

Day 16 Notes

Lesson 3-1 Solving Two-Step Equations

Lesson Objectives	NAEP 2005 Strand: Algebra, Geometry
<ul style="list-style-type: none"> ▼ Solve two-step equations ▼ Use deductive reasoning 	Topics: Equations and Inequalities; Mathematical Reasoning Local Standards:

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Key Concepts

Solving Two-Step Equations

Step 1 Use the Addition or Subtraction Property of Equality to get the term with a variable alone on one side of the equation.

Step 2 Use the Multiplication or Division Property of Equality to write an equivalent equation in which the variable has a coefficient of 1.

$$\begin{array}{l}
 3x = 12 \\
 \frac{3x}{3} = \frac{12}{3} \\
 1x = 4 \\
 x = 4
 \end{array}$$

$$\begin{array}{l}
 x - 7 = 9 \\
 +7 \quad +7 \\
 \hline
 1x = 16 \\
 x = 16
 \end{array}$$

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Key Concepts

Steps for Solving a Multi-Step Equation

Step 1 Clear the equation of fractions and decimals.

Step 2 Use the Distributive Property to remove parentheses on each side.

Step 3 Combine like terms on each side.

Step 4 Undo addition or

Step 5 Undo multiplication or

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Solve $21 = -p + 8$ p. 41

$$\begin{array}{l}
 21 = -p + 8 \\
 -8 \quad -8 \\
 \hline
 13 = -p \\
 -13 = -p \quad (-1)13 = (-1)(-p) \\
 -13 = p \\
 -x = 7 \quad -x = -2 \\
 x = -7 \quad x = 2
 \end{array}$$

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$$\begin{array}{l}
 21 = -p + 8 \\
 21 = -(13) + 8 \\
 21 = 13 + 8 \\
 21 = 21 \checkmark
 \end{array}$$

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a. $7 = 2y - 3$

$$\begin{array}{l}
 7 = 2y - 3 \\
 +3 \quad +3 \\
 \hline
 10 = 2y \\
 \frac{10}{2} = \frac{2y}{2} \\
 5 = y
 \end{array}$$

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b. $\frac{x}{9} - 15 = 12$

$$\begin{array}{l}
 \frac{x}{9} - 15 = 12 \\
 +15 \quad +15 \\
 \hline
 \frac{x}{9} = 27 \\
 \frac{x}{9} \cdot 9 = 27 \cdot 9 \\
 x = 243
 \end{array}$$

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c. $-x + 15 = 12$

$$\begin{array}{r|l}
 -x + 15 = 12 & \\
 \hline
 -15 & -15 \\
 \hline
 -x & -3 \\
 \hline
 x & x \\
 \hline
 x = 3 &
 \end{array}$$

$(-1) \cdot (-x) = -3 \cdot (-1)$

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ex. 3

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Solve $3 - 5z = 18$

$3 - 5z = 18 \quad \text{Subtraction Prop.}$

$-5z = 15 \quad \text{Simplify}$

$z = -3 \quad \text{Division Prop.}$

Quick v # 3

$-4m = 3 \quad \text{Addition Prop.}$

$-4m = 12 \quad \text{Simplify}$

$m = -3 \quad \text{Division Prop.}$

$m = -3 \quad \text{Simplify}$

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