

NWEA Assessment Item Illustrating 3.OA.D.8

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Domain: Operations and Algebraic Thinking

3.OA.D: Solve problems involving the four operations, and identify and explain patterns in arithmetic.

Calculator Availability: No

Use the information to answer the question.

Javier's photo album fits 9 pictures on each page. He filled 7 pages and has some pictures on page 8.

Which could be the total number of pictures that Javier has in the album?

<input type="radio"/> A. 50
<input type="radio"/> B. 58
<input type="radio"/> C. 66
<input type="radio"/> D. 74

Alignment: 3.OA.D.8: Solve two-step word problems using the four operations. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

By grade 3, students are expected to solve a range of problem types involving the four operations and an unknown in any position. In this item, students use multiplication, which is formally introduced in grade 3, to find the total number of pictures used on the first 7 pages. Next, students reason which number is within the appropriate range, rather than computing an exact total. This requires understanding that the total number of pictures on all 8 pages is more than 9×7 but less than 9×8 , so the total is between 63 and 72.

Coherence: Students have been solving addition and subtraction word problems since kindergarten. In kindergarten, students solved single-step problems within 10, utilizing only the four most basic problem types outlined in Table 1 of the CCSS Mathematics Glossary.^{K.OA.A.2} In grade 1, students were introduced to more problem types, greater numbers, and the idea of using a symbol for the unknown.^{1.OA.A} In grade 2, students were expected to solve one- and two-step problems for all problem types.^{2.OA.A.1} In grade 3, problem solving has expanded to include multistep problems with all four operations and letters for the unknown.^{3.OA.D.8} The reasoning required in this item will be formally explored in grade 4 when students are asked to interpret remainders within the context of a problem.^{4.OA.A.3} As students progress through the grades, they will expand problem solving beyond whole numbers. In grade 4, students will solve addition and subtraction word problems involving fractions with like denominators and word problems involving multiplication of fractions and whole numbers.^{4.NF.B} In grade 5, students will solve word problems involving addition and subtraction of fractions with like denominators,^{5.NF.A.2} multiplication of fractions and mixed numbers,^{5.NF.B.6} and division of unit fractions and whole numbers.^{5.NF.B.7}

Rigor: This item attends to conceptual understanding, procedural skill, and application. Multiplying single-digit numbers is a grade-level procedure. Conceptually, students need to understand multiplication as equal groups in order to interpret and then solve the problem. Because of the nature of the problem, the solution path is not immediately obvious and requires interpreting what the final page not being filled means relative to the total number of pictures on the previous pages.

Answer Key:

Use the information to answer the question.

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Learn More

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