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Multi-Step Equations with like terms on the same side (no negative coefficients)

$$\begin{array}{r} -12 + 3x + 2x = 3 \\ +12 \hline 3x + 2x = 15 \\ 5x = 15 \\ (x = 3) \end{array}$$

Multi-Step Equations with like terms on the same side (negative coefficients)

	1. $-12 + 3x + 2x = 3$ $\begin{array}{r} -12 + 5x = 3 \\ +12 \hline 5x = 15 \\ \frac{5x}{5} = \frac{15}{5} \\ (x = 3) \end{array}$	2. $x - 6 + 2x = 3$ $\begin{array}{r} x + 2x = 3 + 6 \\ 3x = 9 \\ \frac{3x}{3} = \frac{9}{3} \\ (x = 3) \end{array}$
	3. $3x - 2 - 1x = 4$ $\begin{array}{r} 3x - 1x = 4 + 2 \\ 2x = 6 \\ \frac{2x}{2} = \frac{6}{2} \\ (x = 3) \end{array}$	4. $x + 3x - 16 = 4$ $\begin{array}{r} x + 3x = 4 + 16 \\ 4x = 20 \\ \frac{4x}{4} = \frac{20}{4} \\ (x = 5) \end{array}$
	1. $-1 + 1x - 3x = 5$ $\begin{array}{r} 1x - 3x = 5 + 1 \\ -2x = 6 \\ \frac{-2x}{-2} = \frac{6}{-2} \\ (x = -3) \end{array}$	2. $-x - 9 + 3x = 3$ $\begin{array}{r} -x + 3x = 3 + 9 \\ 2x = 12 \\ \frac{2x}{2} = \frac{12}{2} \\ (x = 6) \end{array}$
	3. $\boxed{-3x} - 23 + \boxed{2x} = 7$ $\begin{array}{r} -1x - 23 = 7 \\ +23 +23 \\ -1x = 30 \\ \frac{-1x}{-1} = \frac{30}{-1} \\ (x = -30) \end{array}$	4. $-x - 3x + 16 = 4$ $\begin{array}{r} -x - 3x = 4 - 16 \\ -4x = -12 \\ \frac{-4x}{-4} = \frac{-12}{-4} \\ (x = 3) \end{array}$

Multi-Step Equations with
distributive property and
like terms on the same
side (no negative
coefficients)

1. $4x + 7(x - 3) = 34$

$$\begin{aligned} 4x + 7x - 21 &= 34 \\ 11x - 21 &= 34 \\ \hline 11x &= 55 \\ \hline 11 & 11 \\ x &= 5 \end{aligned}$$

2. $2x + 3(2x - 4) = 44$

$$\begin{aligned} 2x + 6x - 12 &= 44 \\ 8x - 12 &= 44 \\ +12 & +12 \\ 8x &= 56 \\ X &= 7 \end{aligned}$$

3. $3x + 2(x + 2) = 49$

$$\begin{aligned} 3x + 2x + 4 &= 49 \\ 5x + 4 &= 49 \\ -4 & -4 \\ \hline 5x &= 45 \\ \hline 5 & 5 \\ x &= 9 \end{aligned}$$

4. $2x + 7(x - 2) = 31$

$$\begin{aligned} 2x + 7x - 14 &= 31 \\ 9x - 14 &= 31 \\ +14 & +14 \\ \hline 9x &= 45 \\ \hline 9 & 9 \\ x &= 5 \end{aligned}$$

Multi-Step Equations with
distributive property and
like terms on the same
side(negative coefficients)

$$1. -4x + 5(-x + 4) = 34$$

$$\begin{aligned} -4x - 5x + 20 &= 34 \\ -9x + 20 &= 34 \\ -20 &\quad -20 \\ \hline -9x &= 14 \\ -9 &\quad -9 \\ x &= \frac{14}{-9} \end{aligned}$$

$$2. -2x + 4(-2x - 2) = 44$$

$$\begin{aligned} -2x - 8x - 8 &= 44 \\ -10x - 8 &= 44 \\ +8 &\quad +8 \\ -10x &= 52 \\ x &= \frac{52}{-10} \end{aligned}$$

$$3. -3x - 2(2x + 3) = 48$$

$$\begin{aligned} -3x - 4x - 6 &= 48 \\ -7x - 6 &= 48 \\ +6 &\quad +6 \\ \hline -7x &= \frac{54}{-7} \\ x &= \frac{54}{-7} \end{aligned}$$

$$4. 4x - 7(x - 2) = 31$$

$$\begin{aligned} 4x - 7x + 14 &= 31 \\ -3x + 14 &= 31 \\ -14 &\quad -14 \\ -3x &= 17 \\ -3 &\quad -3 \\ x &= \frac{17}{-3} \end{aligned}$$