

Learning Standards for Grades PreK-6

Number Sense and Operations

- Understand numbers, ways of representing numbers, relationships among numbers, and number systems
Understand meanings of operations and how they relate to one another
Compute fluently and make reasonable estimates

Grades PreK-K

Table with 2 columns: Learning Standards and Selected Problems or Classroom Activities. Includes standards K.N.1 through K.N.8.

Exploratory Concepts and Skills

- Count on, back, beginning from any number in the counting sequence
Represent strategies using objects, and investigate the partitioning of sets. Identify equal parts of groups
Create problems that can be solved using addition and subtraction

Patterns, Relations, and Algebra

- Understand patterns, relations, and functions
Represent and analyze mathematical situations and structures using algebraic symbols
Use mathematical models to represent and understand quantitative relationships
Analyze change in various contexts

Grades PreK-K

Table with 2 columns: Learning Standards and Selected Problems or Classroom Activities. Includes standards K.P.1 through K.P.4.

Exploratory Concepts and Skills

- Explore skip counting by twos

Patterns, Relations, and Algebra

Geometry

- Analyze characteristics and properties of two- and three-dimensional geometric shapes and develop mathematical arguments about geometric relationships
Specify locations and describe spatial relationships using coordinate geometry and other representational systems
Apply transformations and use symmetry to analyze mathematical situations
Use visualization, spatial reasoning, and geometric modeling to solve problems

Grades PreK-K

Table with 2 columns: Learning Standards and Selected Problems or Classroom Activities. Includes standards K.G.1 through K.G.4.

Exploratory Concepts and Skills

- Investigate symmetry of two- and three-dimensional shapes and constructions

Measurement

- Understand measurable attributes of objects and the units, systems, and processes of measurement
Apply appropriate techniques, tools, and formulas to determine measurements

Grades PreK-K

Table with 2 columns: Learning Standards and Selected Problems or Classroom Activities. Includes standards K.M.1 through K.M.3.

Exploratory Concepts and Skills

- Explore and use standard units to measure and compare temperature, length, and time
Identify positions of events over time, e.g., earlier, later

Data Analysis, Statistics, and Probability

- Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them
Select and use appropriate statistical methods to analyze data
Develop and evaluate inferences and predictions that are based on data
Understand and apply basic concepts of probability

Grades PreK-K

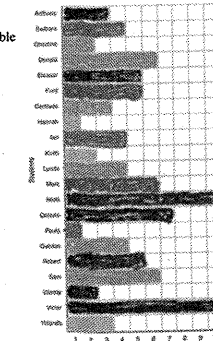
Table with 2 columns: Learning Standards and Selected Problems or Classroom Activities. Includes standard K.D.1.

Exploratory Concepts and Skills

- Collect and organize data in lists, tables, and simple graphs

Refers to standard K.D.1. Children use chips to represent objects in the stories below in order to be able easily...

Story 1 Ms. Chapman has large floppy hats... Story 2 Mr. Miller has animal hats...



Refers to standard K.D.1.f. Create a bar graph that illustrates the number of pockets in classmates' clothes.

Mathematics | Kindergarten

In kindergarten, instructional time should focus on two critical areas: (1) representing, relating, and operating on whole numbers, initially with sets of objects (2) describing shapes and space. More learning time in kindergarten should be devoted to number than to other topics.

- (1) Students use numbers, including written numerals, to represent quantities and to solve quantitative problems...
(2) Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary.

Kindergarten

Introduction

In kindergarten, instructional time should focus on two critical areas: (1) representing, relating, and operating on whole numbers, initially with sets of objects; and (2) describing shapes and space. More learning time in kindergarten should be devoted to number than to other topics.

- 1. Students use numbers, including written numerals, to represent quantities and to solve quantitative problems...
2. Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary.

The Standards for Mathematical Practice complement the content standards so that students increasingly engage with the subject matter as they grow in mathematical maturity and expertise throughout the elementary, middle, and high school years.

Kindergarten Overview

Counting and Cardinality

- A. Know number names and the counting sequence.
B. Count to tell the number of objects.
C. Compare numbers.

Operations and Algebraic Thinking

- A. Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

Number and Operations in Base Ten

- A. Work with numbers 11-19 to gain foundations for place value.

Measurement and Data

- A. Describe and compare measurable attributes.
B. Classify objects and count the number of objects in each category.

Geometry

- A. Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).
B. Analyze, compare, create, and compose shapes.

Standards for Mathematical Practice. 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning.

Grade K Overview

Counting and Cardinality

- Know number names and the count sequence.
Count to tell the number of objects.
Compare numbers.

Operations and Algebraic Thinking

- Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

Number and Operations in Base Ten

- Work with numbers 11-19 to gain foundations for place value.

Measurement and Data

- Describe and compare measurable attributes.
Classify objects and count the number of objects in categories.

Geometry

- Identify and describe shapes.
Analyze, compare, create, and compose shapes.

Mathematical Practices

- 1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
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Counting and Cardinality

K.CC

Know number names and the count sequence.

- 1. Count to 100 by ones and by tens.
2. Count forward beginning from a given number within the known sequence...
3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).

Count to tell the number of objects.

- 4. Understand the relationship between numbers and quantities; connect counting to cardinality.
a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name...
b. Understand that the last number name said tells the number of objects counted...
c. Understand that each successive number name refers to a quantity that is one larger.

Compare numbers.

- 6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.

Operations and Algebraic Thinking

K.OA

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

- 1. Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).
4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.

Include groups with up to ten objects. Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)

Number and Operations in Base Ten

K.NBT

Work with numbers 11-19 to gain foundations for place value.

- 1. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

Measurement and Data

K.MD

Describe and compare measurable attributes.

- 1. Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.
2. Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. For example, directly compare the heights of two children and describe one child as taller/shorter.

Classify objects and count the number of objects in each category.

- 3. Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.

Geometry

K.G

Identify and describe shapes (squares, circles, triangles, rectangles, hexagons, cubes, cones, cylinders, and spheres).

- 1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as above, below, beside, in front of, behind, and next to.
2. Correctly name shapes regardless of their orientations or overall size.
3. Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").

Analyze, compare, create, and compose shapes.

- 4. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).
5. Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.
6. Compose simple shapes to form larger shapes. For example, "Can you join these two triangles with full sides touching to make a rectangle?"

Limit category counts to be less than or equal to 10.

Number and Operations in Base Ten

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Classify objects and count the number of objects in each category.

- 3. Classify objects into given categories; count the numbers of objects in each category (up to and including 10) and sort the categories by count.

Geometry

K.G

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