

3.3

Solve Multi-Step Equations

Goal • Solve multi-step equations.

Your Notes

Example 1 Solve an equation by combining like terms

Solve $3t + 5t - 5 = 11$.

Solution

$$3t + 5t - 5 = 11$$

$$\underline{\hspace{1cm}} - 5 = 11$$

$$\underline{\hspace{1cm}} - 5 + \underline{\hspace{1cm}} = 11 + \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

$$\frac{\boxed{\hspace{1cm}}}{\boxed{\hspace{1cm}}} = \frac{\boxed{\hspace{1cm}}}{\boxed{\hspace{1cm}}}$$

$$t = \underline{\hspace{1cm}}$$

The solution is $\underline{\hspace{1cm}}$.

Write original equation.

Combine like terms.

Add $\underline{\hspace{1cm}}$ to each side.

Simplify.

Divide each side by $\underline{\hspace{1cm}}$.

Simplify.

Example 2 Solve an equation using the distributive property

Solve $5a + 3(a + 2) = 22$.

Solution

Method 1

Show All Steps

$$5a + 3(a + 2) = 22$$

$$5a + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = 22$$

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} = 22$$

$$\underline{\hspace{1cm}} = 22 - \underline{\hspace{1cm}}$$

$$\underline{\hspace{1cm}} = 16$$

$$\frac{\boxed{\hspace{1cm}}}{\boxed{\hspace{1cm}}} = \frac{16}{\boxed{\hspace{1cm}}}$$

$$a = \underline{\hspace{1cm}}$$

Method 2

Do Some Steps Mentally

$$5a + 3(a + 2) = 22$$

$$5a + \underline{\hspace{1cm}} + \underline{\hspace{1cm}} = 22$$

$$\underline{\hspace{1cm}} + \underline{\hspace{1cm}} = 22$$

$$\underline{\hspace{1cm}} = 16$$

$$a = \underline{\hspace{1cm}}$$

Your Notes

✔ **Checkpoint** Solve the equation. Check your solution.

1. $9d - 4d - 2 = 18$	2. $2x + 7(x - 3) = 6$
3. $3w + 4 + w = 36$	4. $40 = 2(10 + 4k) + 2k$

Example 3 Multiply by a reciprocal to solve an equation

Solve $\frac{3}{4}(a - 5) = 9$.

Solution

$$\frac{3}{4}(a - 5) = 9$$

Write original equation.

$$\underline{\hspace{1cm}} \cdot \frac{3}{4}(a - 5) = \underline{\hspace{1cm}} \cdot 9$$

Multiply each side by $\underline{\hspace{1cm}}$.

$$a - 5 = \underline{\hspace{1cm}}$$

Simplify.

$$a - 5 + \underline{\hspace{1cm}} = 12 + \underline{\hspace{1cm}}$$

Add $\underline{\hspace{1cm}}$ to each side.

$$a = \underline{\hspace{1cm}}$$

Simplify.

✔ **Checkpoint** Solve the equation. Check your solution.

5. $\frac{1}{2}(4x - 2) = 7$	6. $\frac{5}{6}(2y + 4) = 10$
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Homework