

**Cluster 7: Foundations of Place Value - Exploring numbers 11-20**

**Duration:** 3 - 5 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.K.NBT.1**

Compose and decompose numbers from 11 to 19 into ten ones and some further ones by:

- Using objects or drawings
- Recording each composition or decomposition by a drawing OR expression
- Understanding that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

**NC.K.OA.3**

Decompose numbers less than or equal to 10 into pairs in more than one way using objects or drawings, and record each decomposition by a drawing or expression.

**NC.K.OA.4**

For any number from 0 to 10, find the number that makes 10 when added to the given number using objects or drawings, and record the answer with a drawing or expression.

**NC.K.OA.5**

Demonstrate fluency with addition and subtraction within 5.

**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?**

The mathematical discourse established in Cluster 1 should continue to be embedded and utilized throughout each successive cluster.

Students build a foundational understanding of the base-ten number system by creating teen numbers composed of ten ones and some more ones. This work extends and formalizes all their experiences composing, decomposing, and naming quantities throughout the year. Through various experiences students have developed a deep understanding of the relationships that exist between and among numbers 0-5. By the end of the year students will be able to accurately, efficiently, and flexibly compose and decompose numbers 0-5 with automaticity.

- Students use objects, drawings, and equations to first explore and then explain how teen numbers, 11-19, are made up of ten ones and some more ones. As students gain experience in constructing and describing teen numbers in Kindergarten, they begin to move from thinking of 10 as ‘10 ones’ to a new unit called ‘1 ten’ (unitizing), a concept that will be formalized in Grade 1. (ex. ‘I know it’s 14 because there are 10 ones and 4 more ones’ later can be explained as ‘I know it’s 14 because there is one group of 10 and 4 left over. That’s 14!’)

- Teachers are encouraged to use addition and subtraction equations to model the situations, but students are not required to use equations until Grade 1.

#### Fluency to 5

- At this point in the learning sequence, students should be able to quickly recognize small groups of numbers (0-5) in a variety of arrangements (perceptual subitizing). We now need to move forward from perceptual subitizing to conceptual subitizing in helping students to understand that smaller groups of numbers can be joined to make a larger number.

Building on students opportunities to explore, represent, and discuss various ways to compose and decompose quantities 0-5, students have developed a deep understanding of the relationships that exist between and among numbers. Students are now able to accurately, efficiently, and flexibly compose and decompose numbers 0-5 with automaticity. While students have been working on 5 most of the year, it is included in this cluster because this is the point that mastery is expected.

#### ***Important Considerations:***

- The number range in this standard emphasizes the understanding of ten ones rather than an understanding of the tens “place”. This work is an opportunity for students to begin using the strategy of counting on.
- Working with numbers 11 - 19 builds foundational understanding of place value. It is important for students to understand that 18 is made up of a group of 10 ones and 8 more ones instead of just 18 individual ones.
- Students will need varied and multiple experiences in order to ensure understanding of a set of 10 ones and some more ones when working with numbers 11 - 19.
- Special attention should be paid to the number names 11-19. This is the first opportunity students have to work with 2-digit numerals, yet they do not follow the same pattern of naming as those numerals 20-99.
- It is important that students understand the word “grouping.” This term is used frequently when working with a set of objects. This word can become problematic if not fully understood.
- Even though students may have demonstrated fluency, they still need to be able to apply this knowledge as needed in addition and subtraction problem situations.