

NWEA Assessment Item Illustrating 7.EE.B.4.a

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Domain: Expressions and Equations

7.EE.B: Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

Calculator Availability: Yes

Solve for x .

$$-\frac{3}{4}x + 8 = 23$$

Enter the answer in the box.

$x =$

Alignment: 7.EE.B.4a: Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

This item targets the part of the standard about fluently solving equations of the form $px + q = r$. Solving equations fluently using algebraic reasoning is an important part of the work of grade 7, and not all items need to be grounded in application (word problems). A negative fraction was chosen for the coefficient to reinforce the grade level expectation of operating with rational numbers fluently.

Coherence: Throughout grades K–5, students developed their algebraic reasoning skills by solving simple equations with unknowns in all positions. In grade 6, the concept of a variable was introduced and students solved one-step equations.^{6.EE.B.7} In grade 7, students are extending this work beyond one-step equations and inequalities.^{7.EE.B.4} Students will further apply this knowledge to solve more complex linear equations in grade 8.^{8.EE.B.7} and extend the use of these strategies to solve non-linear equations in high school.^{HSA-REI.A/B}

Rigor: This item attends to procedural skill. Students have developed grade-level procedures for operating with rational numbers in different forms and for solving equations of the form $px + q = r$. The calculator is provided as a tool, which, if used, lessens the procedural complexity of the item

Answer Key:

Solve for x .

$$-\frac{3}{4}x + 8 = 23$$

Enter the answer in the box.

$x =$

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