

NWEA Assessment Item Illustrating 3.OA.A.1

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Domain: Operations and Algebraic Thinking

3.OA.A: Represent and solve problems involving multiplication and division.

Calculator Availability: No

In which situation is the number of lemons equal to 5×3 ?

<input type="radio"/>	A. Rita has 5 lemons in each of 3 bags.
<input type="radio"/>	B. Rita has 5 lemons and buys 3 more lemons.
<input type="radio"/>	C. Rita has 5 lemons and gives 3 of the lemons away.
<input type="radio"/>	D. Rita has 5 lemons and gets 3 lemons from a friend.

Alignment: 3.OA.A.1: Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. *For example, describe a context in which a total number of objects can be expressed as 5×7 .*

This standard represents students' first formal introduction to the multiplication symbol. The focus of the item is on understanding the meaning of multiplication. In order to answer correctly, students connect the abstract representation of 5×3 to a context involving multiple sets of equal-sized groups. The options are intentionally structured in parallel to reduce the reading load and to allow students to focus on the differences in each scenario. Because the focus is on connecting the meaning of multiplication to the scenarios, computation of the product is not required.

Coherence: Students were introduced to the foundational multiplication concept of equal groups in grade 2 when they used addition to find the total number of objects in an array.^{2.OA.C.4} The work with arrays was supported by skip counting by 5s and 10s.^{2.NBT.A.2} The major focuses of Operations and Algebraic Thinking in grade 3 are developing multiplication and division concepts, solving multiplication and division word problems, relating the operations of multiplication and division, and gaining fluency with the products of two one-digit numbers.^{3.OA.A, 3.OA.B, 3.OA.C} Students' understanding of multiplication will continue to expand beyond equal groups to include multiplicative comparison^{4.OA.A.1, 4.OA.A.2} and the concept of scaling.^{5.NF.B.5}

Rigor: This item attends to conceptual understanding and application. In order to answer correctly, students demonstrate understanding of the concept of multiplication as equal groups and the ability to connect a symbolic representation to a real-world situation. Given that this item represents students' introduction to multiplication, the scenarios are intentionally simple. If students understand the meaning of multiplication, the operations indicated in each scenario should be obvious.

Answer Key:

In which situation is the number of lemons equal to 5×3 ?

<input checked="" type="radio"/>	A. Rita has 5 lemons in each of 3 bags.
<input type="radio"/>	B. Rita has 5 lemons and buys 3 more lemons.
<input type="radio"/>	C. Rita has 5 lemons and gives 3 of the lemons away.
<input type="radio"/>	D. Rita has 5 lemons and gets 3 lemons from a friend.

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