CLASSROOM ACTIVITY 3.4A

A benefit dinner held two raffles. One raffle was for a $30 gift certificate and the tickets sold for $1 each. The other raffle was for a 21-inch TV and the tickets sold for $2 each. The total amount of money received from both raffles was $359, and the total number of tickets sold was 248. How many of each type of ticket were sold?

1. Let $x$ represent the number of $1 tickets sold.

Let $y$ represent

2. Write two equations in terms of $x$ and $y$.

3. Solve the system of equations found in part (b).

4. Interpret your answer.
CLASSROOM ACTIVITY 3.4B

A 12% silver alloy is to be mixed with a 27% silver alloy to get 20 grams of a 15% silver alloy. How much of each of the 12% and 27% alloys should be used?

1. Let x represent the number of grams of the 12% silver alloy.

   Let y represent ____________________________

2. Write two equations in terms of x and y.

   ________________________________________
   ________________________________________

3. Solve the system of equations found in part (b).

4. Interpret your answer.
CLASSROOM ACTIVITY 3.4C

Fred invests $3000 more in an account that pays 4% simple interest than he invests in an account that pays 3% simple interest. If the total interest earned for the first year is $610, how much did Fred invest in each account?

1. Let x represent the principal invested in account paying 3% interest.

   Let y represent ______________________

2. Write two equations in terms of x and y.
   ______________________
   ______________________

3. Solve the system of equations found in part (b).
CLASSROOM ACTIVITY 3.4 D

A motorboat can travel 84 miles in 2 hours with the current. Against the current, the same trip takes 3 hours. What is the speed of the current and the speed of the boat in still water?

1. Let $x$ represent the speed of the boat in still water.

Let $y$ represent ____________________________

2. Complete the chart:

<table>
<thead>
<tr>
<th></th>
<th>Distance</th>
<th>Rate</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>with the current</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>against the current</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. Write two equations in terms of $x$ and $y$.

__________________________________________

__________________________________________

4. Solve the system of equations found in part (b).

5. Interpret your answer.
CLASSROOM ACTIVITY 3.4E

Two angles are complementary. One angle is $8^\circ$ more than the other. What are the measures of the two angles?

1. Set up a system of two equations. Let $x$ represent the smaller angle and $y$ represent the larger angle.

   equation 1: __________________________

   equation 2: __________________________

2. Solve the system of equations by using the substitution method.

3. Interpret your answer.
SECTION 3.4 SYSTEM APPLICATIONS

CLASSROOM ACTIVITY 3.4A (COSTS)

\[ \begin{align*} 
\text{\# of \# \$1 \text{ tickets}} & \quad \text{\# of \# \$2 \text{ tickets}} \\
X & \quad Y \\
\text{TOTAL \# OF TICKETS} & 248 \\
\text{TOTAL INCOME} & 259 \\
- & Y \\
\end{align*} \]

\[ \begin{align*} 
y & = -111 \\
Y & = 111 \\
X & = 137 \\
\end{align*} \]

CLASSROOM ACTIVITY 3.4B (MIXTURES)

\[ \begin{align*} 
X & = \text{\# grams 12\%} \\
Y & = \text{\# grams 27\%} \\
\text{GRAMS SOLUTION} & 12\% \\
\text{GRAMS Pure Silver} & 0.18X \\
\end{align*} \]

\[ \begin{align*} 
X & = 20 \\
Y & = 5 \\
1.2X + 2.7(20 - X) & = 3 \\
-0.15X & = -2.4 \\
X & = 16 \\
Y & = 4 \\
\end{align*} \]

CLASSROOM ACTIVITY 3.4C (INVESTMENT)

\[ \begin{align*} 
X & = \text{principle at 3\%} \\
Y & = \text{principle at 4\%} \\
\text{PRINC.} & 3\% \quad 4\% \quad \text{TOTAL} \\
\text{INT.} & 0.03X \\
\text{610} & 0.04Y \\
\end{align*} \]

\[ \begin{align*} 
Y & = 2000 + X \\
0.03X + 0.04Y & = 610 \\
\text{(2000, 10,000)} \\
\end{align*} \]

CLASSROOM ACTIVITIES 3.4D

\[ \begin{align*} 
d & = \text{speed in still water} \\
y & = \text{speed of current} \\
54 & = (x+y) \times 2 \\
42 & = x + y \\
(35, 7) \\
\text{(AGAIN) 84 = (x-y) \times 3} \\
28 & = x - y \\
70 & = 2x \\
\end{align*} \]
CLASSROOM ACTIVITY 3.4E (GEOMETRY)

\[ X = \text{smaller} \quad Y = \text{larger} \]

\[ X + 8 = Y \quad X + Y = 90 \]

\[ \frac{2x}{2} = \frac{88}{2} \quad (41, 49) \]

\[ X = 41 \]

\[ \text{SINCE} \quad X + Y = 90 \]

\[ 41 + Y = 90 \quad - 41 \]

\[ Y = 49 \]