

- 5) Hockey team receives 2 points when they win and one point when they tie. One season, a team won a championship with 48 points. They won 9 more games than they tied. How many wins and how many ties did the team have?

Let  $x = \#$  tied games. Then  $y = 9 + x$  ( $\#$  won)

$$\Rightarrow 2(9+x) + 1(x) = 48$$

$$18 + 2x + x = 48 \rightarrow 3x = 30$$

$$x = 30/3 = 10$$

$$y = 9 + 10 = 19$$

$\Rightarrow$  They tied 10 games, won 19.

6) Solve by the elimination method.

$$\begin{array}{r} x + 9y = 41 \\ -x + 5y = 15 \\ \hline \end{array}$$

$$14y = 56$$

$$y = 56/14 = 4$$

$$\begin{array}{r} x + 9(4) = 41 \\ x = 5 \end{array}$$

What is the solution of the system?  $(5, 4)$

7) Solve by the elimination method.

$$\begin{array}{r} 2(5x + 3y = -13) \rightarrow 10x + 6y = -26 \\ 3(7x - 2y = 11) \rightarrow 21x - 6y = 33 \\ \hline 31x = 7 \\ x = 7/31 \end{array}$$

$$\begin{array}{r} 5(7/31) + 3y = -13 \\ 3y = -13 - 35/31 \\ y = -146/31 \end{array}$$

What is the solution of the system?  $(7/31, -146/31)$

8) Solve by the elimination method.

$$\begin{array}{r} 3(0.3x - 0.2y = 4) \rightarrow 0.9x - 0.6y = 12 \\ 2(0.5x + 0.3y = 1) \rightarrow 1x + 0.6y = 2 \\ \hline 1.9x = 14 \end{array}$$

$$\rightarrow x = 14/1.9 = \frac{140}{19}$$

What is the solution of the system?

$(140/19, -170/19)$

$$\begin{array}{r} \text{So } 0.3\left(\frac{140}{19}\right) - 0.2y = 4 \\ -0.2y = 4 - 0.3\left(\frac{140}{19}\right) \\ y = -170/19 \end{array}$$

9) Solve by the elimination method.

$$\begin{array}{r} 6x - 9y = 25.5 \\ 7y - 3x = -14 \end{array} \quad \begin{array}{r} 6x - 9y = 25.5 \\ (-3x + 7y = -14)(2) \rightarrow \\ \hline -6x + 14y = -28 \end{array} \quad \begin{array}{r} 6x - 9y = 25.5 \\ -6x + 14y = -28 \\ \hline 5y = -2.5 \\ y = -0.5 \end{array}$$

$$\begin{array}{r} 6x - 9(-0.5) = 25.5 \\ 6x = 21 \rightarrow x = 3.5 \end{array}$$

What is the solution of the system?  $(3.5, -0.5)$

10) Solve by the elimination method.

$$\begin{array}{r} -3(0.05x + 0.25y = 66) \rightarrow -0.15x - 0.75y = -198 \\ 0.15x + 0.05y = 72 \\ \hline -0.7y = -126 \rightarrow y = 180 \\ \text{so } 0.05x + 180(0.25) = 66 \\ x = 420 \end{array}$$

What is the solution of the system?  $(420, 180)$

11) The perimeter of a rectangle is 174 inches. The length exceeds the width by 31 inches. Find the length and the width. (Type an integer or a decimal) in inches.

$$\begin{array}{l} w = \text{width} \\ l = w + 31 \end{array} \Rightarrow \begin{array}{r} 2w + 2(w + 31) = 174 \\ 2w + 2w + 62 = 174 \\ 4w = 112 \rightarrow w = 28 \\ \rightarrow L = 28 + 31 = 59 \end{array}$$

Width = 28 inches, length = 59 inches

12) The Everton College store paid \$1927 for an order of 51 calculators. The store paid \$8 for each scientific calculator. The others, all graphing calculators, cost the store \$57 each. How many of each type of calculator was ordered?

$$\begin{array}{l} x = \# \text{ scient} \\ y = \# \text{ graph. calc} \end{array} \quad \begin{array}{r} x + y = 51 \rightarrow x = 51 - y \\ 8x + 57y = 1927 \\ 8(51 - y) + 57y = 1927 \\ 408 - 8y + 57y = 1927 \end{array}$$

The store ordered 20 scientific calculators and 31 graphing calculators.

$$\begin{array}{r} 49y = 1519 \\ y = \underline{\underline{31}} \quad \text{so } x = 51 - 31 \\ = \underline{\underline{20}} \end{array}$$

- 13) Snookers lumber can convert logs into either lumber or plywood. In a given day, the mill turns out three times as many units of plywood as lumber. It makes a profit of \$30 on a unit of lumber and \$45 on a unit of plywood. How many of each unit must be produced and sold in order to make a profit of \$16830?

$x = \text{lumber}$   
 $3x = \text{plywood}$   
 "y"

$$30x + 45(3x) = 16,830$$

$$30x + 135x = 16,830$$

$$165x = 16,830$$

$$x = \underline{102} \rightarrow y = 102 \cdot 3 = \underline{306}$$

Snookers lumber must produce and sell 102 units of lumber and 306 units of plywood to make a profit of \$16830.

- 14) Soybean meal is 16% protein; cornmeal is 8% protein. How many pounds of each should be mixed together in order to get 320-pound mixture that is 15% protein?

$x = \text{Soybean}$   
 $y = \text{cornmeal}$

$$x + y = 320$$

$$y = 320 - x$$

16% protein x	+	8% protein 320-x	=	15% 320
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$$\rightarrow .16x + .08(320 - x) = .15(320)$$

$$.16x + 25.6 - .08x = 48$$

$$.08x = 22.4 \rightarrow x = 280 \text{ so } y = 40$$

How many pounds of the cornmeal should be in the mixture? Soybean?

280 pounds of soybean, 40 pounds of cornmeal

- 15) A student makes a \$8.75 purchase at the bookstore with a \$20 bill. The store has no bills and gives the change in quarters and fifty-cent pieces. There are 30 coins in all. How many of each kind are there?

$x = \# \text{ quarters}$   
 $y = \# \text{ 50-cent pieces}$

$$(1) x + y = 30$$

$$\text{OR } y = 30 - x$$

Change =

$$\$20 - 8.75 = 11.25$$

$$(2) .25x + .50y = 11.25$$

$$0.25x + 0.50(30 - x) = 11.25$$

$$0.25x + 15 - 0.5x = 11.25$$

$$-0.25x = -3.75 \rightarrow x = \underline{15}$$

$$\text{so } y = 30 - 15 = \underline{15}$$

There are 15 quarters and 15 fifty cent pieces.