4.3 Systems of Linear Equations + Problem Solving (pg 62-66)

\[ S = \text{the # of small frames} \]
\[ L = \text{the # of large frames} \]

\[ S + L = 16 \]

4. You are going to buy 16 frames.

\[ y = \text{price} \cdot \text{quantity} \]

\[ 5D = D \cdot 5 \quad \text{[hamburgers]} \]
\[ 4B = B \cdot 4 \quad \text{[burgers]} \]

\[ 7S = S \cdot 7 \quad \text{Total # of frames} \]
\[ 19L = 19 \cdot L \quad \text{Total # of frames} \]

\[ 7S + 19L = 160 \]

(Substitution to solve)

12. \( x = \# \) of quarts of 6% milk

\[ y = \# \text{ of quarts of 1% milk} \]

\[ \sum \text{liquids} \quad \frac{x + y = 100}{\text{total}} \]

*Clear decimals by multiplying by 100*

\[ \frac{.06x}{\text{Butterfat}} = .06 \quad \text{Amount} \]
\[ .06x + .01y = .04 \cdot 100 \]

(Substitution)
4.3 Systems of Linear Equations & Problem Solving (pg 62-66)

11 S = the # of small frames
L = the # of large frames
$ = quantity

S + L = 16

12 D = cost of one hotdog
B = cost of one hamburger
$I = price \cdot quantity

5D = D \cdot 5 \leftarrow \text{hotdogs}
4B = B \cdot 4 \leftarrow \text{burgers}

\begin{align*}
7S &= 7 \cdot S \\
19L &= 19 \cdot L
\end{align*}

Total to spend (B) is \$160

\begin{align*}
14,25 &
\Rightarrow (5D + 4B = \$14.25) \quad (4D + 5B = \$15.00)
\end{align*}

13 F = the first #
S = the second #

\begin{align*}
F &= S - 8 \\
6F &= 3S + 8
\end{align*}

(Substitution to solve)

14 X = # of quarts of 6% BF milk
Y = # of quarts of 1% BF milk

\begin{align*}
X + Y &= 100
\end{align*}

(Liquid portion)

\begin{align*}
.06X &= 6\% \cdot X \\
.01Y &= 1\% \cdot Y
\end{align*}

(Concentration)

\begin{align*}
.06X + .01Y &= .04 \cdot 100
\end{align*}

(Substitution)
19. \[ p = \text{the speed of the plane in still air} \]

\[ W = \text{the speed of the wind} \]

\[ \text{d} = \text{r} \times \text{t} \]

\[ \text{distance} = \text{rate} \times \text{time} \]

- **With:** \[ 3000 = (p + W) \times 4 \]

- **Against:** \[ 3000 = (p - W) \times 5 \]

\( \text{Elimination} \)

Solve problems with cost & revenue functions

29. \[ C(x) = R(x) \]

\[ 14x + 3600 = 16x \]

\[ -14x \]

\[ 2x = 2 \]

\[ x = \frac{2}{2} = 1 \text{,}000 \]

35. a. \[ R(x) = x \times 550 \]

\[ = 550x \]

b. \[ C(x) = 200x + 7000 \]

\[ R(x) = C(x) \]

\[ 550x = 200x + 7000 \]

\[ -200x \]

\[ 350x = 7000 \]

350 \[ \frac{350}{350} \]

\[ x = 20 \text{ desks} \]