

Multi-Step Equations

February 18, 2020

Scrap

$$\cancel{4x} - \cancel{4x}$$

2.2 Multi Step Equations

1. Get rid of all ()
"Distributive Property"
2. Combine all like terms
on each side of the equal sign.
3. If variables are on both
sides "move" (opposite operation)
the smaller amount.

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Ex: $5(2x - 3) = 25$

\rightarrow

$$\begin{array}{rcl} 10x - 15 & = & 25 \\ + 15 & & + 15 \\ \hline 10x & = & 40 \\ \div 10 & & \div 10 \\ x & = & 4 \end{array}$$

$$\begin{array}{rcl} \frac{x}{3} - 9 & = & -2 \\ + 9 & & + 9 \\ \hline \frac{x}{3} & = & 7 \\ \times 3 & & \times 3 \\ x & = & 21 \end{array}$$

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Ex: $4x + 3(2x - 8) = 6$

$4x + 6x - 24 = 6$

$10x - 24 = 6$

$10x = 30$

$x = 3$

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$$\begin{array}{l} 4x - 8 = 2x + 6 \\ \text{---} -2x \quad \downarrow \quad \text{---} -2x \\ 2x - 8 = 6 \\ \text{---} +8 \quad \text{---} +8 \\ 2x = 14 \\ \text{---} \div 2 \quad \text{---} \div 2 \\ x = 7 \end{array}$$
$$\left\{ \begin{array}{l} 4(7) - 8 = 2(7) + 6 \\ 28 - 8 = 14 + 6 \\ 20 = 20 \checkmark \end{array} \right.$$

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$$\begin{aligned} -2(3x-4)+8 &= 5x+3(2x-2) \\ -6x+8+8 &= 5x+6x-6 \\ -6x+16 &= 11x-6 \\ +6x &+6x \\ 16 &= 17x-6 \\ +6 &+6 \\ \hline \frac{22}{17} &= \cancel{17}x \\ \boxed{\frac{22}{17} = X} &\quad \rightarrow \quad \boxed{X = \frac{22}{17}} \end{aligned}$$

