1. Use the given feasible region to find the maximum and minimum values, as well as where each of these values occurs, of the given objective functions.

(a) OBJ: \( P = x + 4y \)

(b) OBJ: \( P = 4x + 3y \)

Use the Method of Corners to solve Questions 2 and 3.

2. OBJ: Max \( P = 2x + 2y \)
   SUBJECT TO: \( 3x - y \geq 12 \)
               \( x + y \leq 15 \)
               \( x \geq 2, y \geq 5 \)

3. A candy company has 100 kg of chocolate-covered nuts and 125 kg of chocolate-covered raisins to be sold as two different mixes. One mix will contain half nuts and half raisins and will sell for $6 per kilogram. The other mix will contain 1/3 nuts and 2/3 raisins and will sell for $4.80 per kilogram.

   (a) How many kilograms of each mix should the company prepare for maximum revenue? Find the maximum revenue.

   (b) The company raises the price of the half-and-half mix to $8 per kilogram. Now how many kilograms of each mix should the company prepare for maximum revenue? Find the maximum revenue.
4. \[
\begin{bmatrix}
  x & y & s_1 & s_2 & s_3 & P \\
  2 & 2 & 0 & 3 & 1 & 0 & 15 \\
  3 & 4 & 1 & 6 & 0 & 0 & 20 \\
 -2 & -1 & 0 & 1 & 0 & 1 & 10 \\
\end{bmatrix}
\]

(a) First, write the solution (value of ALL variables) at this point in the simplex process.

(b) Next, find the best next pivot element and write down the subsequent simplex tableau.

(c) Finally, write down the solution after the pivot you just made. Is this the final solution?

5. **Solve the following problem using SIMPLEX.**

The Fancy Fashions Store has $8000 available each month for advertising. Newspaper ads cost $400 each and no more than 20 can be run per month. Radio ads cost $200 each and no more than 30 can be run per month. TV ads cost $1200 each, with a maximum of 6 available each month. Approximately 2000 women will see each newspaper ad, 1200 will hear each radio announcement and 10,000 will see each TV ad. How much of each type of advertising should be used if the store wants to maximize its ad exposure? At this point are there any leftover resources? If so, how much of each resource is leftover?