9/14/2012 - Sec 4.3 Math 1010

4.1

#69 $\left(\frac{1}{2}x - \frac{1}{8}y = -\frac{1}{4}\right)^{-8}$ $\Rightarrow -4x + y = 2$

$4x - y = -2$

$4x - y = -2$

$0 = 0$

$\{(x,y) \mid 4x - y = -2\}$

#54 $3x + 3y = 0$

$(-2x - y = 0)3$ $\quad -6x - 3y = 0$

$-2(0) - y = 0$

$0 - y = 0$

$-y = 0$

$y = 0$

$\frac{-3x}{-3} = \frac{0}{-3}$

$x = 0$

$(0,0)$

4.2

#6 $\begin{cases} -3x+y-z=-10 \\ -4x+2y+3z=-1 \\ 2x+3y-2z=-5 \end{cases}$

① Eliminate y using ① and ②

$-2(-3x+y-z=-10) \Rightarrow$ ② $6x-2y+2z=20$

$-4x+2y+3z=-1$

$2x+5z=19$

$-3(-3x+y-z=-10) \Rightarrow$ ③ $9x-3y+3z=30$

$2x+3y-2z=-5$

$11x+z=25$

④ $2x+5z=19$

$11x+z=25 \leftarrow$ ⑤ $z=-11x+25$

$2x+5(-11x+25)=19$

$2x-55x+125=19$

$\quad -125 \quad -125$

$\frac{-53x}{-53} = \frac{-106}{-53}$

⑥ $x=2$

$z=-11(2)+25$

$=-22+25$

⑦ $z=3$

⑧ $-3x+y-z=-10$

$-3(2)+y-(3)=-10$

$-6+y-3=-10$

$y-9=-10$

$+9 \quad +9$

$y=-1$

$\boxed{(2,-1,3)}$ ← ans

Sec 4.3

Recall Steps to Solving

1st Read the Problem

2nd Assign Variables

3rd Write a system of Equation

4th Solve the System

5th State the answer. Label it appropriately

6th Check with the words of original problem

Ex:

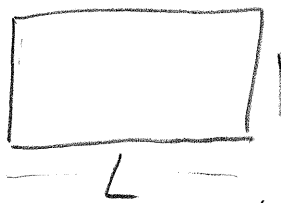
A Regular Soccer field with Perimeter of 360 yds. The length is 20 yds more than the width. Find the dimensions

$P = 360$

Length is 20yds more than Width

Length = ? L

Width = ? W



$2L + 2W = 360$

$L = W + 20$

$2(W+20) + 2W = 360$

$2W + 40 + 2W = 360$

$4W + 40 = 360$

$-40 \quad -40$

$4W = 320$

$W = 80$ yds

$L = 100$ yds ✓

Example #2

Basketball tickets = b

Hockey tickets = h

$2h + b = 148.79$

$-2(h + 2b = 148.60)$

$2h + b = 148.79$

$-2h + -4b = -297.20$

$-3b = -148.41$

$\frac{-3b}{-3} = \frac{-148.41}{-3}$

$b = \$49.47$

$h + 2(49.47) = 148.60$

$h + 98.94 = 148.60$

$-98.94 \quad -98.94$

$h = \$49.66$

basketball ticket = $\$49.47$

hockey ticket = $\$49.66$

Example

A grocer has some $\$4$ per lb coffee and $\$8$ per lb coffee She will mix to make 50 lb of $\$5.60$ per lb coffee. How much of Each should be used

$\$4$	+	$\$8$	=	$\$5.60$
x		y		50

$4x + 8y = 5.60(50)$

$x + y = 50$

$4x + 8y = 280$

$x + y = 50$

$x = 30$

$y = 20$

30 lb of \$4 per lb coffee

20 lb of \$8 per lb coffee

#46

"up close" = x

"in the middle" = y

"far out" = z

$x = 10 + y$

$y = 10 + z$

$2x = 20 + 3(z)$ ★

$z = y - 10$

$y = 10 + (y - 10)$

$2(10 + y) = 20 + 3(y - 10)$

$20 + 2y = 20 + 3y - 30$

$20 + 2y = -10 + 3y$

$-20 \quad -3y \quad -20 \quad -3y$

$-y = -30$

$y = 30$ ✓

$x = 10 + y$

$x = 10 + 30$

$x = 40$ ✓

$z = y - 10$

$= 30 - 10$

$= 20$ ✓

"upclose" tickets are \$40

"in the middle" tickets are \$30

"far out" tickets are \$20