GRADE TWO MATH OVERVIEW

Operations and Algebraic Thinking, OA

- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

Number and Operations in Base Ten, NBT

- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data, MD

- Measure and estimate lengths in standard units.
- Relate addition and subtraction to length.
- Work with time and money.
- Represent and interpret data.

Geometry, G

- Reason with shapes and their attributes.

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 ~ 12 wks)	**Trimester 2** (Nov-Feb ~ 12 wks)	**Trimester 3** (Feb-May ~ 9wks)
• Understand Place Value within 1,000 • Skip count by 5s, 10s, & 100's • Read and write numbers in multiple forms to 1,000 • Compare two three-digit numbers using >, =, & < • Add and subtract within 20 using multiple strategies • Understand odd/even concepts • Solve Addition and Subtraction word problems with numbers within 100 with unknowns in all positions (using drawings and equations) • Fluently add and subtract within 100 using properties of operations and number relationships • Add up to 4 two digit numbers using multiple strategies • Draw picture/bar graphs with up to 4 categories; solve add, subtract and compare problems using information from the graph • Explain why addition and subtraction strategies work using place value and properties of operations • **My Math Ch. 1, 2, 3, 4, 5, 9**	• Add up to 4 two digit numbers using multiple strategies • Add and subtract within 1,000 using multiple strategies • Mentally find ten more/ten less and 100 more/100 less of a three digit number • Explain why addition and subtraction strategies work using place value and properties of operations • Intro to grouping concepts and problems (multiplication/division) • Understand arrays; find the total number of objects using repeated addition and write matching equations (up to 5 rows of 5) • Recognize and draw 2D and 3D shapes with particular attributes • Intro to Fair Sharing Concepts • Partition a rectangle into equal shares and find total number of squares • Partition circles and squares into 2, 3 or 4 equal parts & describe parts and the whole using halves, thirds and fourths. • Recognize that equal shares of identical wholes need not have the same shape • **My Math Ch. 3, 6, 7, 12**	• Represent whole numbers as lengths on a number line; use the number line to solve addition and subtraction problems within 100 • Solve addition and subtraction word problems within 100 involving lengths • Create a line plot based on measurement data • Measure length using appropriate tools • Measure an object with different units and compare • Compare lengths of two different objects using standard units • Estimate lengths (in, ft, cm, m) • Solve problems using money (coins, bills, $, ¢) • Tell and write time to 5 minutes using digital and analog clocks and AM/PM • Add and subtract within 1,000 using multiple strategies • Explain why addition and subtraction strategies work using place value and properties of operations • Review and extend critical areas • **My Math Ch. 8, 10, 11**

SMMUSD
SANTA MONICA-MALIBU UNIFIED SCHOOL DISTRICT

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

Grade 2

In grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

(1) Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

(2) Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.

(3) Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.

(4) Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Mathematical Practice	Explanation and Examples
MP.1 Make sense of problems and persevere in solving them.	In second grade, students realize 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. They 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?" They make conjectures about the solution and plan out a problem-solving approach. An example for this might be giving a student an equation and having him/her writes a story to match.
MP.2 Reason Abstractly and quantitatively	Younger students recognize that a number represents a specific quantity. They connect the quantity to written symbols. Quantitative reasoning entails creating a representation of a problem while attending to the meanings of the quantities. Second graders begin to know and use different properties of operations and relate addition and subtraction to length. In second grade students represent situations by decontextualizing tasks into numbers and symbols. For example, in the task, "There are 25 children in the cafeteria, and they are joined by 17 more children. How many students are in the cafeteria? " Students translate the situation into an equation, such as: 25 + 17 = __ and then solve the problem. Students also contextualize situations during the problem solving process. For example, while solving the task above, students might refer to the context of the task to determine that they need to subtract 19 if 19 children leave.
MP.3 Construct viable arguments and critique the reasoning of others	Second graders may construct arguments using concrete referents, such as objects, pictures, drawings, and actions. They practice their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?", "Explain your thinking," and "Why is that true?" They not only explain their own thinking, but listen to others' explanations. They decide if the explanations make sense and ask appropriate questions. Students critique the strategies and reasoning of their classmates. For example, to solve 74 - 18, students may use a variety of strategies, and after working on the task, they might discuss and critique each others' reasoning and strategies, citing similarities and differences between various problem-solving approaches
MP.4 Model with mathematics	In early grades, students experiment with representing problem situations in multiple ways including writing numbers, using words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, creating equations. Students need opportunities to connect the different representations and explain the connections. They should be able to use any of these representations as needed. In grade two students model real-life mathematical situations with a number sentence or an equation and check to make sure that their equation accurately matches the problem context. They use concrete manipulatives and pictorial representations to explain the equation. They create an appropriate problem situation from an equation. For example, students create a story problem for the equation 43 + 17 = ___ such as "There were 43 gumballs in the machine. Tom poured in 17 more gumballs. How many gumballs are now in the machine?"

MP.5 Use appropriate tools strategicall y	In second grade, students consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be better suited than others. For instance, second graders may decide to solve a problem by drawing a picture rather than writing an equation. Students may use tools such as snap cubes, place value (base ten) blocks, hundreds number boards, number lines, rulers, virtual manipulatives, and concrete geometric shapes (e.g., pattern blocks, three-dimensional solids). Students understand which tools are the most appropriate to use. For example, while measuring the length of the hallway, students can explain why a yardstick is more appropriate to use than a ruler.
MP.6 Attend to precision	As children begin to develop their mathematical communication skills, they try to use clear and precise language in their discussions with others and when they explain their own reasoning Second grade students communicate clearly, using grade-level appropriate vocabulary accurately and precise explanations and reasoning to explain their process and solutions. For example, while measuring an object, students carefully line up the tool correctly to get an accurate measurement. During tasks involving number sense, students consider if their answer is reasonable and check their work to ensure the accuracy of solutions.
MP.7 Look for and make use of structure	Second graders look for patterns. For instance, they adopt mental math strategies based on patterns (making ten, fact families, doubles). Second grade students look for patterns and structures in the number system. For example, students notice number patterns within the tens place as they connect skip counting by 10s to corresponding numbers on a 100s chart. Students see structure in the base-ten number system as they understand that 10 ones equal a ten, and 10 tens equal a hundred. Students adopt mental math strategies based on patterns (making ten, fact families, doubles). They use structure to understand subtraction as a missing addend problems (e.g., 50 - 33 = __ can be written as 33 + __ = 50 and can be thought of as “How much more do I need to add to 33 to get to 50?”)
MP.8 Look for and express regularity in repeated reasoning	Second grade students notice repetitive actions in counting and computation (e.g., number patterns to skip count) When children have multiple opportunities to add and subtract, they look for shortcuts, such as using estimation strategies and then adjust the answer to compensate. Students continually check for the reasonableness of their solutions during and after completing a task by asking themselves, “Does this make sense?”

	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.