NWEA Assessment Item Illustrating 5.NF.B.7.b

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

Which <u>two</u> problems can be solved by finding the value of $8 \div \frac{1}{2}$?

- [ ] A. A string 8 yards in length is cut in half. What is the length of each piece of string?

- [ ] B. A string 8 yards in length has $\frac{1}{2}$ yard cut off. How much of the original string is left?

- [ ] C. A string 8 yards in length is $\frac{1}{2}$ the length needed for a project. How many yards of string are needed?

- [ ] D. A string 8 yards in length is cut into pieces that are each 2 yards in length. How many 2-yard pieces are made?

- [ ] E. A string 8 yards in length is cut into pieces that are each $\frac{1}{2}$ yard in length. How many $\frac{1}{2}$-yard pieces are made?

Alignment: 5.NF.B.7b: Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.*

This item highlights the interpretation component of the standard. The two correct scenarios in this item represent both the number-of-groups-unknown interpretation of division (answer option C) and the group-size-unknown interpretation of division (answer option E).

Coherence: In grade 3, students were formally introduced to the equal-groups interpretation of multiplication and division with whole numbers[3.OA.A.1] and the relationship between the operations. [3.OA.B] In grade 4, students solved multiplicative comparison problems with whole numbers[4.OA.A] and began multiplying fractions by a whole number.[4.NF.B.4] This work continues in grade 5, when students multiply fractions by both whole numbers and fractions and solve problems about finding a fraction of a whole number.[5.NF.4] In grade 6, students will expand upon the grade 5 work to divide with non-unit fractions by non-unit fractions.[6.NS.A.1]

Rigor: This item attends to conceptual understanding and application. In this case, the application of the real-world scenario supports the conceptual understanding of division with fractions.

Answer Key:

Which <u>two</u> problems can be solved by finding the value of $8 \div \frac{1}{2}$?

- [ ] A. A string 8 yards in length is cut in half. What is the length of each piece of string?

- [ ] B. A string 8 yards in length has $\frac{1}{2}$ yard cut off. How much of the original string is left?

- [x] C. A string 8 yards in length is $\frac{1}{2}$ the length needed for a project. How many yards of string are needed?

- [ ] D. A string 8 yards in length is cut into pieces that are each 2 yards in length. How many 2-yard pieces are made?

- [x] E. A string 8 yards in length is cut into pieces that are each $\frac{1}{2}$ yard in length. How many $\frac{1}{2}$-yard pieces are made?

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