1. 7000 tickets worth $137,125 were sold for a concert. General admission tickets cost $22 each, and “standing room only” tickets cost $14.50 each. How many of each type were sold?

2. A 60% acid solution is to be mixed with an 80% acid solution to produce 20 liters of a 65% acid solution. How many liters of each solution are needed?

3. Lenore can purchase a car for $15,000, which will require her to spend an average of $80 per month in repairs and maintenance. Or, she can lease a car for $350 per month, which includes all repairs and maintenance. After how many months will the leased car and the purchased car cost the same?

4. A company gives an annual bonus to its top two salespeople. Sally and Fred were the top two salespeople last year. The ratio of Sally’s bonus to Fred’s bonus was 8 to 7. If the sum of their bonuses was $84,000, find the bonus Sally received.

5. A plane flying into a headwind travels 960 miles in 4 hours. With a tailwind, the return trip of 960 miles takes 3 hours. This problem will determine the speed of the plane (with no wind), and the windspeed. Let $x =$ speed of the plane (with no wind), and $y =$ speed of the wind.

   a) Fill in the table with known values and expressions using $x$ and $y$. Note that traveling into a headwind causes the plane to slow down, and traveling with a tailwind will make the plane go faster.

<table>
<thead>
<tr>
<th>Direction</th>
<th>Distance</th>
<th>Rate</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>With headwind</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With tailwind</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   b) Use the formula that shows the relationship among distance, rate and time to write a system of equations in the two variables $x$ and $y$.

   c) Solve the system of equations from part b to determine the speed of the plane (with no wind), and the windspeed.
Dave finds that his heart rate in the afternoon is linearly related to the number of cups of coffee he drank in the morning. When he drinks three cups in the morning, his heart rate in the afternoon is 70 beats per minute. When he drinks five cups in the morning, his heart rate in the afternoon is 76 beats per minute.

(a) Write an equation relating his heart rate (r) in the afternoon to the number of cups of coffee he has had in the morning.
(b) Plot your equation.
(c) Find the slope, n-intercept and r-intercept and discuss the physical meaning of each.
(d) How many cups must he drink in the morning to have a heart rate above 100 in the afternoon?

The graph below shows the ratio of the number of import vehicle sold to number of domestic vehicle sold each Michigan.

(a) Write an equation relating the ratio (r) to the number (t) of years since 1980.
(b) If 50,000 domestic vehicles were sold in 1989, how many import vehicles were sold in 1989?
(c) In 1989, what was the ratio of domestic vehicle sold to total vehicles sold?
(d) In what year was the number of domestic vehicles sold twice the number of import vehicles sold?