**2.NBT.9**

**Explain why addition and subtraction strategies work, using place value and the properties of operations.**

**Summary:**

While it is important that students show mastery of addition and subtraction facts, their ability to communicate their strategy (and the strategies others use) for finding the answer is just as important. Students should be able to explain why addition and subtraction strategies work by using manipulatives, drawings, or words. Their explanation should be based on place value (e.g., grouping) and properties of operations (e.g., commutativity and associativity of addition). Students do not need to know the names of the properties; they may say that they are reordering or regrouping addends.

 **Understanding the Standard:**

* Students should be provided with multiple opportunities to solve addition and subtraction problems using a variety of strategies. Discussions of these strategies need to occur among students and with the teacher. Students often begin communicating these ideas with drawings or manipulatives first and then move into more verbal explanations.
* Students should be able to explain why addition and subtraction strategies work by using manipulatives, drawings, or words. Their explanation should be based on place value (e.g., grouping) and properties of operations (e.g., commutativity and associativity of addition). Teachers could present a solution method students have not seen before, and ask students to figure out how it works for the given numbers, then see if they can use it on new numbers and if they can explain it.
* Another possible way to assess mastery of this strategy is to ask a student to present a novel (and correct) strategy for adding or subtracting two numbers, and ask other students to explain how/why the strategy works.

**Questions to Focus Instruction:**

* Are students able to articulate their reasoning for using specific strategies when adding and subtracting?
* Can students apply their knowledge of place value and properties of operations to explain why addition and subtraction strategies work?
* Can students support their explanations with concrete objects, drawings, or (written or oral) words?
* When a student justifies a solution, does he/she use procedural language ("I added the 6 and 7 and got 13, then I carried the 1, and 1 plus 3 plus 4 is 8, so the answer is 83") or does he/she use conceptual language that suggests an understanding of the underlying mathematics (articulate that he/she is adding ones to tens and tens to tens, and that ten of the ones in 13 had to be regrouped to form an additional ten)?

**Skills**

**Prior to:** Students have been introduced to a variety of addition and subtraction strategies. Discussion about each has been guided. ([1.NBT.4](http://www.readtennessee.org/math/teachers/k-3_common_core_math_standards/first_grade/number_operations_in_base_ten/1nbtc4.aspx), [2.NBT.7](http://www.readtennessee.org/math/teachers/k-3_common_core_math_standards/second_grade/number_operations_in_base_ten/2nbtb7.aspx))
 **At Grade Level:** Students use place value to explain their reasoning for using a variety of addition and subtraction strategies, and can support their explanations with concrete objects, drawings, and/or words.
 **Moving Beyond:** Students’ prior experience with explaining addition and subtraction strategies prepares them for doing the same with multiplication and division.  Go to [3.OA.D.9](http://www.readtennessee.org/math/teachers/k-3_common_core_math_standards/third_grade/operations_algebraic_thinking/3oad9.aspx) to see the progression  of related skills.

*1Explanations may be supported by drawings or objects.*