

NWEA Assessment Item Illustrating 3.NF.A.2.b

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Domain: Number and Operations–Fractions

3.NF.A: Develop understanding of fractions as numbers.

Calculator Availability: No

Place the fraction at the correct location on the number line.

The image shows a number line starting at 0 and ending at 2. There are 9 tick marks between 0 and 2, dividing the segment into 10 equal intervals. Each interval represents 1/10 of the distance from 0 to 2. A red dot is placed at the 5th tick mark from 0, which represents the fraction 5/10 or 1/2. Below the number line, the fraction 5/4 is written next to a red dot, indicating the fraction to be placed on the number line.

Alignment: 3.NF.A.2b: Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.

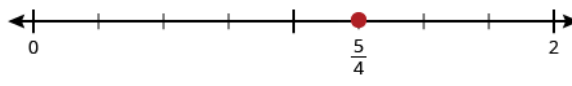
Using a number line to represent fractions provides students with the opportunity to deepen their understanding of fractional quantities and to visualize the relationship between rational and whole numbers by placing them together on a number line. In this item, the number line is divided into fourths but is not labeled at the 1 mark. Students need to know how to represent fractions greater than 1.

Coherence: In grades 1 and 2 in the Measurement and Data domain, students began learning concepts that prepared them for understanding number lines. As early as grade 1, students learned to measure objects by laying down nonstandard length units end to end.^{1.MD.A.2} In grade 2, students measured objects with rulers using different units. This prepared them to then represent whole numbers on number lines and to represent addition and subtraction of whole numbers on number lines.^{2.MD.A, 2.MD.B.6} In grade 3, placing fractions on number lines reinforces important fraction concepts of the grade. It supports the concept that a whole is divided into equal parts and that a fraction is a number. Number lines will continue to be important models for students to use when they do computation with fractions in both grades 4 and 5.^{4.NF.A.1, 4.NF.B.3, 5.NF.B.4} In grades 6 and 7, when students will learn about integers and develop a more complete understanding of rational numbers, the number line will help them understand these categories of numbers.^{6.NS.C.6, 6.NS.C.7, 7.NS.A.1}

Rigor: This item attends to conceptual understanding. Students use a visual model to represent a fraction. The item requires that students have a deeper understanding of fractions because $5/4$ is a fraction that is greater than 1.

Answer Key:

Place the fraction at the correct location on the number line.



The number line is a horizontal line with arrows at both ends. It is divided into four equal segments by tick marks. The first tick mark on the left is labeled '0'. The fourth tick mark on the right is labeled '2'. A red dot is placed on the second tick mark from the left, which is labeled with the fraction $\frac{5}{4}$.

Learn More

Learn more with the [Math Assessment Item Alignment Professional Development Modules](#).

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