3.2.11 - Thursday's Notes/Examples
Solving Equations by Distributing & Combining Like Terms

Example 1:

For the holidays, I bought each of my 3 children a stuffed animal and an $8 book. I also bought each of my 5 nieces a stuffed animal and a $6 blanket. All stuffed animals were the same price. I spent a total of $126. Write an equation, using the distributive property, to represent this situation.

Equation: $3(x+8) + 5(x+6)=126$

Solve the equation and explain your solution in the context of the situation.

$$3x+24+5x+30=126$$
$$8x+54=126$$
$$\underline{\quad -54 \quad -54}$$
$$\frac{8x}{8}=\frac{72}{8}$$
$$x=9$$

Solution: Each of the stuffed animals cost $9.

Example 2: $2(x + 5) + 4(2x + 10) = 60$

$$2x+10 + 8x+40=60$$
$$10x+50 = 60$$
$$\underline{\quad -50 \quad -50}$$
$$\frac{10x}{10} = \frac{10}{10}$$
$$x = 1$$

Example 3: $4(x - 7) + 8(1 - 6x) = 24$

$$4(x + {}^-7) + 8(1 + {}^-6x) = 24$$
$$4x + {}^-28 + 8 + {}^-48x = 24$$
$$-44x + {}^-20 = 24$$
$$\underline{\quad +20 \quad +20}$$
$$\frac{-44x}{-44} = \frac{44}{-44}$$
$$x = -1$$

Example 4: $-3(-5 - 2n) - 6(1 - 5n) = -9$

$$-3(-5 + {}^-2n) + {}^-6(1 + {}^-5n) = -9$$
$$15+6n+{}^-6+30n=-9$$
$$9+36n \quad = -9$$
$$\underline{-9 \qquad\qquad +{}^-9}$$
$$\frac{36n}{36} = \frac{-18}{36}$$
$$n = -\tfrac{1}{2}$$