

Section Overview



Solving Equations Containing Integers

Lessons 1-7, 1-8

Why? Many real-world problems may be solved by using equations.

To solve an equation, isolate the variable on one side of the equation.

To do this, *undo* the operation that is performed on the variable in the equation.

$$\begin{array}{r} 25 = r - 15 \\ + 15 = + 15 \\ \hline 40 = r \end{array}$$

To **undo the subtraction** and isolate the variable r , add 15 to both sides of the equation.

$$\begin{array}{r} 25 = r + 15 \\ - 15 = - 15 \\ \hline 10 = r \end{array}$$

To **undo the addition** and isolate the variable r , subtract 15 from both sides of the equation.

$$\begin{array}{r} 225 = -5r \\ \frac{225}{-5} = \frac{-5r}{-5} \\ \hline -45 = r \end{array}$$

To **undo the multiplication** and isolate the variable r , divide both sides by -5 .

$$\begin{array}{r} 45 = \frac{r}{-5} \\ (-5)(45) = (-5)\left(\frac{r}{-5}\right) \\ \hline -225 = r \end{array}$$

To **undo the division** and isolate the variable r , multiply both sides by -5 .

Two-Step Equations

Lesson 1-9

Why? To work effectively with formulas in science, students must be able to solve multi-step equations. Solving two-step equations is a stepping stone to solving multi-step equations and two-step inequalities.

To solve, identify the operations and the order in which they are applied to the variable. Then use inverse operations to undo them in the reverse order.

$$8x + 15 = 39$$

$$\begin{array}{r} - 15 \quad - 15 \\ 8x + 15 = 39 \\ \hline 8x = 24 \\ \frac{8x}{8} = \frac{24}{8} \\ \hline x = 3 \end{array}$$

Subtract 15 from both sides of the equation.

Divide both sides of the equation by 8.