

Solving Multi-Step Equations

Objectives:

- ...to solve multi-step equations involving integers, decimals, and fractions
- ...to solve equations with variable terms on both sides

Assessment Anchor: Not Applicable



NOTES

To solve a multi-step equation:

1. Perform any distributive property shown in the equation.
2. Combine any like terms in the equation (do not cross the = sign)
3. Now you should see a two step equation remaining, please follow the steps for solving two step equations.

EXAMPLES

- 1) $2(x + 5) = -11$ original problem
- $$\begin{array}{r} 2x + 10 = -11 \\ -10 \quad -10 \\ \hline 2x = -21 \\ 2 \quad 2 \end{array}$$
-perform distributive property
.....subtract 10 from both sides
.....simplify the equation
.....divide both sides by 2
- $x = -10.5$ final answer!
- 2) $-13 = 5 + 4x - 6x$ original problem
- $$\begin{array}{r} -13 = 5 - 2x \\ -5 \quad -5 \\ \hline -18 = -2x \\ -2 \quad -2 \end{array}$$
-combine like terms
.....subtract 5 from both sides
.....simplify the equation
.....divide both sides by -2
- $9 = x$ final answer!

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MORE EXAMPLES

3) $-2(4x - 3) = 10$

4) $3x + 7x - 8 = -19$

5) $-35 = -3x + 8 + 5x$

6) $14 = \frac{1}{2}(8x + 12)$

EVEN MORE EXAMPLES – Careful Here!!

7) $4(2x - 11) - 6x = -3$

8) $-32 = -3 + 7x + 3(x - 2)$