

Math Performance Standards (Grade Level Expectations) Kindergarten

Each PSGLE includes a bolded statement called the "stem." Each stem is the same or similar across the grades for a given PSGLE and is meant to communicate the main curriculum and instructional focus of the PSGLE across the grades.

The first row of each table includes a heading that refers to the content standard, and the second row includes a heading that refers to the performance standard. (The content standard is a broad statement of what students should know; the performance standards state what students should know and be able to do at ages 5-7, 8-10, 11-14, and 15-18.) The second box includes the complete performance standards for ages 5-7.

The coding indicates the content strand and the PSGLE number, so PSGLE [2] MEA-1 is content strand Measurement, and the first PSGLE for that content strand for grade 2.

Content Standard A: Mathematical facts, concepts, principles, and theories			
Measurement: Select and use systems, units, and tools of measurement			
Measurement Performance Standards that apply to grades K-3: M2.1.1 Compare and order objects by various measurable attributes including calendar, temperature, length, weight, capacity, area, and volume. M2.1.2 Compare objects to standard and non-standard units to identify objects that are greater than, less than, and equal to, a given unit. M2.1.3 Choose a unit of measure, estimate the length or weight of objects and then measure to check for reasonableness. M2.1.4 Tell time to the nearest half hour, distinguishing between morning, afternoon, and evening. M2.1.5 Identify coins, their value, and the value of given sets of coins.			
Measurable Attributes			
Kindergarten	Grade 1	Grade 2	Grade 3
<p>The student demonstrates understanding of measurable attributes by</p> <p>[K] MEA-1 making comparisons between objects using concepts of big/little, long/short, large/small, more/less, same (M2.1.1)</p> <p>[K] MEA-2 identifying coins by name: penny, nickel, dime and quarter (M2.1.5)</p>	<p>The student demonstrates understanding of measurable attributes by</p> <p>[1] MEA-1 measuring and/or comparing objects using standard and nonstandard units (M2.1.2)</p> <p>[1] MEA-2 identifying money by its value (e.g., penny, nickel, dime, quarter, dollar) (M2.1.5)</p>	<p>The student demonstrates understanding of measurable attributes by</p> <p>[2] MEA-1 measuring to the nearest inch or foot (M2.1.3)</p> <p>[2] MEA-2 comparing and ordering objects by length, weight, area, time, temperature (M2.1.1)</p> <p>[2] MEA-3 comparing objects to standard and nonstandard units to identify objects that are greater than, less than, and equal to a given unit (M2.1.2)</p> <p>[2] MEA-4 identifying coins, their value, or the value of a set of coins up to one dollar (M2.1.5)</p>	<p>The student demonstrates understanding of measurable attributes by</p> <p>[3] MEA-1 [estimating length to the nearest inch or foot L] (M2.1.3)</p> <p>[3] MEA-2 comparing and ordering objects according to measurable attribute (calendar, length, [temperature, weight, area, or volume L]) (M2.1.1)</p> <p>[3] MEA-3 identifying or describing objects that are greater than, less than, or equal to a unit of measure (standard or non-standard) (M2.1.2)</p> <p>[3] MEA-4 selecting an appropriate unit of English, metric, or non-standard measurement to estimate the length, time, weight, or temperature (M2.1.3)</p> <p>[3] MEA-5 identifying coins, their value, or the value of a set of coins (M2.1.5)</p>

The number or letter in brackets indicates the grade level.

The coding at the end of each PSGLE indicates the performance standard the PSGLE is aligned to.

Math Performance Standards (Grade Level Expectations) Kindergarten

Content Standard A: Mathematical facts, concepts, principles, and theories

Numeration: Understand and use numeration

Measurement: Select and use systems, units, and tools of measurement

Numeration Performance Standards that apply to grades K-3: **M1.1.1** Read, write, order, count, and model one-to-one correspondence with whole numbers to 100. **M1.1.2** Use, model, and identify place value positions of 1's, 10's, and 100's. **M1.1.3** Model and explain the processes of addition and subtraction, describing the relationship between the operations. **M1.1.4** Select and use various representations of ordinal and cardinal numbers. **M1.1.5** Identify, model, and label simple fractions, describing and defining them as equal parts of a whole, a region, or a set. **M1.1.6** Identify, describe, and extend patterns inherent in the number system. Skip count by 2's, 5's, and 10's. Add and subtract by 10. Identify even and odd numbers. **M1.1.7** Demonstrate the commutative and identity properties of addition.

Measurement Performance Standards that apply to grades K-3: **M2.1.1** Compare and order objects by various measurable attributes including calendar, temperature, length, weight, capacity, area, and volume. **M2.1.2** Compare objects to standard and non-standard units to identify objects that are greater than, less than, and equal to, a given unit. **M2.1.3** Choose a unit of measure, estimate the length or weight of objects and then measure to check for reasonableness. **M2.1.4** Tell time to the nearest half hour, distinguishing between morning, afternoon, and evening. **M2.1.5** Identify coins, their value, and the value of given sets of coins.

Understanding Numbers	Understanding Meaning of Operations	Number Theory	Measurable Attributes	Measurement Techniques
Kindergarten				
<p>The student demonstrates conceptual understanding</p> <ul style="list-style-type: none"> • of whole numbers to 20 by <p>[K] N-1 demonstrating 1-1 correspondence (M1.1.1)</p> <p>[K] N-2 recognizing and counting whole numbers from 0-20 (M1.1.1)</p> <p>[K] N-3 writing and ordering whole numbers from 0-20 (M1.1.1)</p> <p>[K] N-4 counting whole numbers backwards from 10 to 0 (M1.1.1)</p> <p>[K] N-5 identifying ordinal position, first to the tenth (M1.1.4)</p> <ul style="list-style-type: none"> • of simple fractions <p>[K] N-6 dividing an even numbered set of concrete objects (up to 20) into halves (M1.1.5)</p> <p>[K] N-7 identifying halves (M1.1.5)</p> <p>[K] N-8 identifying full, half full, and empty containers (M1.1.5)</p>	<p>The student demonstrates conceptual understanding of mathematical operations by</p> <p>[K] N-9 recognizing (+), (-), and (=) signs (M1.1.3)</p> <p>[K] N-10 using objects or pictures to model addition and subtraction of whole numbers (M1.1.3)</p> <p>[K] N-11 using number lines or objects related to real situations (M1.1.3)</p>	<p>The student demonstrates conceptual understanding of number theory by</p> <p>[K] N-12 demonstrating skip counting by 2's, 5's, and 10's with support (M1.1.6)</p>	<p>The student demonstrates understanding of measurable attributes by</p> <p>[K] MEA-1 making comparisons between objects using concepts of big/little, long/short, large/small, more/less, same (M2.1.1)</p> <p>[K] MEA-2 identifying coins by name: penny, nickel, dime, and quarter (M2.1.5)</p>	<p>The student demonstrates ability to use measurement techniques by</p> <p>[K] MEA-3 identifying instruments used to measure length, time, and temperature (M2.1.3)</p> <p>[K] MEA-4 naming in sequence the days of the week (M2.1.1)</p> <p>[K] MEA-5 telling time to the hour using analog and digital clocks (M2.1.4)</p>

Math Performance Standards (Grade Level Expectations) Kindergarten

Content Standard A: Mathematical facts, concepts, principles, and theories.

Estimation and Computation: Perform basic arithmetic functions, make reasoned estimates, and select and use appropriate methods or tools

Functions and Relationships: Represent, analyze, and use patterns, relations, and functions

Estimation and Computation Performance Standards that apply to grades K-3: **M3.1.1** Make reasonable estimates of “how many” and “how much”; estimate the results of simple addition and subtraction problems. **M3.1.2** Recall and use basic addition and subtraction facts orally and with paper and pencil without a calculator. **M3.1.3** Add and subtract whole numbers to 100 using a variety of models and algorithms. **M3.1.4** Model multiplication as repeated addition and grouping objects; model division as “sharing equally” and grouping objects.

Functions and Relationships Performance Standards that apply to grades K-3: **M4.1.1** Recognize, describe, create, and extend repeating and increasing patterns with a variety of materials including symbols, objects, and manipulatives. **M4.1.2** Generate and solve simple functions by identifying and applying addition and subtraction patterns. **M4.1.3** Use a calculator to find and extend patterns in the number system. **M4.1.4** Complete open space sentences with missing numbers; use appropriate vocabulary including greater than, less than, and equal to; and use the correct symbols.

Estimation	Computation	Describing Patterns and Functions	Modeling and Solving Equations and Inequalities
Kindergarten			
<p>The student determines reasonable answers to real-life situations, paper/pencil computations, or calculator results by</p> <p>[K] E&C-1 comparing the number of objects in different sets using more, less, same</p> <p>[K] E&C-2 estimating the number of objects in a given set as more or less than 10 (M3.1.1)</p>	<p>The student accurately solves problems (including real-world situations) involving</p> <p>[K] E&C-3 adding and subtracting whole numbers up to ten using manipulatives (M3.1.3)</p>	<p>The student demonstrates conceptual understanding of functions, patterns, or sequences by</p> <p>[K] F&R-1 recognizing patterns found in common objects, sounds, and movements (M4.1.1)</p> <p>[K] F&R-2 identifying, sorting, and classifying objects by attribute and identifying objects that do not belong to a particular group (M4.1.1)</p> <p>[K] F&R-3 recognizing, identifying, and continuing simple patterns of color, shape, or size (M4.1.1)</p>	<p>The student demonstrates algebraic thinking by</p> <p>[K] F&R-4 adding or subtracting whole numbers to 10 using manipulatives to solve story problems (M4.1.4)</p> <p>[K] F&R-5 showing more, less, or equal to using objects (M4.1.4)</p>

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Content Standard A: Mathematical facts, concepts, principles, and theories.

Geometry: Construct, transform, and analyze geometric figures.

Geometry Performance Standards that apply to grades K-3: **M5.1.1** Identify, sort, describe, model, and compare circles, triangles, and rectangles including squares regardless of orientation. **M5.1.2** Identify, sort, describe, model, and compare solid figures including cubes, cylinders, and spheres. **M5.1.3** Identify and create examples of line symmetry; compare and describe given circles, triangles, and rectangles as larger, smaller, or congruent. **M5.1.4** Demonstrate conservation of area using drawings or manipulatives. **M5.1.5** Describe and identify geometric transformations including slides, flips, and turns. **M5.1.6** Use comparative directional and positional words: above, below, inside, outside, on, in, right and left, horizontal, vertical, and middle. **M5.1.7** Draw and build familiar shapes.

Geometric Relationships	Similarity, Congruence, Symmetry, and Transformation of Shapes	Perimeter, Area, Volume, and Surface Area	Position and Direction	Construction
Kindergarten				
<p>The student demonstrates an understanding of geometric relationships by</p> <p>[K] G-1 sorting and classifying shapes according to similar attributes (M5.1.1)</p> <p>[K] G-2 describing objects using three attributes such as size, color, and shape (M5.1.1)</p> <p>[K] G-3 identifying triangle, circle, rectangle, and square (M5.1.1)</p>	<p>The student demonstrates conceptual understanding of similarity, congruence, symmetry, or transformations of shapes by</p> <p>[K] G-4 comparing geometric shapes (M5.1.3)</p>	<p>The student solves problems using perimeter or area by</p> <p>Not addressed at this grade level.</p>	<p>The student demonstrates understanding of position and direction by</p> <p>[K] G-5 identifying positions of objects that are above, below, before, after, next to, in the middle of, in front of, behind... (M5.1.6)</p>	<p>The student demonstrates a conceptual understanding of geometric drawings or constructions by</p> <p>[K] G-6 drawing, copying, or describing triangles, squares, rectangles and circles (M5.1.7)</p>

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Content Standard A: Mathematical facts, concepts, principles, and theories		
Statistics and Probability: Formulate questions, gather and interpret data, and make predictions		
<p>Statistics and Probability Performance Standards that apply to grades K-3: M6.1.1 Collect, record, organize, display, and explain the classification of data. M6.1.2 Describe data from a variety of visual displays including tallies, tables, pictographs, bar graphs, and Venn diagrams. M6.1.3 Use the terms “maximum” and “minimum” when working with a data set. M6.1.4 Find and record the possibilities of simple probability experiments; explain differences between chance and certainty, giving examples. M6.1.5 Conduct a survey and tally the results.</p>		
Data Display	Analysis and Central Tendency	Probability
Kindergarten		
<p>The student demonstrates an ability to classify and organize data by</p> <p>[K] S&P-1 constructing real graphs using concrete objects or pictographs with support (M6.1.1)</p> <p>[K] S&P-2 collecting and recording data with support (M6.1.1)</p>	<p>The student demonstrates an ability to analyze data (comparing, explaining, interpreting, evaluating; or drawing or justifying conclusions) by</p> <p>[K] S&P-3 describing information from real graphs or pictographs (M6.1.2)</p>	<p>The student demonstrates a conceptual understanding of probability and counting techniques by</p> <p>[K] S&P-4 making simple predictions using events or repeated observations (M6.1.4)</p>

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Content Standards B, C, D, and E: Process skills and abilities			
Applying conceptual knowledge and skills as designated in all strands of Content Standard A by problem solving, communicating, reasoning, and making connections			
<p>Problem-Solving Performance Standards that apply to grades K-3: M7.1.1 Formulate problems from practical and mathematical activities. M7.1.2 Develop and apply strategies including guess and check, modeling and acting out, drawings, and extending patterns to solve a variety of problems. M7.1.3 Predict an answer before solving a problem and compare results to check for reasonableness.</p> <p>Communication Performance Standards that apply to grades K-3: M8.1.1 Translate problems from everyday language into math language and symbols. M8.1.2 Use manipulatives, models, pictures, and language to represent and communicate mathematical ideas. M8.1.3 Use everyday language to explain thinking about problem solving strategies and solutions to problems.</p> <p>Reasoning Performance Standards that apply to grades K-3: M9.1.1 Draw conclusions about mathematical problems. M9.1.2 Find examples that support or refute mathematical statements. M9.1.3 Explain why a prediction, estimation, or solution is reasonable.</p> <p>Connections Performance Standards that apply to grades K-3: M10.1.1 Apply mathematical skills and processes to literature. M10.1.2 Apply mathematical skills and processes to situations with self and family.</p>			
Problem Solving: Understand and be able to select and use a variety of problem-solving strategies	Communication: Form and use appropriate methods to define and explain mathematical relationships	Reasoning: Use logic and reason to solve mathematical problems	Connections: Apply mathematical concepts and processes to situations within and outside of school.
Kindergarten			
<p>The student demonstrates an ability to problem solve by</p> <p>[K] PS-1 solving simple problems using concrete objects (M7.1.2)</p>	<p>The student communicates his or her mathematical thinking by</p> <p>[K] PS-2 telling how objects were used to solve simple problems (M8.1.2)</p>	<p>The student demonstrates an ability to use logic and reason by</p> <p>[K] PS-3 explaining what makes sense (M9.1.3)</p> <p>[K] PS-4 drawing pictures that support simple mathematical statements (M9.1.2)</p>	<p>The student understands and applies mathematical skills and processes across the content strands by</p> <p>[K] PS-5 using real world context (i.e., self, friends, and family) (M10.1.2)</p>