NWEA Assessment Item Illustrating 2.OA.B.2

Domain: Operations and Algebraic Thinking
2.OA.B: Add and subtract within 20.
Calculator Availability: No

Solve. Enter an answer in each box.

$18 - 9 =$ [ ]

$11 - 9 =$ [ ]

$15 - 9 =$ [ ]

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 to solve such problems. Some students may choose to apply the relationship between operations and solve these subtraction problems as unknown addend problems, asking themselves, "What number plus 9 equals 18?" instead of "What is 18 – 9?" This approach also allows students to employ the make-a-ten or the counting-on strategy. Students who think of 11 – 9 as 9 + ? = 11 may realize that 9 + 1 = 10, so 9 + 2 = 11. As a different strategy, students may choose to decompose numbers in relationship to the number 10. For example, 15 – 9 could also be thought of as 15 – 5 – 4. 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.A, 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 will conclude in grade 4.[4.NBT.B.4]

Rigor: This item attends to procedural skill. This is appropriate, given that the standard addresses fluency within 20, which is a grade-level expectation.

[1] Common 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.

$18 - 9 =$ `9`

$11 - 9 =$ `2`

$15 - 9 =$ `6`

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