

# NWEA Assessment Item Illustrating 4.NF.B.4.c

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**Domain:** Number and Operations—Fractions

**4.NF.B:** Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

**Calculator Availability:** No

Use the information to answer the question.

Zoe ran  $\frac{3}{5}$  mile each day for 7 days.

How many miles did Zoe run in all? Move numbers to the boxes to show the answer. If there is no whole number, enter 0 in the first box.

$\frac{\text{$  miles

0      1      2      3      4      5      6      7      8      9

**Alignment:** **4.NF.B.4c** Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.

This item has students solve a one-step problem in which they multiply a fraction by a whole number. The product is a fraction that is greater than one. While  $21/5$  is a correct and acceptable solution to this item, we do not generally talk about running  $21/5$  miles per week. Students may convert the solution into a format that is more informative, such as  $4 \frac{1}{5}$  miles. Note that in grade 4, students learn to multiply a fraction by only a whole number, meaning they learn to find seven groups of three-fifths and not three-fifths of seven.

**Coherence:** This item extends the work that students began in grade 3 when they learned to multiply whole numbers and to understand multiplication as a number of groups with a certain number of objects in each group.<sup>3.OA.A.1</sup> Students will learn to solve more complex problems involving fraction multiplication and division in grade 5 and grade 6. In grade 5, students will multiply fractions by fractions and multiply decimals.<sup>5.NF.B, 5.NBT.B.7</sup> In grade 6, students will begin to learn about ratios<sup>6.RP.A.2</sup> and begin to learn to divide fractions by fractions.<sup>6.NS.A.1</sup>

**Rigor:** This item attends to conceptual understanding, application of mathematics in a real-world setting, and procedural skill. Students need to understand what it means to multiply a fraction by a whole number in order to solve the problem. In terms of how they apply their understanding of the mathematics, students might use their understanding of multiplication as equal groups, which was introduced in grade 3, or they might use their understanding of multiplication as a comparison, which is introduced in grade 4. Students use grade-level procedural skill when multiplying a whole number by a fraction.

**Answer Key:** There are multiple equivalent correct responses. One sample correct response is shown.

Use the information to answer the question.

Zoe ran  $\frac{3}{5}$  mile each day for 7 days.

How many miles did Zoe run in all? Move numbers to the boxes to show the answer. If there is no whole number, enter 0 in the first box.

$$\boxed{4} \frac{\boxed{1}}{\boxed{5}} \text{ miles}$$

0      1      2      3      4      5      6      7      8      9

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