Operations & Algebraic Thinking   2.OA

Represent and solve problems involving addition and subtraction.
1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.[1]

Add and subtract within 20.
2. Fluently add and subtract within 20 using mental strategies.[2] By end of Grade 2, know from memory all sums of two one-digit numbers.

Work with equal groups of objects to gain foundations for multiplication.
3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

_____
[1] See Glossary, Table 1.
[2] See standard 1.OA.6 for a list of mental strategies.

Number & Operations in Base Ten   2.NBT

Understand place value.
1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
   a.   100 can be thought of as a bundle of ten tens — called a "hundred."
   b.   The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
2. Count within 1000; skip-count by 5s, 10s, and 100s.
3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Use place value understanding and properties of operations to add and subtract.
5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
6. Add up to four two-digit numbers using strategies based on place value and properties of operations.
7. Add and subtract within 1000, 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. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
8. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
9. Explain why addition and subtraction strategies work, using place value and the properties of operations.[1]

_____
[1] Explanations may be supported by drawings or objects.

NY-2.OA	Operations and Algebraic Thinking

Add and subtract within 20.

2a. Fluently add and subtract within 20 using mental strategies. Strategies could include:

- counting on;

- making ten;

- decomposing a number leading to a ten;

- using the relationship between addition and subtraction; and

- creating equivalent but easier or known sums.

2b. Know from memory all sums within 20 of two one-digit numbers.

Coherence:　NY-1.OA.6　→　NY-2.OA.2

e.g., $8 + 6 = $
$8 + 2 + 4 = $
$10 + 4 = 14$

e.g., $13 - 4 = $
$13 - 3 - 1 = $
$10 - 1 = 9$

e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$

e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$

Note on *Fluency* with Facts:
- *Fluently* adding and subtracting within 20 (NY-2.OA.2) means students can find sums and differences within 20 reasonably quickly, and say or write it. Fluency involves a mixture of just knowing some answers, knowing some answers from patterns, and knowing some answers from the use of strategies.[10] Reaching fluency will take much of the year for many students. For more on how children develop fluency, see *K–5 Progression on Counting and Cardinality and Operations and Algebraic Thinking*, pp. 18-19 and *Adding it Up*, pp. 182-195.

Note on *Fluency* vs. *Knowing from Memory*:
- The standards intentionally distinguish between asking for *fluency* with addition and subtraction (NY-2.OA.2a) and asking students to *know from memory* addition facts (NY-2.OA.2b). *Fluency* means students are fast, accurate, flexible, and have understanding. They use strategies efficiently.[12] By the end of the K–2 grade span, students have sufficient experience with these strategies to *know from memory* all single-digit sums.[10]