

Match each exercise with its label (A, B, or C).

- | | |
|--------------------|---------------|
| 1. $2(x - 3) = 10$ | A. expression |
| 2. $2(x - 3) < 10$ | B. equation |
| 3. $2(x - 3)$ | C. inequality |

Simplifying, Then Solving Equations

Some equations are more complicated. To solve these equations, we need to simplify each side of the equation, then use our skills to solve the equation. Here's an example involving adding like terms:

$$\begin{array}{r}
 2x + 3x + 5 = 45 \\
 5x + 5 = 45 \quad \longrightarrow \text{Combine like terms.} \\
 \quad -5 \quad -5 \quad \longrightarrow \text{Subtract 5 from each side of the equation.} \\
 \hline
 5x = 40 \\
 \div 5 \quad \div 5 \quad \longrightarrow \text{Divide each side of the equation by 5} \\
 \hline
 x = 8 \\
 \odot
 \end{array}$$

Here's another example. This time, we need to use the distributive property first:

$$\begin{array}{r}
 3(x + 1) = -12 \\
 3x + 3 = -12 \quad \longrightarrow \text{Use the distributive property to remove the parentheses.} \\
 \quad -3 \quad -3 \quad \longrightarrow \text{Subtract 3 from each side of the equation.} \\
 \hline
 3x = -15 \\
 \div 3 \quad \div 3 \quad \longrightarrow \text{Divide both sides of the equation by 3.} \\
 \hline
 x = -5 \\
 \odot
 \end{array}$$

These next few examples are a bit more complicated. Let's do them together. Solve each equation and simplify each expression.

• $2x - 5x + 1 = 10 - 1$

• $5(x - 2) + 6x = 1$

• $2(3x - 1) - (5x + 3)$

• $4(3x + 2) - 18 = 14$

Now, try a few on your own. Solve each equation and simplify each expression.

1. $m - 9m = 8 - 19$

2. $-15 = 3(x + 5)$

3. $-2(5x - 1) = -7$

4. $2x + 3x - 4 = 18$

5. $2(x - 5) + 15 = -23$

6. $\frac{2}{3}x = -15$

7. $-2(3x + 1) - 3(4x + 2)$

8. $-4(x - 1) = -32$