we need 100 lb. of candy @ $2.89/lb.
we have unlimited supply of two different types, one @ $2.45/lb. and the other @ $3.55/lb.
How many pounds of each we need to mix?

\[
\begin{align*}
\frac{$2.45}{x \text{ lb.}} + \frac{$3.55}{y \text{ lb.}} &= \frac{$2.89}{100 \text{ lb.}} \\
\begin{cases}
x + y &= 100 \\
2.45x + 3.55y &= 2.89(100)
\end{cases}
\end{align*}
\]
\[
\begin{align*}
\begin{aligned}
\begin{cases}
x + y &= 100 \\
245x + 355y &= 28900
\end{cases}
\div 5
\rightarrow \begin{cases}
-49x - 49y &= -4900 \\
49x + 71y &= 5780
\end{cases}
= \rightarrow 22y = 880
\Rightarrow y = 40 \rightarrow x = 60
\end{aligned}
\end{align*}
\]

60 lb. @ $2.45/\text{lb.}$

32 lb. @ $3.55/\text{lb.}$

---

We need 100 liters of an acid solution with 26% concentration. We have unlimited supply of 20% and 28% acid solutions. How many liters of each?

\[
\begin{align*}
\begin{cases}
x + y &= 100 \\
x \text{ liters} + y \text{ liters} &= 100 \text{ liters}
\end{cases}
\left\{ \begin{array}{l}
\frac{20}{1} = 0.20 \\
\frac{28}{1} = 0.28 \\
\frac{26}{1} = 0.26
\end{array} \right.
\end{align*}
\]

\[
\begin{align*}
\begin{cases}
x + y &= 100 \\
0.20x + 0.28y &= 0.26(100)
\end{cases}
\text{Finish this yourself.}
\end{align*}
\]
Simple Interest \( I = P \cdot r \cdot t \)

John deposited a total of $2000 in two accounts. He earned $105 in simple interest after one year. One account paid 4% and the other account paid 6% in simple interest.

<table>
<thead>
<tr>
<th>Accounts</th>
<th>( P \cdot r \cdot t = I )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Act 1</td>
<td>( x \cdot 0.04 \cdot 1 = 0.04x )</td>
</tr>
<tr>
<td>Act 2</td>
<td>( y \cdot 0.06 \cdot 1 = 0.06y )</td>
</tr>
</tbody>
</table>

\[
\begin{align*}
\begin{cases} 
 x + y &= 2000 \\
 0.04x + 0.06y &= 105 
\end{cases}
\end{align*}
\]

Multiply by 100 to remove .

\[
\begin{align*}
2x + 3y &= 20000 \\
4x + 6y &= 10500 \\
2x + 3y &= 5250
\end{align*}
\]

\[
\begin{align*}
-2 \begin{cases} 
 x + y &= 2000 \\
 2x + 3y &= 5250
\end{cases} &\Rightarrow \\
-2x - 2y &= -4000 \\
2x + 3y &= 5250
\end{align*}
\]

\[
y = 1250
\]

$1250 @ 6\%$ and $750 @ 4\%$. 

Steph Curry has 31 points in a game without shooting any free throws. If we switch the baskets he made, 2 pts → 3 pts, 3 pts → 2 pts. He would have had 34 points. How many of each did he make?

\[ \begin{align*}
2x + 3y &= 31 \\
3x + 2y &= 34
\end{align*} \]

\[ \begin{align*}
2(8) + 3y &= 31 \\
3(8) + 2y &= 34
\end{align*} \]

Lisa opened two accounts, simple interest, one @ 4.5%, and another one @ 6.5% APR. She earned $112 in one year. The money @ 6.5% account was $200 more than the money @ 4.5% account. How much per acct?

\[ \begin{align*}
\text{Act I} & \quad x \cdot 4.5\% \cdot 1 = 0.045x \\
\text{Act II} & \quad y \cdot 6.5\% \cdot 1 = 0.065y
\end{align*} \]

\[ \begin{align*}
45x + 65y &= 112000 \\
5x + 13y &= 22400
\end{align*} \]