KINDERGARTEN MATH OVERVIEW

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

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

Number and Operations in Base Ten, NBT
- Work with numbers 11-19 to gain foundations for place value.

Measurement and Data, MD
- Describe and compare measurable attributes.
- Classify objects and count the number of objects in categories.

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

SANTA MONICA-MALIBU UNIFIED SCHOOL DISTRICT

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.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

YEAR AT A GLANCE

Trimester 1 (Aug - Oct/11 wks)	**Trimester 2** (Nov – Jan/11 wks)	**Trimester 3** (Feb - May /16wks)
Critical Concepts: • Counting Collections • Word Problems (Separate – Result Unknown, Join – Result Unknown, Partitive Division/Fair Share) • Name, recognize, count, and write numbers 0 to 20 • Compare numbers to 10 • Ordinal numbers to 10 Supporting Concepts: • Addition • Subtraction • Classify/Sort Objects • Position • 2D Shapes Materials: • MyMath Ch. 1-3 • Counting Collections • Word Problems • Mentor Texts/Read Alouds	Critical Concepts: • Counting Collections • Word Problems (Previous Problem Types PLUS Part-Part-Whole: Whole Unknown) • Count to 100 by ones and tens • Compose and Decompose to 10 • Addition • Subtraction Supporting Concepts: • Classify/Sort Objects • Position • 2D Shapes • Length/Height/Weight Materials: • MyMath Ch. 4-6 • Counting Collections • Word Problems • Mentor Texts/Read Alouds	Critical Concepts: • Word Problems (Previous Problem Types PLUS Multiplication & Measurement Division) • Compose and Decompose 11 to 19 • Measurement (Classify/Sort, Length/Height/Weight) • Geometry (Position, 2D and 3D Shapes) Supporting Concepts: • Counting Collections • Count to 100 • Addition • Subtraction Materials: • MyMath Ch. 7-12 • Counting Collections • Word Problems • Mentor Texts/Read Alouds

Structures to Support CA Content Standards/CGI/Problem Solving: Real World Math, Problem Analysis "Think Time", Partner Collaboration, Productive Struggle, Whole Group Student Share

CRITICAL AREAS

Kindergarten

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, 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, and 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.

(2) 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.

Mathematical Practice	Explanation and Examples
MP.1 Make sense of problems and persevere in solving them.	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.
MP.2 Reason Abstractly and quantitatively	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 an amount of objects counted, select the correct number card "17" to follow "16" on a vertical calendar with days arranged in tens, 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 student develop mathematical language.
MP.3 Construct viable arguments and critique the reasoning of others	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...?"
MP.4 Model with mathematics	In early grades students begin to represent problem situations in multiple ways (e.g., using numbers, words or mathematical language, objects, acting out, making a chart or list, drawing pictures, or creating equations). For example, a student may use cubes or tiles to show the different number 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 and concrete representations) while solving tasks and record an answer with a drawing or equation.

MP.5 Use appropriate tools strategically	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 or later, make math drawings of the quantities. Students decide which tools may be helpful to use depending on the problem or task and explain why they use specific mathematical tools.
MP.6 Attend to precision	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. Students should be encouraged to answer questions such as, “How do you know your answer is reasonable?”
MP.7 Look for and make use of structure	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. Teachers might ask, “What do you notice when...?” Students may use various strategies to attain fluency such as counting on, counting all, and taking away.
MP.8 Look for and express regularity in repeated reasoning	In the early grades, students notice repetitive actions in counting, computations, 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). Students should be encouraged to answer questions such as “What would happen if...? 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 (8 = 4 + 4), 5 of one color and 3 of another (8 = 5 + 3), etc. For each solution, students repeatedly engage in the process of finding two numbers to join together to equal 8.

	Describe the Intent of This Mathematical Practice	Describe One Teacher Action That Might Facilitate this Mathematical Practice	Describe Evidence of Students Engaged in This Mathematical Practice
Mathematical Practice 1 Make Sense of Problems and Persevere	The goal is of this practice is for students to become successful problem solvers of word problems and operations.	To facilitate this practice, you select appropriate problems and guide students in the problem-solving process (for example, engage students in discussions about problems, and ask questions that promote students' thinking about problems).	When students are demonstrating this practice, they are actively pursuing solutions to a variety of problems. They make decisions about strategies to use, showcase their thinking, and explain the outcomes of problem-solving experiences.
Mathematical Practice 2 Reason Abstractly and Quantitatively	The goal of this practice is for students to learn how to reason with and about mathematics.	To support students' development of reasoning, you should provide students space to think and reflect on mathematical content and support students in communicating and refining their thinking	When students are demonstrating this practice, they are sharing and justifying their mathematical conceptions and adjusting their thinking based on mathematical information gathered through discussions and responses to their questions.
Mathematical Practice 3 Construct Viable Arguments and Critique the Reasoning of Others	The goal of this practice is for students to make and test conjectures and to communicate their mathematical thinking.	You establish social norms in the classroom that support communicating mathematical ideas and questioning the thinking of others. Your level of specialized content knowledge is such that you are able to provide rich problems to elicit conjectures and arguments, to identify common misconceptions, and to guide discussions around important mathematical ideas.	Students are presenting their solutions along with the justifications for their choices. When there is disagreement regarding a solution the student making the claim explains her thinking. The student critiquing the claim makes sense of the argument and then provides clarification, including examples or counterexamples and another justification.
Mathematical Practice 4 Model With Mathematics	The goal of this practice is for students to model real-world situations with mathematics in order to solve problems in everyday life and reasonable ways.	You focus students' attention on mathematizing real-life situations, and then question students to remind them to be sure that the solutions to these problems are reasonable relative to the context in which they arose.	Students are active participants in using mathematics to make sense of daily life. They use symbols and tools to help them make sense of and solve naturally arising problems in reasonable ways.

	Describe the Intent of This Mathematical Practice	Describe One Teacher Action That Might Facilitate this Mathematical Practice	Describe Evidence of Students Engaged in This Mathematical Practice
Mathematical Practice 5 Use Appropriate Tools Strategically	The goal of this practice is for students to make proper decisions about which tools (if any) they will use to learn the mathematics.	You can facilitate this practice by making appropriate tools accessible to students and guiding students in their selection and use of these tools.	Students engaged in this practice are actively using manipulatives and other practical learning tools when needed to develop their mathematics understanding.
Mathematical Practice 6 Attend to Precision	The goal of this practice is for students to attend to precision in all aspects of communications related to mathematics.	When you model the appropriate use of vocabulary, symbols, and explanations for current grade-level content, you prepare students for the mathematics to come in future grades. It is important to provide opportunities for students to share their mathematical ideas and for you to attend to what they share for accuracy.	Evidence of this practice must be grounded in communication, whether written or oral. Students engaged in this practice are using careful, accurate definitions; they are including units with quantities as necessary; and they are performing computations carefully and appropriately and accurately describing the procedures they used. Sharing of ideas for this aspect of student learning should be an ongoing part of the work in your collaborative team.
Mathematical Practice 7 Look For and Make Use of Structure	The goal of this practice is for students to recognize structure and to use mathematical structure to learn mathematics with understanding.	Your actions that facilitate this practice showcase various patterns for students to explore and provide students the opportunity to describe the structure they see.	Students engaged in this practice demonstrate awareness of structure in mathematics by identifying instances of structure, discussing structure, and using structure in advantageous ways to solve problems and learn other mathematics. (For example seeing 8+9 as a doubles plus 1 fact)
Mathematical Practice 8 Look For and Express Regularity in Repeated Reasoning	The goal of this practice is for students to look for repetition in the calculations they complete with the goal of determining general methods and related shortcuts.	You should be careful to avoid oversimplifying instructions or making sense of shortcuts in calculations for students. Instead, you want to provide examples for students to complete, highlighting regularity for students to identify, by questioning students regarding the processes they use. Additionally, you will create an environment that supports students in making and sharing conjectures about general methods they notice.	Evidence that students are demonstrating this practice takes the form of classroom discussions or written descriptions in which students describe the conjectures they make regarding what they notice about repeated calculations, as well as define their general methods.