

Solving Multi-Step Equations

Parentheses

$$\begin{aligned}
 -10n + 3(8 + 8n) &= -6(n - 4) \\
 -10n + 24 + 24n &= -6n + 24 \\
 14n + 24 &= -6n + 24 \\
 +6n &
 \end{aligned}$$

1st Get rid of Parentheses by Distributing

$$\begin{aligned}
 20n + 24 &= 24 \\
 -24 &= -24 \\
 \hline
 20n &= 0 \text{ Eyes!} \\
 20 &= 20 \\
 n &= 0
 \end{aligned}$$

2nd Combine like terms (same variable and exponent)

★
20/0
Can't divide by 0

3rd Move X term

Special Cases

$$\begin{aligned}
 3x - 7 &= 3(x - 7) \\
 3x - 7 &= 3x - 21 \quad \star \\
 -3x & \quad -3x \\
 \hline
 -7 &= -21
 \end{aligned}$$

4th Solve 2 step Eq.

False
No Solution
it was never equal

$$\begin{aligned}
 3x - 21 &= 3(x - 7) \\
 3x - 21 &= 3x - 21 \quad \star \\
 -3x & \quad -3x \\
 \hline
 -21 &= -21
 \end{aligned}$$

True
Infinite Solution
they are exactly the same expression every number could be a solution

Equation Solving

August ~~19~~ 25

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Name

Key

Solve each Equation.

$$4 + y = 12$$

$$\begin{array}{r} -4 \quad -4 \\ \hline y = 8 \end{array}$$

$$3x + 7 = -8$$

$$3x = -15$$

$$x = -5$$

$$7x - 3x - 8 = 24$$

$$4x - 8 = 24$$

$$4x = 32$$

$$x = 8$$

$$22x + 2(3x + 5) = 66$$

$$22x + 6x + 10 = 66$$

$$28x + 10 = 66$$

$$28x = 56$$

$$x = 2$$

$$7x + 19 = -2x + 55$$

$$9x + 19 = 55$$

$$9x = 36$$

$$x = 4$$

$$3x - 10 + 4x = 5x - 7$$

$$7x - 10 = 5x - 7$$

$$2x - 10 = -7$$

$$2x = 3$$

$$x = \frac{3}{2} \text{ or } 1.5$$

$$15 - 2y = 3y$$

$$15 = 5y$$

$$y = 3$$

$$8x - 4 = 20 - 4x$$

$$12x - 4 = 20$$

$$12x = 24$$

$$x = 2$$

$$6x - 5 = 7x + 7 - x$$

$$\star 6x - 5 = 6x + 7$$

$$-5 = 7$$

No Solution

$$2(2x + 3) = -6(x + 9)$$

$$4x + 6 = -6x - 54$$

$$10x + 6 = -54$$

$$10x = -60$$

$$x = -6$$

$$4(1-x) + 3x = -2(x+1)$$

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

$$4 - x = -2x - 2$$

$$4 + x = -2$$

$$\boxed{x = -6}$$

$$6(x+3) + 3x = 3(x-2)$$

$$6x + 18 + 3x = 3x - 6$$

$$9x + 18 = 3x - 6$$

$$6x = -24$$

$$\boxed{x = -4}$$

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

$$4x + 2 - x = -3x - 6$$

$$3x + 2 = -3x - 6$$

$$6x + 2 = -6$$

$$6x = -8$$

$$\boxed{x = -\frac{4}{3} \text{ or } -1.\bar{3}}$$

$$-3(7-3x) + 2x = 5(2x-4)$$

$$-21 + 9x + 2x = 10x - 20$$

$$-21 + 11x = 10x - 20$$

$$-21 + x = -20$$

$$\boxed{x = 1}$$

$$x + 2(x-6) = -1(2x-14) + 49$$

$$x + 2x - 12 = -2x + 14 + 49$$

$$3x - 12 = -2x + 63$$

$$5x - 12 = 63$$

$$5x = 75$$

$$\boxed{x = 15}$$

$$2(6-2x) = -9x - \frac{1}{2}(-4x+6)$$

$$12 - 4x = -9x + 2x - 3$$

$$12 - 4x = -7x - 3$$

$$12 + 3x = -3$$

$$3x = -15$$

$$\boxed{x = -5}$$

nothing
to distribute
so you can
drop ()