

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: Operations and Algebraic Thinking		Grade Level: 2
2.OA.B Cluster: Add and subtract within 20.		
Learners develop and use strategies that make sense to them, looking for patterns and similarities among facts and strategies.		
<p>**This is a MAJOR cluster. <i>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.</i></p> <p>2.OA.2 Add and subtract within 20.</p> <ul style="list-style-type: none"> a. Fluently add and subtract within 20 using mental strategies. (See standard 1.OA.6 for a list of mental strategies.) b. By end of Grade 2, know from memory all sums of two one-digit numbers. 		
Aspects of Rigor for Student Learning: (Conceptual, Procedural, and/or Application)		
Conceptual Understanding	Procedural Fluency	Application
	Use strategies to mentally/fluently solve addition/subtraction problems within 20. (2.OA.2a) Know from memory one digit plus one digit math facts. (2.OA.2b)	
Enacting the Mathematical Practices - Evidence of Students Engaging in the Practices		
<ol style="list-style-type: none"> 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. <ul style="list-style-type: none"> • Use number relationships and previously-mastered facts to solve more difficult facts. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics. 5. Use appropriate tools strategically. 6. Attend to precision. <ul style="list-style-type: none"> • Accurately solve the problem. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning. 		

Vertical and Horizontal Coherence and Learning Progressions

<u>Previous Learning Connections</u>	<u>Current Learning Connections</u>	<u>Future Learning Connections</u>
Learners add and subtract within 20 to build towards fluency, but fluency is only expected with addition and subtraction problems to 10. (1.OA.6)	Learners apply their automaticity of facts to 20 to fluently add and subtract within 100. They use higher level strategies such as place value, properties of operation, and the relationship between addition and subtraction. (2.NBT.5) *See defined phases of math fact acquisition in <i>Relevance, Explanations, and Examples</i> for further clarification.	Learners are efficient and accurate when adding and subtracting multi-digit numbers. (3.OA.8, 3.NBT.2)

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

- Addition
- Difference
- Subtraction
- Sum

Relevance, Explanations, and Examples:

Fluency-skill in carrying out procedures flexibly, accurately, efficiently and appropriately

Know from memory-quick, effortless recall of facts

*Teachers should use tasks, activities, discussions, and games to help students move through the three phases of math fact acquisition (Van De Walle, 2007):

Phase I: Constructing meaning and counting strategies **(K.CC.1-5)**

- one-to-one correspondence
- conservation of number
- Counting

Phase II: Reasoning strategies **(1.OA.6, 2.OA.2)**

- Solve a problem such as $9 + 6$ by making a ten to solve an easier, equivalent problem ($10 + 5$).
- Use doubles to solve a near doubles problem ($8 + 7$ becomes $7 + 7 + 1$).
- Think addition to solve a subtraction problem.

Phase III: Working toward quick recall