

NWEA Assessment Item Illustrating 5.NF.B.6

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Domain: Number and Operations—Fractions

5.NF.B: Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Calculator Availability: No

Use the information to answer the question.

A student ran around a path $1\frac{1}{2}$ times. The path is $\frac{3}{4}$ mile long.

How many miles did the student run?

A. $1\frac{1}{8}$ miles

B. $1\frac{3}{8}$ miles

C. 2 miles

D. $2\frac{1}{4}$ miles

Alignment: 5.NF.B.6: Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

This standard represents the culmination of the fraction multiplication standards in grade 5. Although $9/8$ miles would also be a correct and acceptable answer to this problem, the answer is given as $1\frac{1}{8}$ miles because this is the conventional way to talk about running distances. Students might use different equivalent ways to represent numbers, but they should consider which form makes more sense in the context of the problem.

Coherence: Students were formally introduced to multiplication with whole numbers in grade 3 when the focus was on multiplication as equal groups.^{3.OA.A.1} In grade 4, the concept of multiplication as a comparison was developed with whole numbers.^{4.OA.A} Students also began multiplying fractions by whole numbers in grade 4. It should be noted that grade 4 standards built upon the equal-groups interpretation of multiplication, in which students thought about $5 \times 2/3$ as 5 groups of two-thirds. This work continues in grade 5, when students multiply both fractions or whole numbers by fractions and solve problems about finding a fraction of a whole number.^{5.NF.6} The work of finding a fraction of a whole number builds understanding of the idea of multiplication as scaling,^{5.NF.5} which will be developed further in grade 6 when students are introduced to ratios^{6.RP.A} and in grade 7 when they are introduced to scale drawings.^{7.G.A.1}

Rigor: This item attends to application and procedural skill. The context is not a challenge for grade 5 students to interpret, and multiplying mixed numbers and fractions is a grade-level procedure.

Answer Key:

Use the information to answer the question.

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