

Mathematics K-2

Number, Number Sense and Operations Standard

Students demonstrate number sense including an understanding of number systems and operations, and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods

K	1	2	BENCHMARK	When	Freq
<ul style="list-style-type: none"> • Relate, read and write numerals numbers 0 – 9. 	<ul style="list-style-type: none"> • Use place value concepts to represent whole numbers using numerals, words, expanded notation and physical models with ones and tens. For example: <ul style="list-style-type: none"> ➤ Count by twos, fives and tens. ➤ Identify patterns and groupings in a 100's chart and relate to place value concepts. ➤ Recognize the first digit of a two-digit number as the most important to indicate size of a number and the nearness to 10 or 100. • Read and write the numerals for numbers to 100. 	<ul style="list-style-type: none"> • Use place value concepts to represent, compare and order whole number using physical models, numerals and words, with ones, tens and hundreds. For example: <ul style="list-style-type: none"> ➤ Recognize 10 can mean 10 ones or a single entity (1 ten) through physical models and trading games. ➤ Read and write 3-digit numerals (e.g., 243 as two hundred forty three, 24 tens and 3 ones, or 2 hundreds and 43 ones, etc.) and construct models to represent each. 	A. Use place value concepts to represent whole numbers using numerals, words and physical models		
<ul style="list-style-type: none"> • Compare and order whole numbers up to 10. • Compare the number of objects in two or more sets when one set has one or two more, or one or two fewer objects. • Recognize the number or quantity of sets up to 5 without counting; e.g., recognize without counting the dot arrangement on a domino as 5. 	<ul style="list-style-type: none"> • Use ordinal numbers to order objects. • Recognize and generate equivalent forms for the same number using physical models, words and number expressions. • Count forward to 100, count backwards from 100, and count forward or backward starting at any number between 1 and 100. • Demonstrate that equal means the same as using visual representations. 	<ul style="list-style-type: none"> • Use place value concepts to represent, compare and order whole number using physical models, numerals and words, with ones, tens and hundreds. For example: <ul style="list-style-type: none"> ➤ Recognize 10 can mean 10 ones or a single entity (1 ten) through physical models and trading games. ➤ Read and write 3-digit numerals (e.g., 243 as two hundred forty three, 24 tens and 3 ones, or 2 hundreds and 43 ones, etc.) and construct models to represent each. • Recognize and classify numbers as even or odd. 	B. Recognize, classify, compare and order whole numbers.		

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K	1	2	BENCHMARK	When	Freq
	<ul style="list-style-type: none"> Represent commonly used fractions using words and physical models for halves, thirds and fourths. 	<ul style="list-style-type: none"> Represent fractions (halves, thirds, fourths, sixths and eighths), using words, numerals and physical models. For example: <ul style="list-style-type: none"> ➤ Recognize that a fractional part can mean different amounts depending on the original quantity. ➤ Recognize that a fractional part of a rectangle does not have to be shaded with contiguous parts. ➤ Identify and illustrate parts of a whole and parts of sets of objects. ➤ Compare and order physical models of halves, thirds and fourths in relations to 0 and 1. 	C. Represent commonly used fractions using words and physical models		
<ul style="list-style-type: none"> Identify and state the value of a penny, nickel and dime. 	<ul style="list-style-type: none"> Identify and state the value of a penny, nickel, dime, quarter and dollar. Determine the value of a small collection of coins (with a total value up to one dollar) using 1 or 2 different type coin. 	<ul style="list-style-type: none"> Represent and write the value of money using the ¢ sign and in decimal forms when using the \$ sign. 	D. Determine the value of a collection of coins and dollar bills		
	<ul style="list-style-type: none"> Show different combinations of coins that have the same value. 	<ul style="list-style-type: none"> Count money and make change using coins and a dollar bill. 	E. Make change using coins for values up to one dollar.		
<ul style="list-style-type: none"> Explain rules of counting, such as each object should be counted once and that order does not change the number. Count to twenty; e.g., in play situations or while reading number books. Determine how many in sets (groups) of 10 or fewer objects. 	<ul style="list-style-type: none"> Count forward to 100, count backwards from 100, and count forward or backward starting at any number between 1 and 100. 		F. Count, using numerals and ordinal numbers		

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K	1	2	BENCHMARK	When	Freq
<ul style="list-style-type: none"> Represent and use whole numbers in flexible ways, including relating, composing and decomposing numbers. Model and represent addition as combining sets and counting on, and subtraction as take-away and comparison. 	<ul style="list-style-type: none"> Model, represent and explain addition as combining sets (part + part = whole) and counting on. Use conventional symbols to represent the operations of addition and subtraction. 		G. Model, represent and explain addition as combining sets and counting on		
<ul style="list-style-type: none"> Represent and use whole numbers in flexible ways, including relating, composing and decomposing numbers. Model and represent addition as combining sets and counting on, and subtraction as take-away and comparison. 	<ul style="list-style-type: none"> Model, represent and explain subtraction as take-away and comparison. Use conventional symbols to represent the operations of addition and subtraction. 	<ul style="list-style-type: none"> Model, represent and explain subtraction as comparison, take-away and part-to-whole; e.g., solve missing addend problems by counting up or subtracting. 	H. Model, represent and explain subtraction as comparison, take-away and part-to-whole		
<ul style="list-style-type: none"> Construct multiple sets of objects each containing the same number of objects. Demonstrate joining multiple groups of objects, each containing the same number of objects; e.g., combining 3 bags of candy, each containing 2 pieces. 	<ul style="list-style-type: none"> Model and represent multiplication as repeated addition and rectangular arrays in contextual situations. 	<ul style="list-style-type: none"> Model, represent and explain multiplication as repeated addition, rectangular arrays and skip counting. 	I. Model, represent and explain multiplication as repeated addition, rectangular arrays and skip counting		
<ul style="list-style-type: none"> Partition or share a small set of objects into groups of equal size; e.g., sharing 6 stickers equally among 3 children. 	<ul style="list-style-type: none"> Model and represent division as sharing equally in contextual situations. 	<ul style="list-style-type: none"> Model, represent and explain division as sharing equally and repeated subtraction. 	J. Model, represent and explain division as sharing equally, repeated subtraction and rectangular arrays		

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K	1	2	BENCHMARK	When	Freq
<ul style="list-style-type: none"> • Represent and use whole numbers in flexible ways, including relating, composing and decomposing numbers. 	<ul style="list-style-type: none"> • Develop strategies for basic addition facts, such as: <ul style="list-style-type: none"> ➤ counting all; ➤ counting on; ➤ one more, two more; ➤ doubles; ➤ doubles plus or minus one; ➤ make ten; ➤ using tens frames; ➤ identity property (adding zero); • Develop strategies for basic subtraction facts, such as: <ul style="list-style-type: none"> ➤ relating to addition (for example, think of $7 - 3 = ?$ as 3 plus? equals 7"); ➤ one less, two less; ➤ all but one (for example, $8 - 7, 5 - 4$); ➤ using tens frames; ➤ missing addends. 	<ul style="list-style-type: none"> • Demonstrate fluency in addition facts with addends through 9 and corresponding subtractions. 	K. Demonstrate fluency in addition facts with addends through 9 and corresponding subtractions		
	<ul style="list-style-type: none"> • Develop strategies for basic addition facts, such as: <ul style="list-style-type: none"> ➤ counting all; ➤ counting on; ➤ one more, two more; ➤ doubles; ➤ doubles plus or minus one; ➤ make ten; ➤ using tens frames; ➤ identity property (adding zero); • Develop strategies for basic subtraction facts, such as: <ul style="list-style-type: none"> ➤ relating to addition (for example, think of $7 - 3 = ?$ as 3 plus? equals 7"); ➤ one less, two less; ➤ all but one (for example, $8 - 7, 5 - 4$); ➤ using tens frames; ➤ missing addends. 	<ul style="list-style-type: none"> • Add and subtract multiples of 10. 	L. Demonstrate fluency in adding and subtracting multiples of 10, and recognize combinations that make 10.		

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Students demonstrate number sense including an understanding of number systems and operations, and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods

K	1	2	BENCHMARK	When	Freq
		<ul style="list-style-type: none">Model and use the commutative property for addition.Demonstrate multiple strategies for adding and subtracting 2 – or 3-digit whole numbers.	M. Demonstrate fluency in adding and subtracting multiples of 10, and recognize combinations that make 10.		

Mathematics K-2

Measurement Standard

Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.

K	1	2	BENCHMARK	When	Freq
	<ul style="list-style-type: none"> • Recognize and explain the need for fixed units and tools for measuring lengths and weight. 		A. Explain the need for standard units of measure		
<ul style="list-style-type: none"> • Identify units of time (day, week, month, year) and compare calendar elements; • Compare and order objects of different lengths, areas, weights and capacities; and use relative terms, such as longer, shorter, bigger, smaller, heavier, lighter, more and less. 		<ul style="list-style-type: none"> • Identify and select appropriate units of measure for: <ul style="list-style-type: none"> ➤ length – centimeters, meters, inches, feet, or yards; ➤ volume (capacity) – liters, cups, pints, or quarts; ➤ weight – grams, ounces, or pounds; ➤ time – hours, half-hours, quarter-hours, or minutes and time designations a.m. or p.m. 	B. Select appropriate units for length, weight, volume (capacity) and time, using: <ul style="list-style-type: none"> • Objects; i.e., non-standard units; • U.S. customary units: inch, foot, yard, ounce, pound, cup, quart, gallon, minute, hour, day, week and year; 		

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Measurement Standard

Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.

K	1	2	BENCHMARK	When	Freq
<ul style="list-style-type: none"> • Identify units of time (day, week, month, year) and compare calendar elements; • Compare and order objects of different lengths, areas, weights and capacities; and use relative terms, such as longer, shorter, bigger, smaller, heavier, lighter, more and less. • Order events based on time. For example: <ul style="list-style-type: none"> ➤ activities that take a long or short time; ➤ review what we do first, next, last; ➤ recall what we did or plan to do yesterday, today, tomorrow. 	<ul style="list-style-type: none"> • Tell time to the hour and half hour on digital and analog (dial) timepieces. • Order a sequence of events with respect to time; e.g., summer, fall, winter and spring; morning, afternoon and night. 	<ul style="list-style-type: none"> • Establish personal or common referents for units of measure to make estimates and comparisons; e.g., the width of a finger is a centimeter, a large bottle of soda pop is 2 liters, a small paper clip weights about one gram. • Tell time to the nearest minute interval on digital and to the nearest 5 minute interval on analog (dial) timepieces. 	C. Develop common referents for units of measure for length, weight, volume (capacity) and time to make comparisons and estimates		
<ul style="list-style-type: none"> • Measure length and volume (capacity) using uniform objects in the environment. 	<ul style="list-style-type: none"> • Estimate and measure weight using non-standard units. • Estimate and measure lengths using non-standard and standard units. 	<ul style="list-style-type: none"> • Estimate and measure the length and weight of common objects, using metric and U.S. customary units, accurate to the nearest unit. • Select and use appropriate measurement tools. 	D. Apply measurement techniques to measure length, weight and volume (capacity).		
		<ul style="list-style-type: none"> • Describe and compare the relationships among units of measure. • Make and test predictions about measurements, using different units to measure the same length or volume. 	E. Recognize that using different units of measurement will yield different numbers for the same measurement.		

Mathematics K-2

Geometry and Spatial Sense Standard

Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two- and three-dimensional geometric figures and objects. Students use spatial reasoning, properties of geometric objects and transformations to analyze mathematical situations and solve problems.

K	1	2	BENCHMARK	When	Freq
	<ul style="list-style-type: none"> • Create new shapes by combining or cutting apart existing shapes. • Identify the shapes of the faces of three-dimensional objects. 	<ul style="list-style-type: none"> • Identify, describe, compare, and sort three-dimensional objects according to the shape of the faces or the numbers of faces, edges, or vertices. • Predict what new shapes will be formed by combining or cutting apart existing shapes. 	A. Describe and create plan figures: circle, rectangle, square, triangle, hexagon, trapezoid, parallelogram and rhombus, and identify them in the environment.		
	<ul style="list-style-type: none"> • Identify the shapes of the faces of three-dimensional objects. 	<ul style="list-style-type: none"> • Identify, describe, compare, and sort three-dimensional objects according to the shape of the faces or the numbers of faces, edges, or vertices. 	B. Describe solid objects: cube, rectangular prism, sphere, cylinder, cone and pyramid, and identify them in the environment		
<ul style="list-style-type: none"> • Identify and sort two-dimensional shapes and three-dimensional objects. 	<ul style="list-style-type: none"> • Identify, compare, and sort two-dimensional shapes; i.e., square, circle, ellipse, triangle, rectangle, rhombus, trapezoid, parallelogram, pentagon, and hexagon. For example: <ul style="list-style-type: none"> ➤ Recognize and identify triangles and rhombuses independent of position, shape or size; ➤ Describe two-dimensional shapes using attributes such as number of sides and number of vertices (corners, or angles). 	<ul style="list-style-type: none"> • Identify, describe, compare, and sort three-dimensional objects according to the shape of the faces or the numbers of faces, edges, or vertices. 	C. Sort and compare two-dimensional figures and three-dimensional objects according to their characteristics and properties		

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Geometry and Spatial Sense Standard

Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two- and three-dimensional geometric figures and objects. Students use spatial reasoning, properties of geometric objects and transformations to analyze mathematical situations and solve problems.

K	1	2	BENCHMARK	When	Freq
	<ul style="list-style-type: none"> Copy figures and draw simple two-dimensional shapes from memory. 	<ul style="list-style-type: none"> Identify and determine whether two-dimensional shapes are congruent or similar by copying or using superposition (lay one thing on top of another). 	D. Identify, explain and model(superposition, copying) the concept of shapes being congruent and similar		
	<ul style="list-style-type: none"> Copy figures and draw simple two-dimensional shapes from memory. 	<ul style="list-style-type: none"> Recognize two-dimensional shapes and three-dimensional objects from different positions. 	E. Recognize two- and three-dimensional objects from different positions		
<ul style="list-style-type: none"> Name and demonstrate the relative position of objects. 	<ul style="list-style-type: none"> Extend the use of location words to include distance (near, far, close to) and directional words (left, right). 		F. Describe location, using comparative (before, after), directional (above, below), and positional (first, last) words		
	<ul style="list-style-type: none"> Copy figures and draw simple two-dimensional shapes from memory. 	<ul style="list-style-type: none"> Create and identify two-dimensional figures with line symmetry. 	G. Identify and draw figures with line symmetry		

Mathematics K-2

Patterns, Functions and Algebra Standard

Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations

K	1	2	BENCHMARK	When	Freq
<ul style="list-style-type: none"> Sort, classify and order objects by size, number and other attributes. 	<ul style="list-style-type: none"> Sort, classify and order objects by two or more attributes, such as color and shape, and explain how objects were sorted. 		A. Sort, classify and order objects by size, number and other properties, and describe the attributes used.		
<ul style="list-style-type: none"> Identify, create, extend and copy sequences of sounds, shapes, motions, and numbers from 1-10. 	<ul style="list-style-type: none"> Extend sequences of sounds, shapes or simple number patterns, and create and record similar patterns. 	<ul style="list-style-type: none"> Extend simple number patterns and create similar patterns using different objects, such as using physical materials or shapes to represent numerical patterns. 	B. Extend sequences of sounds and shapes or simple number patterns, and create and record similar patterns		
<ul style="list-style-type: none"> Describe orally the pattern of a given sequence. 	<ul style="list-style-type: none"> Describe orally the basic unit or general plan of a repeating or growing pattern. 	<ul style="list-style-type: none"> Use patterns to make generalizations and predictions; e.g., determine a missing element in a pattern. Create new patterns with consistent rules or plans, and describe the rule or general plan of existing patterns. 	C. Create and extend patterns: and describe the rule in words		
<ul style="list-style-type: none"> Model a problem situation using physical materials. 	<ul style="list-style-type: none"> Describe orally and model a problem situation using words, objects or number phrase or sentence. 	<ul style="list-style-type: none"> Use objects, pictures, numbers and other symbols to represent a problem situation. 	D. Model problem situations, using objects, pictures, numbers and other symbols		

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Patterns, Functions and Algebra Standard

Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations

K	1	2	BENCHMARK	When	Freq
	<ul style="list-style-type: none"> Solve open sentences by representing an expression in more than one way using the commutative property. 	<ul style="list-style-type: none"> Use symbols to represent unknown quantities and identify values for symbols in an expression or equation using addition and subtraction. 	E. Solve open sentences and explain strategies		
		<ul style="list-style-type: none"> Use symbols to represent unknown quantities and identify values for symbols in an expression or equation using addition and subtraction. 	F. Represent an unknown quantity as a variable using a symbol, such as \square , \blacktriangle , O		
		<ul style="list-style-type: none"> Describe qualitative and quantitative changes, especially those involving addition and subtraction; e.g., a student growing taller versus a student growing two inches in one year. 	G. Describe and compare qualitative and quantitative changes		

Mathematics K-2

Data Analysis and Probability Standard

Students pose questions and collect, organize, represent, interpret and analyze data to answer those questions. Students develop and evaluate inferences, predictions and arguments that are based on data.

K	1	2	BENCHMARK	When	Freq
<ul style="list-style-type: none"> Gather and sort data in response to questions posed by teacher and students. 	<ul style="list-style-type: none"> Construct a question that can be answered by using information from a graph. 	<ul style="list-style-type: none"> Pose questions, use observations, interviews and surveys to collect data, and organize data in charts, picture graphs and bar graphs. Recognize that data may vary from one population to another. 	A. Pose questions and gather data about everyday situations and familiar objects.		
<ul style="list-style-type: none"> Arrange objects in a floor or table graph according to attributes, such as use, size, color, or shape. Select the category or categories that have the most or fewest objects in a floor or table graph. 	<ul style="list-style-type: none"> Identify multiple categories for sorting data. Collect and organize data into charts using tally marks. Arrange five objects by an attribute, such as size or weight, and identify the ordinal position of each object. Answer questions about the number of objects represented in a picture graph, bar graph or table graph. 	<ul style="list-style-type: none"> Pose, questions, use observations, interviews and surveys to collect data, and organize data in charts, picture graphs and bar graphs. Write a few sentences to describe and compare categories of data represented in a chart or graph. 	B. Sort and classify objects by attributes, and organize data into categories in a simple table or chart		
	<ul style="list-style-type: none"> Display data in picture graphs with units of 1 and bar graphs with intervals of 1. Read and interpret charts, picture graphs and bar graphs as sources of information to identify main ideas, draw conclusions, and make predictions. 	<ul style="list-style-type: none"> Read, interpret and make comparisons and predictions from data represented in charts, line plots, picture graphs and bar graphs. Read and construct simple timelines to sequence events. Identify untrue or inappropriate statements about a given set of data. 	C. Represent data using objects, picture graphs and bar graphs		
	<ul style="list-style-type: none"> Describe the likelihood of simple events as possible/impossible and more likely/less likely. 	<ul style="list-style-type: none"> List some of the possible outcomes of a simple experiment, and predict whether given outcomes are more, less or equally likely to occur. Use physical models and pictures to represent possible arrangements of 2 or 3 objects. 	D. Describe the probability of chance events as more, less or equally likely to occur.		

