

Cluster 2: Adding and Subtracting within 100

Duration: 5-6 weeks

Content Standards:

This list includes standards addressed in this cluster, but not necessarily mastered, since all standards are benchmarks for the end of the year. Note strikethroughs and recommendations in the Important Considerations section for more information.

NC.2.OA.1

Represent and solve addition and subtraction word problems, within 100, with unknowns in all positions, by using representations and equations with a symbol for the unknown number to represent the problem, when solving:

- One-Step problems:
 - Add to/Take from - Start Unknown
 - Compare - Bigger Unknown
 - Compare - Smaller Unknown
- ~~Two-Step problems involving single digits:~~
 - ~~Add to/Take from-Change Unknown~~
 - ~~Add to/Take From-Result Unknown~~

NC.2.NBT.2

Count within 4,000 (100 at this point in the year); skip-count by 5s, 10s, ~~and 100s.~~

NC.2.NBT.5

Demonstrate fluency with addition and subtraction, within 100, by:

- Flexibly using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
- Comparing addition and subtraction strategies, and explaining why they work.
- Selecting an appropriate strategy in order to efficiently compute sums and differences.

NC.2.NBT.6

Add up to three two-digit numbers using strategies based on place value and properties of operations [within 100].

NC.2.NBT.8

Mentally add 10 ~~or 100~~ to a given number [within]100–900, and mentally subtract 10 ~~or 100~~ from a given number 100–900.

NC.2.MD.6

Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points and represent whole-number sums and differences, within 100, on a number line.

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.

What is the Mathematics?

In first grade, students developed and understanding on place value within 100. This cluster calls for students to apply this understanding as they employ strategies to fluently add and subtract within the context of word problems.

- Students communicate their thinking with multiple representations (ex., manipulatives, pictures, number lines, equations, etc.). The standard algorithm is not the expectation for second grade (mastery is expected in grade 4).
- Reasoning strategies from Cluster 1 should be revisited and applied to larger numbers within this cluster (ex. The double strategy of $4 + 4 = 8$ can be used to solve $40 + 40 = 80$ and “make a ten” becomes “make a hundred.”).
- Students are introduced to mathematical property as ways to efficiently solve problems, but they do not need to know the formal names or definition of the properties. (ex. What do you notice about $4 + 5$ and $5 + 4$?).
- Place value knowledge is used to add and subtract using counting up and back by tens and also to decompose numbers into tens and ones as a strategy to add and subtract. (ex. In $23+35$, 35 could be decomposed to three tens and five ones and they could count on to find the sum. 23, 33, 43, 53, 54, 55, 56, 57, 58).
- In this cluster MD.6 is incorporated through the use of the number line. Students should understand that when using a number line that the distance between the numbers is what is being “Counted” (Iteration), rather than the tick marks.
- Students engage in one-step word problems of all types with a particular focus on Add to/Take from-Start Unknown; Compare-Bigger Unknown, Compare-Smaller Unknown.

Important Considerations

Problem Types are presented early in the school year because research indicates students need distributed practice over time with increasing difficulty in number ranges.

- The concepts of addition and subtraction are introduced before the concept of place value because students need to solidify their understanding of ten’s and 1’s. The number ranges that students are working does not require students to have a firm foundation in place value to the thousands at this time.
- 2.OA.1 only includes one-step problems during this cluster. Two-step problems are included in Cluster 6.
- Students should be taught to focus on the action of the problem rather than identifying keywords. Keyword strategies are often misleading, and they don’t work in every problem situation. Students who rely on keywords tend to ignore the context of the problem. Instead, they pull out the numbers and “do something with them” based on the keyword. When students can identify the action (operation) and the unknown (what they are solving for), they can solve problems successfully.