

1.  $a = \# 2 \text{ pointers}$   
 $b = \# 3 \text{ pointers}$

$$\begin{aligned} a + b &= 9 \\ 2a + 3b &= 20 \end{aligned}$$

$$\begin{bmatrix} 1 & 1 \\ 2 & 3 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 9 \\ 20 \end{bmatrix}$$

$$\begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 7 \\ 2 \end{bmatrix}$$

Greg made 7 2-pointers and 2 3-pointers

2.  $a = \# \text{ pkgs } < 3 \text{ lbs.}$   
 $b = \# \text{ pkgs } \geq 3 \text{ lbs}$

$$\begin{aligned} a + b &= 12 \\ 2a + 3b &= 29 \end{aligned}$$

$$\begin{bmatrix} 1 & 1 \\ 2 & 3 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 12 \\ 29 \end{bmatrix}$$

$$\begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 7 \\ 5 \end{bmatrix}$$

The  $\#$  pkgs  $< 3$  lbs was 7. There were 5 pkgs  $\geq 3$  lbs.

3.  $b = \$ \text{ earned babysitting}$   
 $r = \$ \text{ earned @ restaurant}$

$$\begin{aligned} 8b + 3r &= 58 \\ 2b + 5r &= 40 \end{aligned}$$

$$\begin{bmatrix} 8 & 3 \\ 2 & 5 \end{bmatrix} \begin{bmatrix} b \\ r \end{bmatrix} = \begin{bmatrix} 58 \\ 40 \end{bmatrix}$$

$$\begin{bmatrix} b \\ r \end{bmatrix} = \begin{bmatrix} 5 \\ 6 \end{bmatrix}$$

Dale earned \$5 babysitting and \$6 at the restaurant.

4.  $h = \# \text{ hours}$

$C = \text{Cost}$

$$c = 7 + 2h \quad 2h - c = -7$$

$$C = 5 + 3h \quad 3h - c = -5$$

$$\begin{bmatrix} 2 & -1 \\ 3 & -1 \end{bmatrix} \begin{bmatrix} h \\ c \end{bmatrix} = \begin{bmatrix} -7 \\ -5 \end{bmatrix}$$

$$\begin{bmatrix} h \\ c \end{bmatrix} = \begin{bmatrix} 2 \\ 11 \end{bmatrix}$$

Break even point is (2, 11). Option 1 is better for 2 hrs or more. Option 2 is better for less than 2 hours.

5.  $a = \# \text{ ml } 1\% \text{ sol.}$

$b = \# \text{ ml } 10\% \text{ sol.}$

$$a + b = 90 \quad \rightarrow a + b = 90$$

$$.01a + .1b = .03(90) \rightarrow .01a + .1b = 2.7$$

$$\begin{bmatrix} 1 & 1 \\ .01 & .1 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 90 \\ 2.7 \end{bmatrix}$$

$$\begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 70 \\ 20 \end{bmatrix}$$

There should be 70 ml of the 1% sol + 20 ml of the 10% sol.

6.  $a = \# \text{ drums type 1 } (\$30)$

$b = \# \text{ drums type 2 } (\$20)$

$$a + b = 7$$

$$30a + 20b = 160$$

$$\begin{bmatrix} 1 & 1 \\ 30 & 20 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 7 \\ 160 \end{bmatrix}$$

$$\begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 2 \\ 5 \end{bmatrix}$$

Mr. George bought 2 \$30 drums and 5 \$20 drums.

7.  $l = \text{length}$   
 $w = \text{width}$

$$2l + 2w = 86 \rightarrow 2l + 2w = 86$$
$$2w = l + 2 \rightarrow -l + 2w = 2$$

$$\begin{bmatrix} 2 & 2 \\ -1 & 2 \end{bmatrix} \begin{bmatrix} l \\ w \end{bmatrix} = \begin{bmatrix} 86 \\ 2 \end{bmatrix}$$

$$\begin{bmatrix} l \\ w \end{bmatrix} = \begin{bmatrix} 28 \\ 15 \end{bmatrix}$$

The length of the rectangle is 28 and the width is 15.

8.  $a = \# \text{ memb. ordering 1}$   
 $b = \# \text{ memb. ordering 2}$

$$a + 2b = 880$$
$$12a + 20b = 9840$$

$$\begin{bmatrix} 1 & 2 \\ 12 & 20 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 880 \\ 9840 \end{bmatrix}$$

$$\begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 520 \\ 180 \end{bmatrix}$$

180 members ordered 2 books.

9.  $C = \# \text{ of cars}$   
 $t = \# \text{ of trucks}$

$$T = 4C \rightarrow 4C - t = 0$$
$$5C + 6t = 29000$$

$$\begin{bmatrix} 4 & -1 \\ 5 & 6 \end{bmatrix} \begin{bmatrix} C \\ t \end{bmatrix} = \begin{bmatrix} 0 \\ 29000 \end{bmatrix}$$

$$\begin{bmatrix} C \\ t \end{bmatrix} = \begin{bmatrix} 1000 \\ 4000 \end{bmatrix}$$

They should sell 1000 cars + 4000 trucks.

10.  $S = \#$  acres of Soybeans  
 $C = \#$  acres of corn

$$S + C = 100$$

$$6S + 8C = 660$$

$$\begin{bmatrix} 1 & 1 \\ 6 & 8 \end{bmatrix} \begin{bmatrix} S \\ C \end{bmatrix} = \begin{bmatrix} 100 \\ 660 \end{bmatrix}$$

$$\begin{bmatrix} S \\ C \end{bmatrix} = \begin{bmatrix} 70 \\ 30 \end{bmatrix}$$

Mr. Griffin should have 70 acres  
of soybeans  $\rightarrow$  30 acres of corn.