1st Grade Unit 6 Mathematics

Dear Parents,

The Mathematics Georgia Standards of Excellence (MGSE), 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 Six 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.

Fayette County NBT.8 Use concrete representations (e.g., hundreds chart, 99 chart) to explore number patterns and relationships.

This standard asks students to explore patterns on the hundreds chart (or 99 chart). They should look for patterns that involve tens and ones, before/after/between, etc.

OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

This standard builds on the ideas students learned in Kindergarten by having students use a variety of mathematical representations (e.g., objects, drawings, and equations) to show their thinking. The unknown symbols could include boxes or pictures but not letters.

There are three types of addition problems:

- Result Unknown
- Change Unknown
- Start Unknown

Examples:

Result Unknown	**Change Unknown**	**Start Unknown**
There are 9 students on the playground. Then 8 more students showed up. How many students are there now? 9 + 8 = ____	There are 9 students on the playground. Some more students show up. There are now 17 students. How many students came? 9 + ____ = 17	There are some students on the playground. Then 8 more students came. There are now 17 students. How many students were on the playground at the beginning? ____ + 8 = 17

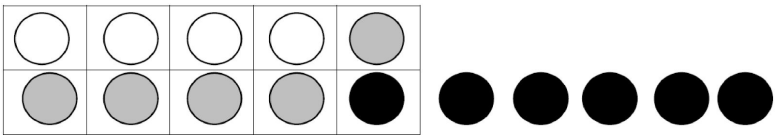
OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

This standard asks students to add (join) three numbers whose sum is less than or equal to 20, using a variety of mathematical representations. This objective does address multi-step word problems.

Example:

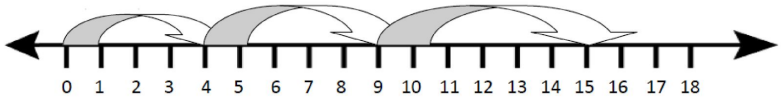
There are cookies on the plate. There are 4 oatmeal raisin cookies, 5 chocolate chip cookies, and 6 gingerbread cookies. How many cookies are there in all?

Student 1: *Adding with a Ten Frame and Counters*
I put 4 counters on the ten-frame for the oatmeal raisin cookies. Then I put 5 different color counters on the ten-frame for the chocolate chip cookies. Then I put another 6 color counters out for the gingerbread cookies. Only one of the counters for the gingerbread cookies fit on the ten-frame, so I had 5 left over. One ten and five left over makes 15 cookies.



Student 2: *Look for Ways to Make 10*
I know that 4 and 6 equal 10, so the oatmeal raisin and gingerbread equals 10 cookies. Then I add the 5 chocolate chip cookies and get 15 total cookies.

Student 3: *Number Line*
I counted on the number line. First I counted 4, and then I counted 5 more and landed on 9. Then I counted 6 more and landed on 15. So there were 15 total cookies.



OA.3 Apply properties of operations as strategies to add and subtract. Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)

This standard calls for students to apply properties of operations as strategies to add and subtract. Students do not need to use formal terms for these properties. Students should use mathematical tools (cubes and counters) and representations (number line and a 100 chart) to model these ideas.

Example:
Students can build a tower of 8 green cubes and 3 yellow cubes, and then build another tower of 3 yellow cubes and 8 green cubes to show that order does not change the result when adding. Students can also use cubes of 3 different colors to "prove" that (2 + 6) + 4 is equivalent to 2 + (6 + 4) and then to prove 2 + 6 + 4 = 2 + 10.

Commutative Property of Addition
Order does not matter when you add numbers. For example, if 8 + 2 = 10 is known, then 2 + 8 = 10 is also known.

Associative Property of Addition
When adding a string of numbers you can add any two numbers first. For example, when adding 2 + 6 + 4, the second two numbers can be added to make a ten first, so
2 + 6 + 4 = 2 + 10 = 12

OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).

This standard mentions the word fluency when students are adding and subtracting numbers within 10. Fluency means accuracy (correct answer), efficiency (within 3-4 seconds), and flexibility (using strategies such as making 5 or making 10). The standard also calls for students to use a variety of strategies when adding and subtracting numbers within 20.
It is important to move beyond the strategy of counting on, as that strategy can become troublesome when working with larger numbers.

Example: 8 + 7 = ___

Student 1: *Making 10 and Decomposing a Number*	Student 2: *Creating an Easier Problem with Known Sums*
I know that 8 plus 2 is 10, so I decomposed (broke) the 7 up into a 2 and a 5. First I added 8 and 2 to get 10, and then added the 5 to get 15. 8 + 7 = (8 + 2) + 5 = 10 + 5 = 15	I know 8 is 7 + 1. I also know that 7 and 7 equal 14 and then I added 1 more to get 15. 8 + 7 = (7 + 7) + 1 = 15

Example: 14 – 6 = ___

Student 1: *Decomposing the Number You Subtract*	Student 2: *Relationship between Addition and Subtraction*
I know that 14 minus 4 is 10, so I broke the 6 up into a 4 and a 2. 14 minus 4 is 10. Then I take away 2 more to get 8. 14 – 6 = (14 – 4) – 2 = 10 – 2 = 8	6 + • is 14. I know that 6 plus 8 is 14, so that means that 14 minus 6 is 8. 6 + 8 = 14, so 14 – 6 = 8

OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.

This standard calls for students to work with the concept of equality by identifying whether equations are true or false. Therefore, students need to understand that the equal sign does not mean the answer comes next, but rather that the equal sign signifies a relationship between the left and right side of the equation.
The number sentence 4 + 5 = 9 can be read as, four plus five is the same amount as nine. In addition, students should be exposed to various representations of equations, such as: an operation on the left side of the equal sign and a number (sum or difference) on the right side
(5 + 8 = 13), an operation on the right side of the equal sign and a number (sum or difference) on the left side (13 = 5 + 8), numbers on both sides of the equal sign (6 = 6), and operations on both sides of the equal sign (5 + 2 = 4 + 3). Students need many opportunities to model equations using cubes, counters, drawings, etc.