NOTES - Solving Multi-Step Equations and Applications

Steps	What this step looks like
Distribute	
Combine like terms	
Undo Addition/Subtraction	
Undo Multiplication/Division	

More Problems for notes: Solving Multistep Equations

1. $19 = 2x - 5x + 4$

2. $6(4 + 3x) = 132$

3. $5 - 7x + 4x = 14$

4. $\frac{-3}{4}(8 + 4x) = -84$

5. $2(3x - 7) + 4x = 26$

6. $7x - 4(2 - 3x) = -21$

7. $3(3x - 1) - 2(3x - 2) = -9$

8. $3(x + 6) - (6x + 7) - 3x = -9$

Word Problems:

1. The perimeter of the following rectangle is 136 units. Find the length and width of the rectangle if the length is 6 more than twice the width.

        Equation: _____

        Solution: _____

                                                      2w + 6

                                                               w

2. Jane needed to make a long distance phone call. The first minute costs $2.00, and then $.25 cents for every minute after that. How long can Jane talk on the phone if she has $8.00?

        Equation: _____

        Solution: _____

Key

NOTES - Solving Multi-Step Equations and Applications

Steps	What this step looks like
Distribute S1 * multiply outside number by all terms inside ( ).	$-3(2x - 5)$ $-6x + 15$
Combine like terms S2 * terms with same variable raised to same power	$(-4a) + 9b (-3a) + 4 \boxed{-12b}$ $-7a - 3b + 4$
Undo Addition/Subtraction S3	$\begin{array}{r} x - 2 = 14 \\ +2 \quad +2 \\ \hline x = 16 \end{array}$
Undo Multiplication/Division S4	$2 \cdot \dfrac{x}{2} = 12 \cdot 2$ $x = 24$

More Problems for notes: Solving Multistep Equations

1. $19 = 2x - 5x + 4$
$19 = -3x + 4$
$-4 \qquad -4$
$\dfrac{15}{-3} = \dfrac{-3x}{-3}$ $\boxed{x = -5}$

2. $6(4 + 3x) = 132$
$24 + 18x = 132$
$-24 \qquad -24$
$\dfrac{18x}{18} = \dfrac{108}{18}$
$x = 6$

3. $5[-7x + 4x] = 14$
$5 - 3x = 14$
$-5 \qquad -5$
$\dfrac{-3x}{-3} = \dfrac{9}{-3}$ $\boxed{x = -3}$

4. $-\dfrac{3}{4}(8 + 4x) = -84$
$-6 - 3x = -84$
$+6 \qquad +6$
$\dfrac{-3x}{-3} = \dfrac{-78}{-3}$
$\boxed{x = 26}$

5. $2(3x - 7) + 4x = 26$
$6x - 14 + 4x = 26$
$10x - 14 = 26$
$+14 \qquad +14$
$\dfrac{10x}{10} = \dfrac{40}{10}$
$\boxed{x = 4}$

6. $7x - 4(2 - 3x) = -21$
$7x - 8 + 12x = -21$
$19x - 8 = -21$
$+8 \qquad +8$
$\dfrac{19x}{19} = \dfrac{-13}{19}$
$\boxed{x = -\dfrac{13}{19}}$

7. $3(3x - 1) - 2(3x - 2) = -9$
$\boxed{9x} (-3) - 6x \boxed{+4} = -9$
$3x - 1 = -9$
$+1 \qquad +1$
$\dfrac{3x}{3} = \dfrac{-10}{3}$
$\boxed{x = -\dfrac{10}{3}}$

8. $3(x + 6) - (6x + 7) - 3x = -9$
$\boxed{3x} (+18) - 6x (-7) - 3x = -9$
$-6x + 11 = -9$
$-11 \qquad -11$
$\dfrac{-6x}{-6} = \dfrac{-20}{-6}$
$\boxed{x = \dfrac{10}{3}}$

Word Problems:

1. The perimeter of the following rectangle is 136 units. Find the length and width of the rectangle if the length is 6 more than twice the width.

Equation: _____

Solution: _____

$2w + 6$

w

2. Jane needed to make a long distance phone call. The first minute costs $2.00, and then $.25 cents for every minute after that. How long can Jane talk on the phone if she has $8.00?

Equation: _____

Solution: _____