**3rd Grade Unit 5 Mathematics**

Dear Parents,

The Common Core State Standards (CCSS), also known in Georgia as the Common Core Georgia Performance Standards (CCGPS), present a balanced approach to mathematics that stresses understanding, fluency, and real world application equally. Know that your child is not learning math the way many of us did in school, so hopefully being more informed about this curriculum will assist you when you help your child at home.

Below you will find the standards from Unit Five in bold print and underlined. Following each standard is an explanation with student examples. Please contact your child’s teacher if you have any questions.

**OA.8 Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.**

This standard refers to two-step word problems using the four operations. The size of the numbers should be limited. Adding and subtracting numbers should include numbers within 1,000. Multiplying and dividing numbers should include single-digit factors and products less than 100. Students should represent problems using equations with a letter to represent unknown quantities.

Example:

Mike runs 2 miles a day. His goal is to run 25 miles. After 5 days, how many miles does Mike have left to run in order to meet his goal? Write an equation and find the solution (2 × 5 + *m* = 25).

This standard also refers to estimation strategies, including using compatible numbers (numbers that sum to 10, 50, or 100) or rounding. The focus in this standard is to have students use and discuss various strategies. Students should estimate during problem solving, and then revisit their estimate to check for reasonableness.

Example:

On a vacation, your family travels 267 miles on the first day, 194 miles on the second day, and 34 miles on the third day. About how many total miles did they travel? Here are some typical estimation strategies for the problem:

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| **Student 1**I first thought about 267 and 34. I noticed that their sum is about 300. Then I knew that 194 is close to 200. When I put 300 and 200 together, I get 500. |  | **Student 2**I first thought about 194. It is really close to 200. I also have 2 hundreds in 267. That gives me a total of 4 hundreds. Then I have 67 in 267 and the 34. When I put 67 and 34 together that is really close to 100. When I add that hundred to the 4 hundreds that I already had, I end up with 500. |  | **Student 3**I rounded 267 to 300. I rounded 194 to 200. I rounded 34 to 30. When I added 300, 200, and 30, I know my answer will be about 530. |

**OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.***

This standard calls for students to examine arithmetic patterns involving both addition and multiplication. Arithmetic patterns are patterns that change by the same rate, such as adding the same number. For example, the series 2, 4, 6, 8, 10 is an arithmetic pattern that increases by 2 between each term. This standard also mentions identifying patterns related to the properties of operations.

Examples:

* Even numbers are always divisible by 2. Even numbers can always be decomposed into 2 equal addends (14 = 7 + 7).
* Multiples of even numbers (2, 4, 6, and 8) are always even numbers.
* On a multiplication chart, the products in each row and column increase by the same amount (skip counting).
* On an addition chart, the sums in each row and column increase by the same amount.

Teacher: What do you notice about the numbers highlighted in pink in the multiplication table? Explain a pattern using properties of operations.

Student: When you change the order of the factors (commutative property), you still get the same product; for example 6 x 5 = 30 and 5 x 6 = 30.



Teacher: What pattern do you notice when 2, 4, 6, 8, or 10 are multiplied by any number (even or odd)?

Student: The product will always be an even number.

Teacher: Why?

What patterns do you notice in this addition table? Explain why the pattern works this way.



Examples:

* Any sum of two even numbers is even.
* Any sum of two odd numbers is even.
* Any sum of an even number and an odd number is odd.
* The doubles (2 addends the same) in an addition table fall on a diagonal.

Students need ample opportunities to observe and identify important numerical patterns related to operations. They should build on their previous experiences with properties related to addition and subtraction. Students investigate addition and multiplication tables in search of patterns and explain why these patterns make sense mathematically.

Students also investigate a hundreds chart in search of addition and subtraction patterns. They record and organize all the different possible sums of a number and explain why the pattern makes sense.

**MD.5 Recognize area as an attribute of plane figures and understand concepts of area measurement.**

**a. A square with side length 1 unit, called “a unit square,” is said to have “one square unit” of area, and can be used to measure area.**

**b. A plane figure which can be covered without gaps or overlaps by *n* unit squares is**

 **said to have an area of *n* square units.**

These standards call for students to explore the concept of covering a region with “unit squares,” which could include square tiles or shading on grid or graph paper.

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|  |  |  |  |  | **4** |
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|  |  |  |  |  |
|  |  |  |  |  |
| **5** | One square unit |

**MD.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).**

Students should be counting the square units to find the area that could be shown in metric, customary, or non-standard square units. Using different sized graph paper, students can explore the areas measured in square centimeters and square inches.

**MD.7 Relate area to the operations of multiplication and addition.**

**a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.**

Students should tile rectangles then multiply their side lengths to show it is the same as counting all the tiles.

Example: To find the area of this rectangle, students can first count the squares (12), then multiply the side lengths (3 x 4) to find the area.

**b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.**

Students should solve real world and mathematical problems that involve area of rectangles.

Example:

Drew wants to tile the bathroom floor using 1 foot tiles. How many square foot tiles will he need? What is the area of his bathroom?

9 feet

6 feet

**c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths *a* and *b* + *c* is the sum of *a* × *b* and *a* × *c*. Use area models to represent the distributive property in mathematical reasoning.**

This standard extends students’ work with the distributive property. For example, in the picture below the area of an 8 × 7 figure can be determined by finding the area of a 8 × 5 and 8 × 2 and adding the two sums.

**d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.**

This standard uses the word rectilinear. A rectilinear figure is a polygon that has all right angles. Students can decompose a rectilinear figure into different rectangles. They find the area of the figure by adding the areas of each of the rectangles together.

Example:

Josh’s playroom needs to be tiled. The diagram shows what the playroom looks like. What is the total area of Josh’s playroom? Show how you know by breaking the figure into rectangles.

**4 yards**

**3 yards**

**6 yards**

**3 yards**

**7 yards**