

# Kindergarten - Unit 3

## Misconceptions:

- Some students may think the last number said when counting a set of objects represents the last object counted rather than the quantity of all objects in the set.
- Some students may think a change in the arrangement of objects changes the number of objects in the set rather than recognizing that the quantity does not change if the objects are rearranged or counted in a different order.
- Some students may think a number can be composed or decomposed in only one way rather than understanding that a number can be composed or decomposed in many ways as long as the quantity of the whole remains the same.
- Some students may think of naming or reciting counting numbers in sequence as a memorization task rather than associating each number with a single object in the set and understanding the tagging of objects to demonstrate one-to-one correspondence.
- Some students may think of naming or reciting counting numbers in sequence as a memorization task rather than understanding that each number represents a quantity and that each number in the counting sequence represents a quantity of one more than the previous number.
- Some students may think there is no pattern or connection between the sequence of number words and the decade words in sequence rather than seeing the pattern or relationship as numbers in sequence move to the next decade (e.g., 19 to 20; 29 to 30; 39 to 40; etc.).
- Some students may think the comparison of two numbers has no relationship to other comparisons rather than realizing that if a given number is greater than another number, then the given number is also greater than all numbers before that number in numerical sequence (e.g., if 8 is greater than 6, it is also greater than 5, 4, 3, 2, 1, and 0).
- Some students may think the comparison of two numbers has no relationship to other comparisons rather than realizing that if a given number is greater than another number, then the given number is also greater than all numbers that could compose that number (e.g., 8 is greater than 7 and greater than 1, 8 is greater than 6 and greater than 2, 8 is greater than 5 and greater than 3, 8 is greater than 4, and 8 is greater than 0).
- Some students may think the comparison of two sets of objects has no relationship to other comparisons rather than realizing that the same comparison of sets of objects applies to the numerals representing the sets of objects.
- Some students may auditorily confuse teen words with decade words (e.g., fifteen and fifty) when reciting numbers.
- Some students may auditorily confuse number words with similar sounds (e.g., seven and eleven) when reciting numbers.

## Underdeveloped Concepts:

- Some students may not associate the idea of "none" with the number zero.

# 1st Grade - Unit 4

## Misconceptions:

- Some students may think the digit 1 in the number 16 represents the value 1 instead of the value 10 or one group of 10.
- Some students may think the decomposition of 15 is  $1 + 5$  instead of  $10 + 5$ , not realizing the importance of the place value in the expanded representation.
- Some students may think a number can only be decomposed one way, when the number can actually be decomposed multiple ways (e.g., sixteen could be represented as 1 group of ten and 6 ones, 16 ones, 3 groups of five and 1 one, etc.).
- Some students may think the total value of a number changes when the number is represented using different decompositions, not realizing that the sum of the addends in each decomposition remains the same.
- Some students may think, when comparing numbers, a number value is only dependent on the largest digit, regardless of the place value location within the number (e.g., when comparing 9 and 13, the student may think that 9 is larger because the digit 9 is larger than any of the digits in the number 13).
- Some students may think numbers are always ordered from smallest to largest rather than understanding that quantifying descriptors determine the order of numbers as they are read from left to right (e.g., largest to smallest, smallest to largest, etc.).
- Some students may think all number lines or open number lines must begin with zero rather than being able to visualize a number line or open number line that displays an isolated portion of a number line or open number line.

## 2nd Grade - Unit 3

### Misconceptions:

- Some students may think they must add or subtract in the order that the numbers are presented in the problem rather than performing the operation based on the meaning and action(s) of the problem situation.
- Some students may think subtraction is commutative rather than recognizing the minuend as the total amount and the subtrahend as the amount being subtracted (e.g.,  $5 - 3$  is not the same as  $3 - 5$ , etc.).
- Some students may think you record the dollar symbol after the numerals when recording one dollar because you orally say "dollar" after "one" rather than recording the dollar symbol, numeral, decimal, and 00.
- Some students may think you can use the dollar symbol, decimal, and cent symbol in the same representation when describing the value of coins rather than either using the dollar symbol with a decimal or using the cent symbol.
- Some students may think a given amount of money can be represented only one way rather than recognizing that the value of coins and bills may be represented with different combinations of coins as long as the total value remains the same.

### Underdeveloped Concepts:

- Some students may not recognize the difference between an addition situation and a subtraction situation based on the context of the problem.
- Some students may interpret the equal sign to mean that an operation must be performed on the numbers on one side and the result of this operation is recorded on the other side of the equal sign rather than understanding the equal sign as representing equivalent values (e.g.,  $10 + 8 = 13 + 5$ ).
- Some students may confuse the  $-$ ,  $+$ , and  $=$  symbols due to not fully understanding the meaning of each symbol.
- Some students may correctly determine related addition number sentences but have difficulty determining the subtraction number sentences within a fact family.
- Some students may view addition and subtraction as discrete and separate operations due to not recognizing the inverse relationship between the operations.
- Some students may recognize the traditional views of coins and bills but not recognize new or commemorative views (e.g., state quarters, buffalo nickels, new paper money, etc.).