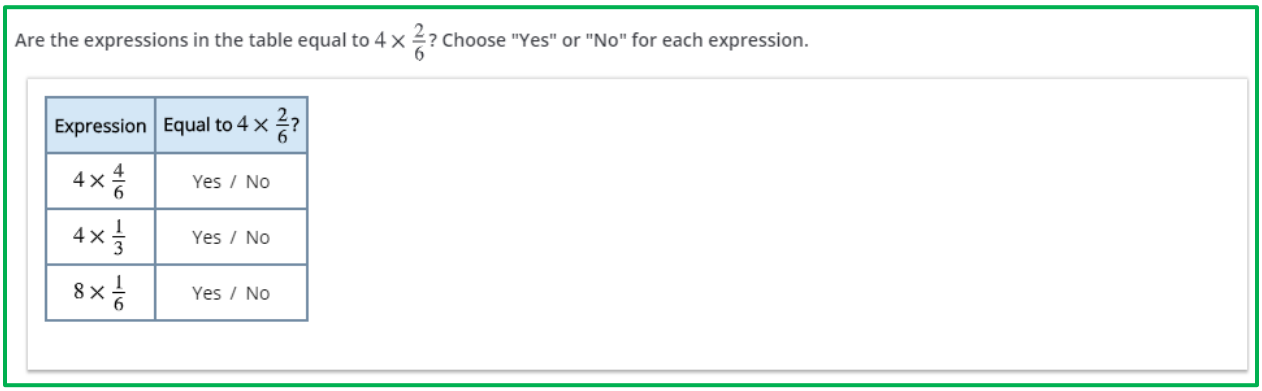
NWEA Assessment Item Illustrating 4.NF.B.4.b

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



Alignment: 4.NF.B.4b: Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)*

It is important that when students multiply with fractions, they apply their understanding of whole-number multiplication to fraction multiplication. This means that students should understand multiplication as a number of groups with a certain number of objects in each group or as a multiplicative comparison between two quantities. For example, 4 x 2/6 can be interpreted as 4 groups of 2/6 or 2/6 + 2/6 + 2/6 + 2/6 or 4 x 2/6. The expression 4 x 2/6 can also be interpreted as 2/6 is twice as large as 1/6, so 4 x 2/6 is twice as large as 4 x 1/6, and 8 x 1/6 is twice as large as 4 x 1/6.

Coherence: Multiplying a fraction by a whole number extends the work in multiplication that students began in grade 3,[3.OA.A.1] and that work extends into middle school. In grade 5, students will multiply fractions by fractions and multiply decimals.[5.NF.B, 5.NBT.B.7] In grade 6, students will begin learning about ratios[6.RP.A.2] and will learn to divide fractions by fractions.[6.NS.A.1]

Rigor: This item attends to conceptual understanding and procedural skill. In this item, students complete three different comparisons with 4 x 2/6 to ensure that they have a conceptual understanding of multiples of fractions. Students also perform a grade 4 procedural skill by multiplying fractions by whole numbers.

Answer Key:

Are the expressions in the table equal to $4 \times \frac{2}{6}$? Choose "Yes" or "No" for each expression.

Expression	Equal to $4 \times \frac{2}{6}$?
$4 \times \frac{4}{6}$	Yes / **No**
$4 \times \frac{1}{3}$	**Yes** / No
$8 \times \frac{1}{6}$	**Yes** / No

Learn More

Learn more with the Math Assessment Item Alignment Professional Development Modules.