Unpacked South Dakota State Mathematics Standards

Purpose: In order for students to have the best chance of success, standards, assessment, curriculum resources, and instruction must be aligned in focus, coherence, and rigor. Unpacked standards documents are intended to help align instruction to the focus, coherence, and rigor of the South Dakota State Mathematics Standards. The standards have been organized in clusters as they are not so much built from topics, but rather woven out of progressions. Not all content in a given grade is emphasized equally in the mathematics standards. Some clusters require greater emphasis than others based on the depth of the ideas, the time that they take to master, and/or their importance to future mathematics or the demands of college and career readiness. To say that some things have greater emphasis is not to say that anything in the standards can safely be neglected in instruction. Neglecting standards will leave gaps in student skill and understanding and may leave students unprepared for the challenges of a later grade.

Domain: Number Base Ten	**Grade Level: 1**

1.NBT.C Cluster: Use place value understanding and properties of operation to add and subtract

This cluster focuses on adding and subtracting using previously learned strategies based on place value and properties of operations within 100.

**This is a MAJOR cluster. *Students should spend the large majority of their time (65-85%) on the major work of the grade. Supporting work and, where appropriate, additional work should be connected to and engage students in the major work of the grade.*

1.NBT.4 Add and subtract within 100.
   a. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, 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 and explain the reasoning used.
   b. Understand that in adding two-digit numbers (sums within 100) add tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

1.NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

1.NBT.6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), 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 and explain the reasoning used.

Aspects of Rigor: (Conceptual, Procedural, and/or Application)

Conceptual Understanding	*Procedural Fluency*	*Application*
Use 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 and explain the reasoning used **(1.NBT.4)** Understand that in adding two-digit numbers (sums within 100) add tens and tens, ones and ones; and sometimes it is necessary to	Add and subtract within 100 **(1.NBT.4)**	

compose a ten **(1.NBT.4)**		
Without counting, explain how you know 10 more or 10 less of a given number using knowledge of the tens place **(1.NBT.5)**	Mentally find 10 more or 10 less of a given number in the range of 10-90 **(1.NBT.5)**	
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 and explain the reasoning used.**(1.NBT.6)**	Subtract multiples of 10 within a range of 10-90 **(1.NBT.6)**	

Enacting the Mathematical Practices - Evidence of Students Engaging in the Practices

1. **Make sense of problems and persevere in solving them.**
   - Solve computation problems focused on developing strategies of tens and ones.
   - Understand that in adding two-digit numbers, sometimes it is necessary to compose a 10.
2. **Reason abstractly and quantitatively.**
   - Attending to the meaning of quantities, learners are deepening their understanding of tens and ones and the relationship between tens and ones
   - Compare two-digit numbers by looking at and breaking apart the value of each digit in the tens place first, then the ones place
3. **Construct viable arguments and critique the reasoning of others.**
   - Compare numbers and explain reasoning using place value language
   - Explain reasoning used when mentally finding 10 more and 10 less
4. **Model with mathematics.**
   - Use models to show number of objects with the corresponding numeral
   - Use models to explain addition and subtraction of two-digit numbers
5. **Use appropriate tools strategically.**
   - Use a variety of manipulatives to build groups of tens and some more
   - Use manipulatives to visually understand adding and subtracting within 100
6. **Attend to precision.**
   - Identify whether a single digit in a number signifies the amount of the tens or of the ones.
   - Name and write the numeral that corresponds with the number of objects in a group
7. **Look for and make use of structure.**
   - Recognize that numbers are composed of base ten units, focusing on tens and ones
8. **Look for and express regularity in repeated reasoning.**
   - Skip counting by tens from any multiple of 10 within 10-90

Vertical and Horizontal Coherence and Learning Progressions

Previous Learning Connections	*Current Learning Connections*	*Future Learning Connections*
Kindergarten learners compose and decompose numbers into tens and ones and use what they know to solve word problems within 10. (**KNBT.1 K.OA.2**)	First grade learners are relating counting to addition and subtraction **(1.OA.5)** Learners are starting to generalize addition and subtraction strategies to numbers within 100. Focusing on multiples of 10 encourages use of place value concepts/strategies.**(1.NBT.2)**	Second grade learners are fluently adding and subtracting within 100 and solving word problems using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. **(2.NBT.5)**

Vocabulary (Key Terms Used by Teachers and Students in this Cluster):

- Multiples of 10
- Two-digit number
- Regroup
- 10 more
- 10 less

Relevance, Explanations, and Examples:

NOTE: "positive or zero differences" indicates that the numbers chosen by the teacher should not result in a negative number

NOTE: Strategies for solving two-digit addition problems when regrouping or composing a ten is necessary:

Example 1:

Adding tens and ones separately

46
+37
‾‾‾
8 3

combine ones
view 6 + 7 as 1 ten and
3 ones

combine 4 tens and 3 tens with the newly composed ten (shown on the addition line)

This method is an application of the commutative and associative properties. The diagrams can help children with understanding and explaining the steps (MP.1). Advantages of writing the 1 below the addends are discussed in the Grade 2 margin.

Example 2:

Counting on by tens

46
+37
‾‾‾
8 3

starting from 46 count on 3 tens then count on 7 ones

56 66 76   77 78 79 80 81

82 83

Counting on by tens from 46, beginning 56, 66, 76, then counting on by ones. This method can be generalized, but the complexity of the counting on required and the lack of efficiency becomes apparent as the number of digits in the addends increases.

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