

# Distributive Property and Collecting Like Terms

A common mistake made while doing the distributive property occurs when the value on the outside of the parentheses is not multiplied by **ALL** the terms inside the parentheses.

**Correct Method:**

$$-7 ( 3x - 1 ) = 91$$

Multiply -7 and 3x to get -21

Multiply -7 and -1 to get +7

$$-21x + 7 = 91$$

$$\begin{array}{r} -7 \quad -7 \\ \hline \end{array}$$

Subtract 7 from both sides

$$-21x = 84$$

$$\frac{-21x}{-21} = \frac{84}{-21}$$

Divide both sides by -21

$$-21 \quad -21$$

$$x = -4$$

**Incorrect Method:**

$$-7 ( 3x - 1 ) = 91$$

Only multiplying the -7 by 3x

$$-21x - 1 = 91$$

**With multi-step equations distributive property and collecting like terms will need to be done.**

$$7(x + 3) + 9 = 5(x - 2) - 3x$$

Multiply 7 and x to get 7x  
Multiply 7 and 3 to get +21  
Multiply 5 and x to get 5x  
Multiply 5 and -2 to get -10

$$7x + 21 + 9 = 5x - 10 - 3x$$

$$7x + \underline{21} + \underline{9} = \underline{5x} - 10 - \underline{3x}$$

Collect like terms on each side

$$\begin{array}{r} 7x + 30 = 2x - 10 \\ \underline{-2x} \quad \underline{-2x} \end{array}$$

Do inverse the operation to move the variable to the right side

$$\begin{array}{r} 5x + 30 = -10 \\ \underline{-30} \quad \underline{-30} \end{array}$$

Do inverse the operation to move the constant to the left side

$$5x = -40$$

$$\begin{array}{r} \underline{5x} = \underline{-40} \\ 5 \quad 5 \end{array}$$

Divide both sides by 5

$$x = -8$$