GRADE FIVE MATH OVERVIEW

Operations and Algebraic Thinking, OA
- Write and interpret numerical expressions.
- Analyze patterns and relationships.

Number and Operations in Base Ten, NBT
- Understand the place value system.
- Perform operations with multi-digit whole numbers and with decimals to hundredths.

Number and Operations—Fractions, NF
- Use equivalent fractions as a strategy to add and subtract fractions.
- Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Measurement and Data, MD
- Convert like measurement units within a given measurement system.
- Represent and interpret data.
- Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Geometry, G
- Graph points on the coordinate plane to solve real-world and mathematical problems.
- Classify two-dimensional figures into categories based on their properties.

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

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

Trimester 1 (Aug-Oct)	Trimester 2 (Nov-Dec-Jan)	Trimester 3 (Feb -May)
YouCubed Week of Inspirational Math ● Understand whole number place value ● Properties of Operations ● Multi-digit add and subtract ● Multiplication using a variety of strategies. ● Multi-digit whole numbers multiplication using algorithm ● Whole number quotient one-digit ● Properties of Operations ● Understand decimal place value. ● Understand to the relationship between the adjacent places in decimal #s ● Decimal addition and subtraction with varied strategies.	● Coordinate plane plotting (quadrant I) ● Generate two numerical patterns using two given rules ● Review 4th gr. fraction concepts ● Addition and subtraction of fractions and decimals applications ● Measurement applications with fractions ● Use equivalent fractions as a strategy to add & subtract fractions (explore other strategies as well) ● Interpreting a fraction as a division. Study relationships. $\frac{4}{5} = 4 \div 5$ $\frac{8}{10} = .80$ (5 kids share 4 items) *compared to*	● Conversions applications with fractions ● Equal share problems ● Convert like measurements within the metric system ● Understand concepts of volume. Make line plots to display data with measurements in fractions of a unit. ● Understand concepts of volume ● Classify two-dimensional figures into categories based on their properties

• Read, write, & compare decimals Whole # quotients (up to four-digit dividends and 2-digit divisors) using strategies (equations, arrays, and/or area models) Understand relationship between multiplication and division • Write & interpret expressions • Analyze patterns & relationships My Math Chpts. 1, 2, 3, 4, 5, 7	$\frac{5}{4} = 5 \div 4$ $\frac{125}{100} = 1.25$ (4 kids share 5 items) • Equal share Problems • * Perform operations with decimals (make connection between decimal & fractions) • Interpreting fraction multiplication as scaling • Multiply fractions • Dividing unit fractions by whole numbers and whole numbers by unit fractions using story contexts • Find the area of a rectangle with fractional sides (chapter 6 taught in unit 5) My Math Chpts. 7, 8, 9, 10, 6	My Math Chpts. 11 and 12 (lessons 8, 9, 10, 11) SMMUSD SANTA MONICA MALIBU UNIFIED SCHOOL DISTRICT

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Grade 5

In grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions, and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to two-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths, and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

(1) Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.)

(2) Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

(3) Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real-world and mathematical problems.

Mathematical Practice	Explanation and Examples
	MPs aligned to EL/ELD and NGSS: MP 1, 3, 6
MP.1 Make sense of problems and persevere in solving them.	In grade five, students solve problems by applying their understanding of operations with whole numbers, decimals, and fractions including mixed numbers. They solve problems related to volume and measurement conversions. Students seek the meaning of a problem and look for efficient ways to represent and solve it. For example, Sonia had 2 1/3 candy bars. She promised her brother that she would give him ½ of a candy bar. How much will she have left after she gives her brother the amount she promised? Students may check their thinking by asking themselves, "What is the most efficient way to solve the problem?", "Does this make sense?", and "Can I solve the problem in a different way?"

MP.2 Reason Abstractly and quantitatively	Fifth graders recognize that a number represents a specific quantity. They connect quantities to written symbols and create logical representations of problems, consider appropriate units and the meaning of quantities. They extend this understanding from whole numbers to their work with fractions and decimals. Students write simple expressions that record calculations with numbers and represent or round numbers using place value concepts. For example, students use abstract and quantitative thinking to recognize that $0.5 \times (300 \div 15)$ is ½ of $(300 \div 15)$ without calculating the quotient.
MP.3 Construct viable arguments and critique the reasoning of others	In fifth grade students may construct arguments using concrete referents, such as objects, pictures, and drawings. They explain calculations based upon models, properties of operations and rules that generate patterns. They demonstrate and explain the relationship between volume and multiplication. They refine 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. Students use various strategies to solve problems and they defend and justify their work with others. For example, two afterschool clubs are having pizza parties. The teacher will order 3 pizzas for every 5 students in the math club; and 5 pizzas for every 8 students in the student council. If a student is in both groups, decide which party he/she should to attend. How much pizza will each student get at each party? If a student wants to have the most pizza, which party should he/she attend?
MP.4 Model with mathematics	In grade five, students experiment with representing problem situations in multiple ways such as using numbers, mathematical language, drawings, pictures, objects, charts, lists, graphs and equations. Students need opportunities to represent problems in various ways and explain the connections. Fifth graders evaluate their results in the context of the situation and they explain whether results to problems make sense. They evaluate the utility of models and can determine which models can be the most useful and efficient to solve problems.

MP.5 Use appropriate tools strategically	Fifth graders consider available tools, including estimation, and decide which tools might help them solve mathematical problems. For instance, students may use unit cubes to fill a rectangular prism and then use a ruler to measure the dimensions. They use graph paper to accurately create graphs and solve problems or make predictions from real world data.
MP.6 Attend to precision	In grade five students continue to refine their mathematical communication skills by using clear and precise language in their discussions with others and in their own reasoning. Students use appropriate terminology when they refer to expressions, fractions, geometric figures, and coordinate grids. They are careful to specify units of measure and state the meaning of the symbols they choose. For instance, to determine the volume of a rectangular prism, students record their answers in cubic units.
MP.7 Look for and make use of structure	In fifth grade, students look closely to discover a pattern or structure. For instance, students use properties of operations as strategies to add, subtract, multiply and divide with whole numbers, fractions, and decimals. They examine numerical patterns and relate them to a rule or a graphical representation.

| MP.8 Look for and express regularity in repeated reasoning | Fifth graders use repeated reasoning to understand algorithms and make generalizations about patterns. Students connect place value and their prior work with operations to understand and use algorithms to fluently multiply multi-digit whole numbers. They use various strategies to perform all operations with decimals to hundredths and they explore operations with fractions with visual models and begin to formulate generalizations. |