

NWEA Assessment Item Illustrating 2.OA.B.2

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Domain: Operations and Algebraic Thinking

2.OA.B: Add and subtract within 20.

Calculator Availability: No

Solve. Enter an answer in each box.

$5 + 9 =$	<input type="text"/>
$6 + 5 =$	<input type="text"/>
$5 + 8 =$	<input type="text"/>

Alignment: 2.OA.B.2: Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.

Basic computational fluency is a key cornerstone of early-grade mathematics development. Early in the year, students are expected to use flexible numeracy skills, such as make-a-ten or doubles strategies to compute such sums. This item builds upon those skills. For example, in the first addition problem, students may decompose the 5 into $4 + 1$ because they recognize that $1 + 9 = 10$. The second addition problem may be thought of as doubles plus 1 and be rewritten as $1 + 5 + 5$ for easier solving. Students may rewrite $5 + 8$ as either $(5 + 5) + 3$ or $3 + (2 + 8)$. Examples of various strategies for single-digit addition and subtraction problems are included in the appendix of the Operations and Algebraic Thinking Progressions document.¹ Ultimately, students are expected to transition from these strategies to knowing all single-digit sums from memory by the end of grade 2.

Coherence: Addition and subtraction were introduced conceptually in kindergarten via concrete, verbal, and symbolic representations.^{K.OA.A.1} Students composed and decomposed numbers within 10 and were expected to gain fluency within 5.^{K.OA.A} In grade 1, students continued their work computing within 20 by applying properties of addition, the relationship between addition and subtraction, counting, and place-value concepts to add and subtract within 20.^{1.OA, 1.OA.B, 1.OA.C} Although students in grades 1 and 2 also apply place-value concepts to compute within 100 and 1,000 in the NBT domain, the work in the OA domain is building toward the rote recall of basic addition facts. In grade 3 and beyond, all work in addition and subtraction will shift to the NBT domain, where it concludes in grade 4.^{4.NBT.B.4}

Rigor: This item attends to procedural skill. This is appropriate given that the standard addresses knowing basic addition facts from memory, which is a grade-level expectation.

¹Common Core Standards Writing Team. Progressions for the Common Core State Standards in Mathematics (draft), 2011. Tucson, AZ: Institute for Mathematics and Education, University of Arizona.

Answer Key:

Solve. Enter an answer in each box.

$5 + 9 =$

$6 + 5 =$

$5 + 8 =$

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