Clarification of Standards for Parents
Grade 1 Mathematics Unit 5

Dear Parents,
We want to make sure that you have an understanding of the mathematics your child will be learning this year. Below you will find the standards we will be learning in Unit Five. Each standard is in bold print and underlined and below it is an explanation with student examples. Your child is not learning math the way we did when we were in school, so hopefully this will assist you when you help your child at home. Please let your teacher know if you have any questions. ☺

MGSE1.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 work in Kindergarten by having students use a variety of mathematical representations (e.g., objects, drawings, and equations) during their work. The unknown symbols should include boxes or pictures, and not letters.

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Teachers should be cognizant of the three types of problems. There are three types of addition and subtraction problems: Result Unknown, Change Unknown, and Start Unknown.

Use informal language (and, minus/subtract, the same as) to describe joining situations (putting together) and separating situations (breaking apart).

Use the addition symbol (+) to represent joining situations, the subtraction symbol (-) to represent separating situations, and the equal sign (=) to represent a relationship regarding quantity between one side of the equation and the other.

A helpful strategy is for students to recognize sets of objects in common patterned arrangements (0-6) to tell how many without counting (subitizing).

Addition Examples:

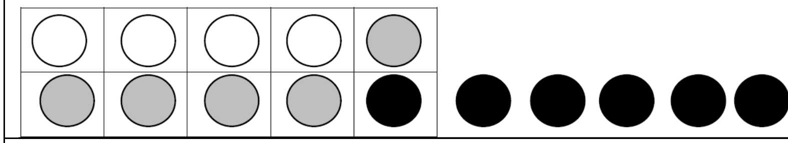
Result Unknown There are 9 students on the playground. Then 8 more students showed up. How many students are there now? *(9 + 8 = ____)*	Change Unknown There are 9 students on the playground. Some more students show up. There are now 17 students. How many students came? *(9 + ____ = 17)*	Start Unknown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

MGSE1.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.

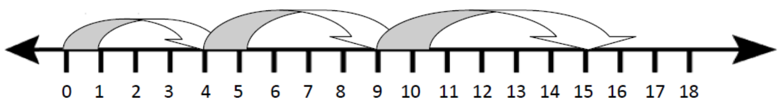
Example:
There are cookies on the plate. There are 4 oatmeal raisin cookies, 5 chocolate chip cookies, and 6 gingerbread cookies. How many cookies are there total?

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 gingerbread cookies fit, so I had 5 leftover. One ten and five leftover makes 15 cookies.



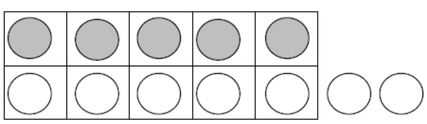
Student 2: *Look for Ways to Make 10*
I know that 4 and 6 equal 10, so the oatmeal raisin and gingerbread equals 10 cookies. Then I add the 5 chocolate chip cookies and get 15 total cookies.

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.

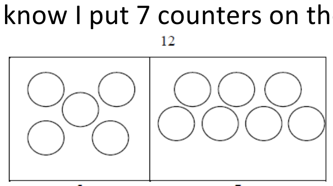


<u>MGSE1.OA.4 Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8. Add and subtract within 20.*</u>
This standard asks for students to use subtraction in the context of unknown addend problems. Example: 12 – 5 = __ could be expressed as 5 + __ = 12. Students should use cubes and counters, and representations such as the number line and the 100 chart, to model and solve problems involving the inverse relationship between addition and subtraction.

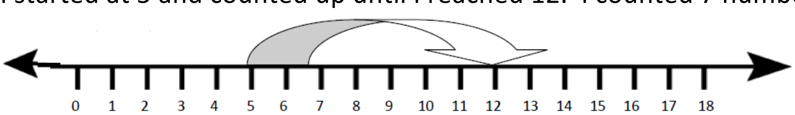
Student 1
I used a ten-frame. I started with 5 counters. I knew that I had to have 12, which is one full ten frame and two leftovers. I needed 7 counters, so 12 – 5 = 7.



Student 2
I used a part-part-whole diagram. I put 5 counters on one side. I wrote 12 above the diagram. I put counters into the other side until there were 12 in all. I know I put 7 counters on the other side, so 12 – 5 = 7.



Student 3: *Draw a Number Line*
I started at 5 and counted up until I reached 12. I counted 7 numbers, so I know that 12 – 5 = 7.



<u>MGSE1.OA.6 Add and subtract within 20.</u>

<u>a. 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).</u>

<u>b. Fluently add and subtract within 10</u>.

It is importance to move beyond the strategy of counting on, which is considered a less important skill than the ones here in 1.OA.6. Many times teachers think that counting on is all a child needs, when it is really not much better skill than counting all and can become troublesome when working with larger numbers.

Example: 8 + 7 = ___

Student 1: *Making 10 and Decomposing a Number* 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	Student 2: *Creating an Easier Problem with Known Sums* 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* 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	Student 2: *Relationship between Addition and Subtraction* 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

Algebraic ideas underlie what students are doing when they create equivalent expressions in order to solve a problem or when they use addition combinations they know to solve more difficult problems. Students begin to consider the relationship between the parts. For example, students notice that the whole remains the same, as one part increases the other part decreases. 5 + 2 = 4 + 3

MGSE1.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.

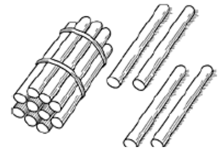
This standard calls for students to work with the concept of equality by identifying whether equations are true or false. Therefore, students need to understand that the equal sign does not mean —answer comes next, but rather that the equal sign signifies a relationship between the left and right side 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 the answer on the right side (5 + 8 = 13) an operation on the right side of the equal sign and the answer on the left side (13 = 5 + 8) numbers on both sides of the equal sign (6 = 6) operations on both sides of the equal sign (5 + 2 = 4 + 3). Students need many opportunities to model equations using cubes, counters, drawings, etc.

MGSE1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

a. 10 can be thought of as a bundle of ten ones – called a "ten."

This standard asks students to unitize a group of ten ones as a whole unit: a ten. This is the foundation of the place value system. So, rather than seeing a group of ten cubes as ten individual cubes, the student is now asked to see those ten cubes as a bundle – one bundle of ten.



b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.

This standard asks students to extend their work from Kindergarten when they composed and decomposed numbers from 11 to 19 into ten ones and some further ones. In Kindergarten, everything was thought of as individual units:

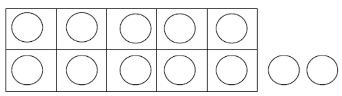
—ones. In First Grade, students are asked to unitize those ten individual ones as a whole unit: —*one* ten‖. Students in first grade explore the idea that the teen numbers (11 to 19) can be expressed as *one* ten and some leftover ones. Ample experiences with ten frames will help develop this concept.

Example:

For the number 12, do you have enough to make a ten? Would you have any leftover? If so, how many leftovers would you have?

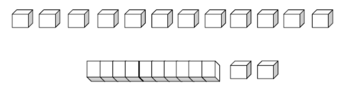
Student 1:

I filled a ten-frame to make one ten and had two counters left over. I had enough to make a ten with some left over. The number 12 has 1 ten and 2 ones.



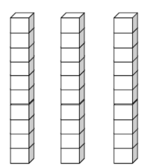
Student 2:

I counted out 12 place value cubes. I had enough to trade 10 cubes for a ten-rod (stick). I now have 1 ten-rod and 2 cubes left over. So the number 12 has 1 ten and 2 ones.



<u>c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).</u>

This standard builds on the work of MGSE1.NBT.2b. Students should explore the idea that decade numbers (e.g., 10, 20, 30, 40) are groups of tens with no left over ones. Students can represent this with cubes or place value (base 10) rods. (Most first grade students view the ten stick (numeration rod) as ONE. It is recommended to make a ten with unfix cubes or other materials that students can group. Provide students with opportunities to count books, cubes, pennies, etc. Counting 30 or more objects supports grouping to keep track of the number of objects.)



<u>MGSE1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.</u>

This standard builds on the work of MGSE1.NBT.1 and MGSE1.NBT.2 by having students compare two numbers by examining the amount of tens and ones in each number. Students are introduced to the symbols greater than (>), less than (<) and equal to (=). Students should have ample experiences communicating their comparisons using words, models and in context before using only symbols in this standard.

Example: 42 ___ 45

Student 1:

42 has 4 tens and 2 ones. 45 has 4 tens and 5 ones. They have the same number of tens, but 45 has more ones than 42. So 45 is greater than 42. So, 42 < 45.

Student 2:

42 is less than 45. I know this because when I count up I say 42 before I say 45. So, 42 < 45.

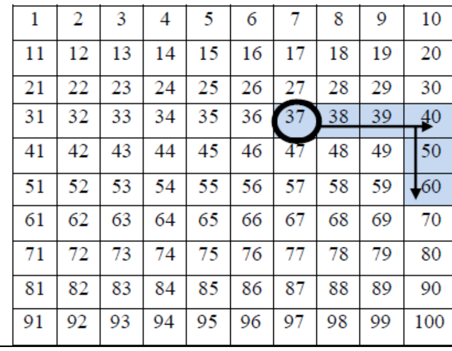
<u>MGSE1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.</u>

This standard calls for students to use concrete models, drawings and place value strategies to add and subtract within 100. Students should not be exposed to the standard algorithm of carrying or borrowing in first grade.

Example:
There are 37 children on the playground. When a class of 23 students come to the playground, how many students are on the playground altogether?

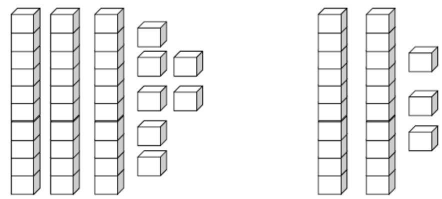
Student 1

I used a hundreds chart. I started at 37 and moved over 3 to land on 40. Then to add 20 I moved down 2 rows and landed on 60. So there are 60 people on the playground.



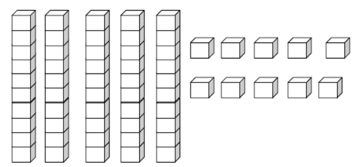
Student 2

I used place value blocks and made a pile of 37 and a pile of 23. I joined the tens and got 50. I then joined the ones and got 10. I then combined those piles and got 60. So there are 60 people on the playground. Relate models to symbolic notation.



Student 3

I broke 37 and 23 into tens and ones. I added the tens and got 50. I added the ones and got 10. I know that 50 and 10 more is 60. So, there are 60 people on the playground. Relate models to symbolic notation.

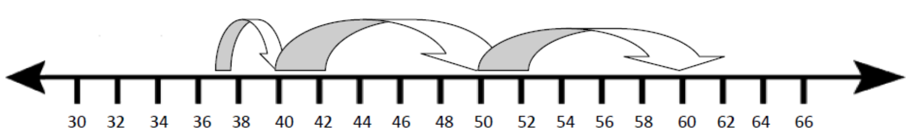


Student 4

Using mental math, I started at 37 and counted on 3 to get 40. Then I added 20 which is 2 tens, to land on 60. So, there are 60 people on the playground.

Student 5

I used the number line. I started at 37. Then I broke up 23 into 20 and 3 in my head. Next, I added 3 ones to get to 40. I then jumped 10 to get to 50 and 10 more to get to 60. So there are 60 people on the playground.



<u>MGSE1.NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.</u>

This standard builds on students' work with tens and ones by mentally adding ten more and ten less than any number less than 100. Ample experiences with ten frames and the hundreds chart help students use the patterns found in the tens place to solve such problems.

Example:

There are 74 birds in the park. 10 birds fly away. How many are left?

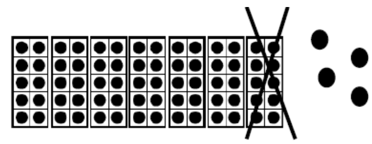
Student 1

I used a 100s board. I started at 74. Then, because 10 birds flew away, I moved back one row. I landed on 64. So, there are 64 birds left in the park.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Student 2

I pictured 7 ten-frames and 4 left over in my head. Since 10 birds flew away, I took one of the ten-frames away. That left 6 ten-frames and 4 left over. So, there are 64 birds left in the park.



MGSE1.NBT.6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

This standard calls for students to use concrete models, drawings and place value strategies to subtract multiples of 10 from decade numbers (e.g., 30, 40, 50).

Example:

There are 60 students in the gym. 30 students leave. How many students are still in the gym?

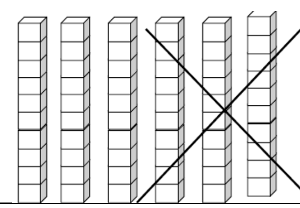
Student 1

I used a 100s chart and started at 60. I moved up 3 rows to land on 30. There are 30 students left.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Student 2

I used place value blocks or unifix cubes to build towers of 10. I started with 6 towers of 10 and removed 3 towers. I had 3 towers left. 3 towers have a value of 30. So there are 30 students left.

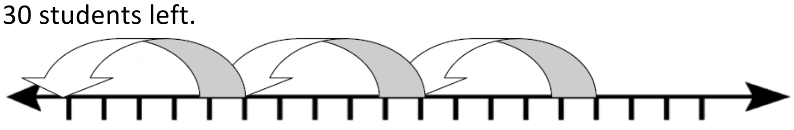


Student 3

Using mental math, I solved this subtraction problem. I know that 30 plus 30 is 60, so 60 minus 30 equals 30. There are 30 students left..

Student 4

I used a number line. I started with 60 and moved back 3 jumps of 10 and landed on 30. There are 30 students left.



MGSE1.NBT.7 Identify dimes, and understand ten pennies can be thought of as a dime. (Use dimes as manipulatives in multiple mathematical contexts.)

(Adapted from Henry County Schools)