

- Solving two-step equations requires **TWO STEPS**.
- You need to **determine what operations are being performed on the variable**.
- Then, you need to **apply the inverse operations ("undo") in the reverse order**.

Ex. 1 Solve $5x + 9 = 24$

* Ask yourself "What is being done **to the variable (x)** in the original equation?"
(remember the Order of Operations!)

* "Undo" those operations by using the **INVERSE** operations in **REVERSE** order.

What are we DOING to x?	Undo (in reverse order)
1. multiply by 5	1. _____ 9
2. add 9	2. _____ by 5

$$\begin{array}{rcl}
 5x + 9 & = & 24 \\
 \underline{} & & \underline{} \\
 5x & = & 15 \\
 \hline
 \frac{5x}{5} & = & \frac{15}{5} \\
 x & = & \underline{}
 \end{array}$$

Original equation

_____ 9 from both sides

Simplify (left side: $9 - 9 = 0$; right side: $24 - 9 = 15$)

Divide both sides by _____

Simplify

Check:

$$\begin{array}{l}
 5x + 9 = 24 \\
 5(\underline{}) + 9 = 24 \\
 \underline{} + 9 = 24 \\
 \underline{} = 24 \quad \text{😊}
 \end{array}$$

Original equation

Substitute your answer for the variable

Simplify

Celebrate!

Ex. 2 Solve $\frac{x}{2} + 5 = 11$

Do	Undo

Subtract _____ from both sides

Simplify

_____ both sides by 2

Check:

Original equation

Substitute your answer for the variable

Simplify

Celebrate!



Your Turn. Check your answers.

1. $4y - 4 = 16$

2. $-1 = \frac{z}{3} - 7$

3. $10 = 7 - m$

Ex. 3

Solve a two-step equation by combining like terms

***Remember --- LIKE TERMS have the SAME VARIABLE raised to the SAME EXPONENT**

$$7x - 4x = 21$$

Original equation

$$\underline{\quad} = 21$$

Combine

$$\frac{3x}{\square} = \frac{21}{\square}$$

Divide each side by (the coefficient)

$$x = \underline{\quad}$$

Simplify

Ex. 4

$$5z + 4z = 36$$

Original Equation

$$\underline{\quad} = 36$$

Combine like terms ()

$$\frac{\square}{\square} = \frac{36}{\square}$$

Divide both sides by

$$x = \underline{\quad} \quad \text{Simplify}$$

YOUR TURN. CHECK your answers.

1. $8y + 3y = 44$

2. $8t - 3t = 35$

3. $-4w - 2w = 24$

4. $-16 = 5d - 9d$