

Introduction

In kindergarten, students will concentrate on number sense. They will use numbers to represent quantities and to solve quantitative problems. Through the study of numbers, students will develop an understanding of cardinality, counting strategies, and strategies for joining and separating within ten and to make ten. Students will use positional words, descriptive words, and mathematical terms to talk about their physical world. The kindergarten year begins with developing strategies for counting by ones. Initially, students learn to count to 20. Students build on this understanding to expand counting to 50 and 100. By the end of kindergarten, students count to 100 by ones and tens. The concept of number builds as the year proceeds. Students will be able to read, write and represent quantities to 20. They compare quantities and numerals up to 10. Students in kindergarten use counting strategies to add and subtract within ten. As kindergarten students develop their ability to compose and decompose numbers, they learn to fluently add and subtract within 5. Another major focus in kindergarten is using both informal and geometric language to describe shapes and space. Geometric concepts and spatial reasoning are developed throughout the kindergarten year as student's progress from informal conversations and activities to more formal classifications and compositions of shapes.

Critical Areas of Instruction for Kindergarten

Critical Area 1: Representing, relating, and operating on whole numbers, initially with sets of objects.

Students use numbers, including written numerals, to represent quantities and to solve quantitative problems, such as counting objects in a set; counting out a given number of objects; comparing sets or numerals; and modeling simple joining and separating situations with sets of objects, or eventually with equations such as $5 + 2 = 7$ and $7 - 2 = 5$. (Kindergarten students should see addition and subtraction equations. Student writing of equations in kindergarten is encouraged, but it is not required.)

Students choose, combine, and apply effective strategies for answering quantitative questions, including quickly recognizing the cardinalities of small sets of objects, counting and producing sets of given sizes, counting the number of objects in combined sets, or counting the number of objects that remain in a set after some are taken away.

Critical Area 2: Describing shapes and space.

Students describe their physical world using geometric ideas (e.g., shape, orientation, spatial relations) and vocabulary. They identify, name, and describe basic two-dimensional shapes, such as squares, triangles, circles, rectangles, and hexagons, presented in a variety of ways (e.g., with different sizes and orientations), as well as three-dimensional shapes such as cubes, cones, cylinders, and spheres. They use basic shapes and spatial reasoning to model objects in their environment and to construct more complex shapes.

Please reference the [California Mathematics Framework](#) for elaboration on the standards, critical areas, major and supporting clusters, and instructional practices.

Suggested Go Math 5E Lesson Format:

- **ENGAGE:** Structure: Rug Time/Whole group. Purpose: Activate Prior Knowledge; Frame the learning with the Essential Question; Build conceptual understanding, Model and discuss possible responses.
- **EXPLORE:** Structure: Centers, Stations, Small Heterogeneous Groups, or Whole Group Instruction. Purpose: Build Conceptual Understanding; Apply the learning across activity types including the use of manipulatives and technology; Deepen understanding and facilitate math discussions through collaborative group work.
 - **EXPLAIN:** During this time students are discussing and solving problems with peers and/or teacher. Questions and tasks should invite student explanations where students are given opportunities to formulate unique responses and multiple approaches (Purpose: Building Procedural Fluency and Transfer to Application; Action: Explain and Justify student's own learning)
 - **ELABORATE:** During this time the teacher (1) Provides opportunities for students to engage in review, consolidation, and/or practice exercises, (2) Makes the mathematics of the lesson explicit by using explanations, representations, and/or examples, (3) Strengthens all students' understanding of the content by sharing a variety of student representations and/or solution methods.
- **EVALUATE:** Structure: Rug or Whole Group. During this time the teacher and students summarize the mathematics with references to student work and/or discussions in order to reinforce the focus of the lesson. Teacher and students answer the essential question through Talk and Share or Journal Writing. Purpose: Summarize Learning; Use Formative Assessment.

Connecting Standards for Mathematical Practice and Content

The Standards for Mathematical Practice apply throughout each course and, together with the content standards, prescribe that students experience mathematics as a coherent, useful, and logical subject that makes use of their ability to make sense of problem situations. The standards for Mathematical Practice (MP) represent a picture of what it looks like for students to **do** mathematics, and to the extent possible, content instruction should include attention to appropriate practice standards. There are ample opportunities for students to engage in each practice in kindergarten; the table below offers some general examples of each practice in Kindergarten.

Standards for Mathematical Practice	Example:
<p>MP1. <i>Make sense of problems and persevere in solving them.</i></p>	<p>In Kindergarten, students begin to build the understanding that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. Real-life experiences should be used to support students' ability to connect mathematics to the world. To help students connect the language of mathematics to their everyday life, ask students questions such as, "How many students are absent?" or have them gather enough blocks for the students at their table. Younger students may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" or they may try another strategy.</p>
<p>MP2. <i>Reason abstractly and quantitatively.</i></p>	<p>Younger students begin to recognize that a number represents a specific quantity and to connect the quantity to written symbols. Quantitative reasoning entails creating a representation of a problem while attending to the meanings of the quantities. For example, a student may write the numeral "11" to represent amount of objects counted, select the correct number card "17" to follow "16" on the calendar, or build a pile of counters depending on the number drawn. In addition, kindergarten students begin to draw pictures, manipulate objects, or use diagrams or charts to express quantitative ideas. Students need to be encouraged to answer questions, such as, "How do you know?" which reinforces their reasoning and understanding and helps students develop mathematical language.</p>
<p>MP3. <i>Construct viable arguments and critique the reasoning of others.</i></p>	<p>Younger students construct arguments using actions and concrete materials, such as objects, pictures, and drawings. They begin to develop their mathematical communication skills as they participate in mathematical discussions involving questions like, "How did you get that?" and, "Why is that true?" They explain their thinking to others and respond to others' thinking. They begin to develop the ability to reason and analyze situations as they consider questions such as, "Are you sure...?", "Do you think that would happen all the time...?", and "I wonder why...?"</p>
<p>MP4. <i>Model with mathematics</i></p>	<p>In early grades, students begin to represent problem situations in multiple ways (e.g., using numbers, words, (mathematical language) objects, acting out, making a chart or list, drawing pictures and creating equations.) For example, a student may use cubes or tiles to show the different number of pairs for 5, or place three objects on a ten frame and then determine how many more are needed to "make a ten." Students rely on manipulatives (or other visual or concrete representations) while solving tasks and record an answer with a drawing or equation.</p>

Standards for Mathematical Practice	Example:
<p>MP5. Use appropriate tools strategically.</p>	<p>Younger students begin to consider the available tools when solving a mathematical problem and decide when certain tools might be helpful. For instance, kindergarteners may decide to use linking cubes to represent two quantities and then compare the two representations side-by-side. Students decide which tools may be helpful to use depending on the problem or task, and explain why they use specific mathematical tools.</p>
<p>MP6. Attend to precision.</p>	<p>Kindergarten students begin to develop precise communication skills, calculations, and measurements. Students describe their own actions, strategies and reasoning using grade-level appropriate vocabulary. Opportunities to work with pictorial representations and concrete objects can help students develop understanding and descriptive vocabulary. For example, students analyze and compare two and three-dimensional shapes and they sort objects based on appearance. While measuring objects iteratively (repetitively), students check to make sure that there are no gaps or overlaps. During tasks involving number sense, students check their work to ensure the accuracy and reasonableness of solutions.</p>
<p>MP7. Look for and make use of structure.</p>	<p>Younger students begin to discern a pattern or structure in the number system. For instance, students recognize that $3 + 2 = 5$ and $2 + 3 = 5$. Students notice patterns in counting strategies to build fluency in facts to five. Students may use various strategies to attain fluency such as counting on, counting back, counting up to subtract, using doubles, and using commutative property and fact families.</p>
<p>MP8. Look for and express regularity in repeating reasoning.</p>	<p>In the early grades, students notice repetitive actions in counting and computation, and mathematical tasks. For example, the next number in a counting sequence is one more when counting by ones and ten more when counting by tens (or one more group of ten). In the task, “There are 8 crayons in the box. Some are red and some are blue. How many of each could there be?”, kindergarten students realize 8 crayons could include 4 of each color ($4 + 4 = 8$), 5 of one color and 3 of another ($5 + 3 = 8$), etc. For each solution, students repeatedly engage in the process of finding two numbers to join together to equal 8.</p>

Adapted from CA Mathematics Framework 2015.

Kindergarten Grade Content Emphasis by Cluster (PARCC/SBAC)

Not all of the content in a given grade is emphasized equally in the standards. Some clusters require greater emphasis than others based on the depth of the ideas, the time they take to master, and/or their importance to future mathematics or the demands of college and career readiness. In addition, an intense focus on the most critical material at each grade allows depth in learning, which is carried out through the Standards for Mathematical Practice. To say that some things have greater emphasis is not to say that anything in the standards can safely be neglected in instruction. Neglecting materials will leave gaps in student skill and understandings and may leave students unprepared for the challenges of a later grade. The following table identifies the Major Clusters, Additional Clusters, and Supporting Clusters for this grade. Also, [Achieve the Core's Coherence Map](#) supports within and across grade level coherence.

Major Clusters (70%) Area of intensive focus where students need fluent understanding and application of the core.	Supporting Clusters (20%) Rethinking and linking areas where some material is being covered, but in a way that applies core understanding.	Additional Clusters (10%) Expose students to other subjects, though at a distinct level of depth and intensity.
<p>Counting and Cardinality</p> <ul style="list-style-type: none"> Know number names and count sequence. Count to tell number of objects. Compare numbers. <p>Operations and Algebraic Thinking</p> <ul style="list-style-type: none"> Understand addition as putting together, and adding to, and understand subtraction as taking apart and taking from. <p>Number and Operation in Base Ten</p> <ul style="list-style-type: none"> Work with numbers 11 – 19 to gain foundation for place value. 	<p>Geometry</p> <ul style="list-style-type: none"> Identify and describe shapes. Analyze, compare, create, and compose shapes. 	<p>Measurement and Data</p> <ul style="list-style-type: none"> Describe and compare measurable attributes. Classify objects in categories.

Depth Opportunities: K.CC.4, K.CC.5, K.CC.6; 1.OA.2, 1.OA.4

Kindergarten Required Fluency –

- K.OA.5 Add and subtract within 5.

KINDERGARTEN SCOPE & SEQUENCE ~ YEAR AT A GLANCE				
Quarter	Q1	Q2	Q3	Q4
Big Ideas	REPRESENTING & COMPARING NUMBERS	COMPARING NUMBERS, EXPLORING ADDITION, & SUBTRACTION	SUBTRACTION & NUMBERS TO 20 AND BEYOND	EXPLORING GEOMETRY & MEASUREMENT
Domain	<ul style="list-style-type: none"> Counting & Cardinality 	<ul style="list-style-type: none"> Operations and Algebraic Thinking Numbers & Operations in Base Ten 	<ul style="list-style-type: none"> Operations and Algebraic Thinking Counting & Cardinality Numbers & Operations in Base Ten 	<ul style="list-style-type: none"> Geometry Measurement & Data
Concepts Focus Standards	<p>Represent, Count, Write and Compare Numbers to 5(Ch. 1 & 2) K.CC.3, K.CC.4a, K.CC.4b, K.CC.4c, K.CC.6</p> <p>Represent, Count, Write and Compare Numbers to 10 Ch. 3 K.CC.2, K.CC.3, K.CC.5, K.CC.6, K.CC.7, K.OA.4</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Can embed K.MD.3 & K.G.1-3 & K.G.4-6: use 2 and 3 dimensional shapes and sort to support K.CC.3-6</p> </div>	<p>Represent, Count, Write and Compare Numbers to 10 Ch. 4 K.CC.2, K.CC.3, K.CC.5, K.CC.6, K.CC.7, K.OA.4</p> <p>Addition (Ch. 5) K.OA.1, K.OA.2, K.OA.3, K.OA.4, K.OA.5</p> <p>Subtraction (Ch. 6 Lessons 1-4) K.OA.1, K.OA.5</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>Can embed K.MD.2 and compare objects to support subtraction: K.OA.5</p> </div>	<p>Subtraction (Ch. 6 Lessons 5-7) K.OA.1, K.OA.2, K.OA.5</p> <p>Represent, Count, and Write Numbers 11-19 (Ch. 7) K.CC.3, K.NBT.1</p> <p>Represent, Count, Write 20 and Beyond (Ch. 8) K.CC.1, K.CC.2, K.CC.3, K.CC.5, K.CC.6</p>	<p>Geometry and Positions – Identify and Describe Two-Dimensional Shapes (Ch. 9) K.G.1, K.G.2, K.G.3, K.G.4, K.G.5, K.G.6</p> <p>Geometry and Positions – Identify and Describe Three-Dimensional Shapes (Ch. 10) K.G.1, K.G.2, K.G.3, K.G.4, K.G.5, K.G.6</p> <p>Measuring, Classifying and Sorting (Ch. 11 & 12) K.MD.1, K.MD.2, K.MD.3</p> <div style="border: 1px solid black; padding: 5px; width: fit-content;"> <p>K.G.4-6 Supports: K.CC.3-6 K.MD.2 Supports K.OA.5 & K.MD.3 Supports K.CC.3-6</p> </div> <p>Getting Ready for 1st Grade</p>
Additional HMH Tools & Resources	Found in Quarter 1 Planner	Found in Quarter 2 Planner	Found in Quarter 3 Planner	Found in Quarter 4 Planner
Common Assignment – HMH Performance Task	HMH Performance Task Marco’s Animals Chapter 3 – Represent and Write Numbers 6 to 9 (K.CC.3 , K.CC.5 , K.CC.6)	HMH Performance Task Bees and Flowers Chapter 5 – Addition (K.OA.1 , K.OA.2 , K.OA.3)	HMH Performance Task How Many Marbles? Critical Area – Numbers and Operations (K.OA.1 , K.OA.2 , K.OA.3 , K.OA.4)	HMH Performance Task Comparing and Sorting Critical Area – Measurement and Data (K.MD.1 , K.MD.2 , K.MD.3 , K.OA.1 , K.OA.2)

Key:

■ Standards in Major Clusters

■ Standards in Supporting Clusters

■ Standards in Additional Clusters

* Denotes a recursive standard

Text Boxes provide suggestions for connections to build coherence across standards and further support the major clusters.