

### Objective 3

Solve a one-variable linear equation with variables on both sides

#### PROBLEM

$$\text{Solve: } 4(-3x + 2) + 4x = 7x$$

#### STEP 1

Use the distributive and commutative properties to simplify the equation. Add like terms.

$$\begin{aligned} 4(-3x + 2) + 4x &= 7x \\ 4(-3x) + 4 \cdot 2 + 4x &= 7x \\ -12x + 8 + 4x &= 7x \\ -12x + 4x + 8 &= 7x \\ -8x + 8 &= 7x \end{aligned}$$

#### STEP 2

Add  $8x$  to both sides of the equation.

$$\begin{array}{r} -8x + 8 = 7x \\ 8x \quad 8x \\ \hline 8 = 15x \end{array}$$

#### STEP 3

Divide both sides of the equation by 15.

$$\begin{aligned} 8 &= 15x \\ \frac{8}{15} &= \frac{15x}{15} \\ \frac{8}{15} &= x \end{aligned}$$

The solution to the equation is  $x = \frac{8}{15}$ .

#### ANSWER

$$x = \frac{8}{15}$$

#### Guided Practice:

$$9x - 5 = \frac{1}{4}(16x + 60)$$

$$7 - 8x = 4x - 17$$

**Guided Practice:**

1.  $24 - 3m = 5m$

2.  $20 + c = 4c - 7$

3.  $9 - 3k = 17 - 2k$

4.  $5z - 2 = 2(3z - 4)$

5.  $3 - 4a = 5(a - 3)$

6.  $8y - 6 = \frac{2}{3}(6y + 15)$

**Additional Help:**

<https://www.khanacademy.org/math/algebra/solving-linear-equations-and-inequalities/basic-equation-practice/v/equations-3>

[http://www.virtualnerd.com/tutorials/?id=Alg1\\_03\\_01\\_0011](http://www.virtualnerd.com/tutorials/?id=Alg1_03_01_0011)