified by the teacher and/or student (e.g., number of siblings, types/numbers of pets, types of flowers in the garden). Data points, collected by students, should be limited to 16 or fewer for no more than four categories. (a) ● Represent data by arranging concrete objects into organized groups to form a simple object graph. (a) ● Represent gathered data, using pictures to form a simple picture graph (e.g., a picture graph of the weather for a month). (a) ● Represent gathered data in tables (vertically or horizontally). (a) ● Answer questions related to the gathered data displayed in object graphs, picture graphs, and tables: <ul style="list-style-type: none"> ○ read the graph to determine the categories of data and the data as a whole (e.g., the total number of responses) and its parts (e.g., five people are wearing sneakers); and ○ interpret the data that represents numerical relationships, including categories with the greatest, the least, or the same. (b) 	<p>K.PS.1 The student will apply the data cycle (pose questions; collect or acquire data; organize and represent data; and analyze data and communicate results) with a focus on object graphs and picture graphs.</p> <ul style="list-style-type: none"> a) Sort and classify concrete objects into appropriate subsets (categories) based on one attribute (e.g., size, shape, color, thickness). b) Describe and label attributes (e.g., size, color, shape) of a set of objects (e.g., coins, counters, buttons) that has been sorted. c) Pose questions, given a predetermined context, that require the collection of data (limited to 25 or fewer data points for no more than four categories). d) Determine the data needed to answer a posed question, and collect the data using various methods (e.g., counting objects, drawing pictures). e) Organize and represent a data set (vertically or horizontally) by sorting concrete objects into organized groups to form a simple object graph. f) Organize and represent a data set (vertically or horizontally) using pictures to form a simple picture graph. g) Analyze data represented in object graphs and picture graphs and communicate results: <ul style="list-style-type: none"> i) ask and answer questions about the data represented in object graphs and picture graphs (e.g., how many in each category, which categories have the greatest, least, or the same amount of data); and

<p align="center">2016 Standards of Learning Essential Knowledge and Skills (EKS) Probability and Statistics</p>	<p align="center">2023 Standards of Learning Knowledge and Skills (KS) Probability and Statistics (PS)</p>
	<p align="center">ii) draw conclusions about the data and make predictions based on the data.</p>
<p>K.12 The student will sort and classify objects according to one attribute.</p> <ul style="list-style-type: none"> ● Identify the attributes of an object (e.g., color, size, shape, thickness). ● Sort objects into appropriate groups (categories) based on one attribute (e.g., size – large bears and small bears). ● Classify sets of objects into groups (categories) of one attribute. ● Label attributes of a set of objects that has been sorted. ● Name multiple ways to sort a set of objects. 	<p>[Included in K.PS.1]</p>

<p align="center">2016 Standards of Learning Essential Knowledge and Skills (EKS) Patterns, Functions, and Algebra</p>	<p align="center">2023 Standards of Learning Knowledge and Skills (KS) Patterns, Functions, and Algebra (PFA)</p>
<p>K.13 The student will identify, describe, extend, create, and transfer repeating patterns.</p> <ul style="list-style-type: none"> ● Identify and describe the core (the part of the sequence that repeats) found in repeating patterns of common objects, sounds, movements, and pictures. ● Extend a repeating pattern by adding at least two complete repetitions of the core to the pattern. 	<p>K.PFA.1 The student will identify, describe, extend, and create simple repeating patterns using various representations.</p> <ul style="list-style-type: none"> a) Identify and describe the core found in repeating patterns. b) Extend a repeating pattern by adding at least two complete repetitions of the core to the pattern. c) Create and describe a repeating pattern using objects, colors, sounds, movements, or pictures.

<p style="text-align: center;">2016 <i>Standards of Learning</i> Essential Knowledge and Skills (EKS) Patterns, Functions, and Algebra</p>	<p style="text-align: center;">2023 <i>Standards of Learning</i> Knowledge and Skills (KS) Patterns, Functions, and Algebra (PFA)</p>
<ul style="list-style-type: none"> ● Create a repeating pattern. ● Compare similarities and differences between patterns. ● Transfer a repeating pattern from one representation to another. 	

2023 Kindergarten Mathematics SOL – Summary of Changes

Kindergarten (2016 SOL to 2023 SOL Numbering)	Parameter Changes/Clarifications (2023 SOL)
<ul style="list-style-type: none"> ● K.1a → K.NS.1 ● K.1b → K.NS.2 ● K.2a → K.NS.2 ● K.2b → [Included in Grade 1] ● K.3a,b,d → K.NS.1 ● K.3c → K.NS.1 ● K.4a-b → K.CE.1 ● K.5 → [Included in Grade 1] ● K.6 → K.CE.1 ● K.7 → [Coin attributes embedded in K.PS.1; Equivalencies moved to Grade 1] ● K.8 → K.MG.3 ● K.9 → K.MG.1 ● K.10a-c → K.MG.2 ● K.11a-b → K.PS.1 ● K.12 → K.PS.1 ● K.13 → K.PFA.1 	<ul style="list-style-type: none"> ● K.NS.1 - Describe the last number named when counting a set as the total number of objects counted ● K.NS.1a - Tell how many in a set increased from 20 to 30 objects ● K.NS.1b - Recognize and explain that the number of objects remains the same regardless of the arrangement or the order in which the objects are counted ● K.NS.1c - Represent forward counting by ones using a variety of tools, including five-frames, ten-frames, and number paths ● K.NS.1f - Count backward increased from 10 to 20; count forward orally to 100 from any given number, previously limited to count orally from 0 to 100 ● K.NS.1g-h - State the number after, decreased from between 0 and 100 to between 0 and 30; state the number before, increased from between 0 and 10 to between 1 and 20 ● K.NS.1j - Count by tens to 100 included with grouping a collection of up to 100 objects ● K.NS.2a-g - Identify, represent, and compare numbers increased from 20 to 30 ● K.NS.2d-e - Construct a set that corresponds to a set of 20 objects increased to 30 objects; given a numeral up to 30, construct a set which has more, fewer, or the same number of objects using models; compare and order three sets (of 10 or less) changed to compare two sets (up to 30 objects) ● K.CE.1a - Use objects, drawings, words, or numbers to compose and decompose numbers less than or equal to 10, in multiple ways ● K.MG.2a - Includes name plane figures

Kindergarten (2016 SOL to 2023 SOL Numbering)	Parameter Changes/Clarifications (2023 SOL)
	<ul style="list-style-type: none"> ● K.MG.3 - Identify a calendar as a tool used to measure time; state the number of days in a week; state the number of months in a year; distinguish between days of the week and months of the year ● K.PS.1 - Describe and label attributes (e.g., size, color, shape) of a set of objects (e.g., coins, counters, buttons) that has been sorted ● K.PS.1 - Collection of data increased from 16 to 25 data points

Deletions from Kindergarten (2016 SOL)	Additions to Kindergarten (2023 SOL)
<ul style="list-style-type: none"> ● K.2b - Compare and order sets from least to greatest and greatest to least [Included in 1.NS.2] ● K.5 - Investigate fractions by representing and solving practical problems [Included in 1.NS.3] ● K.7 [EKS] - Identify the numbers of pennies equivalent to a nickel, a dime, and a quarter (i.e., a nickel has the same value as five pennies) [Moved to 1.NS.1] ● K.9 [EKS] - Compare and describe temperature of two objects or environment using direct comparison [Included in Science standards] ● K.10 [EKS] - Describe the location of one object relative to another, using the terms above, below, and next to [Included in Science standards] ● K.13 [EKS] - Compare similarities and differences between patterns ● K.13 [KS] - Transfer a repeating pattern from one representation to another [Included in 1.PFA.1] 	<ul style="list-style-type: none"> ● K.NS.1i - Compose and decompose numbers 11-19 into a ten and some ones ● K.NS.2g - Compare numbers up to 30 to the benchmarks of 5 and 10 using various models ● K.CE.1c,e - Model and identify the number that makes 5 or makes 10 when added to a given number less than or equal to 5 or 10 ● K.MG.2 - Construct plane figures (circles, triangles, squares, and rectangles) using a variety of tools (e.g., straws, sticks, pipe cleaners) ● K.PS.1c,d,g - Additional data analysis knowledge and skills representing the data cycle have been included (e.g., pose questions, determine data needed to answer a posed question, ask and answer questions about the data; draw conclusions)

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