

Kindergarten Mathematics

Scope and Sequence

Trimester 1

Unit 1: Counting and Quantifying Amounts to 5 (10 Days)

Counting and Cardinality

K.CC

Know number names and the count sequence.

K.CC.1 Count ~~to 100~~ by ones ~~and by tens~~.

K.CC.2 Count forward ~~beginning from a given number~~ within the known sequence (~~instead of having to begin at 1~~).

Count to tell the number of objects.

K.CC.4 Understand the relationship between numbers and quantities; connect. The number of objects is the same regardless of their arrangement counting to cardinality.

- When counting objects, say the number names in the standard order, ~~pairing each object with one and only one number name and each number name with one and only one object~~.
- Understand that the last number name said tells the number of objects counted. ~~The number of objects is the same regardless of their arrangement or the order in which they were counted.~~

K.CC.5 Count to answer “how many?” ~~questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.~~

Standards for Mathematical Practice

4 Model with mathematics.

Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.

5 Use appropriate tools strategically.

Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation

and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

Unit 2: Writing and Representing Quantities to 5 (10 Days)

Counting and Cardinality

K.CC

Know number names and the count sequence.

K.CC.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)~~.

Compare numbers.

K.CC.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.¹

NOTE: ¹include groups with up to 10 objects.

Operations and Algebraic Thinking
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K.OA

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

K.OA.1 Represent addition ~~and subtraction~~ with objects, fingers, ~~mental images~~, drawings², sounds (e.g., claps), acting out situations, ~~verbal explanations, expressions, or equations~~.²

NOTE: ²Drawings need not show details but should show the mathematics in the problem (this applies wherever drawings are mentioned in the standards,)

K.OA.2 Solve addition ~~and subtraction~~ word problems, and add ~~and subtract within~~ 10, e.g., by using objects or drawings to represent the problem.

Standards for Mathematical Practice

2 Reason abstractly and quantitatively.

Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.

7 Look for and make use of structure.

Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2

$\times 7$ and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y .

Unit 3: Understanding 2D Shapes (5 Days)

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

K.G.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.*~~

K.G.2 Correctly name shapes ~~regardless of their orientations or overall size.~~

Analyze, compare, create, and compose shapes.

K.G.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).~~

K.G.5 Model shapes in the world by building shapes from components (e.g., sticks and clay balls) ~~and drawing shapes.~~

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6 Attend to precision.

Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions. Common Core State Standards for MATHEMATICS standards for mathematical practice.

Unit 4: Counting and Quantifying Amounts to 10 (10 Days)

Counting and Cardinality	K.CC
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K.CC.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.

K.CC.4 Understand the relationship between numbers and quantities; connect counting to cardinality.

- When counting objects, say the number names in the standard order, ~~pairing each object with one and only one number name and each number name with one and only one object~~.
- Understand that the last number name said tells the number of objects counted. ~~The number of objects is the same regardless of their arrangement or the order in which they were counted.~~

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5 Use appropriate tools strategically.

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visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital

content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.

Unit 5: Writing and Representing Amounts to 10 (10 Days)

Counting and Cardinality	K.CC
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Compare numbers.

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NOTE: ¹Include groups with up to 10 objects.

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Unit 6: Understanding Measurable Attributes (5 Days)

Measurement and Data	K.MD
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Describe and compare measurable attributes.

K.MD.1 Describe measurable attributes of objects, such as length or weight. ~~Describe several measurable attributes of a single object.~~

K.MD.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.~~

Standards for Mathematical Practice

3 Construct viable arguments and critique the reasoning of others.

Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions; Common Core State Standards for MAT HEMAT ICS standards for mathematical practice communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.

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