Linear Programming

Name: __________________________ Date: ___________________

The solutions to an optimization problem are always found at ______________________________________ of the feasible region.

_________________________ is a mathematical technique used to determine which solutions in the feasible region result in the optimal solutions of the objective function.

To determine the optimal solution to an optimization problem using linear programming we follow 5 steps:

1. Identify the quantity that must be optimized.

2. Define the variables that affect the quantity to be optimized and state any restrictions.

3. Write a system of linear inequalities to describe all the constraints of the problem and graph the feasible solution. Graph the feasible solution.

4. Write the objective function.

5. Write the coordinates of the vertices of the feasible region. Test the coordinates of the vertices in the objective function.

Example A craft shop makes copper bracelets and necklaces. Each bracelet requires 15 minutes of cutting time and 10 minutes of polishing time. Each necklace requires 15 minutes of cutting time and 20 minutes of polishing time. There is a maximum of 225 minutes of cutting time and 200 minutes of polishing time available each day. The shop makes a profit of $5 on each bracelet and $7 on each necklace sold. How many of each should the make per day to earn the most money?

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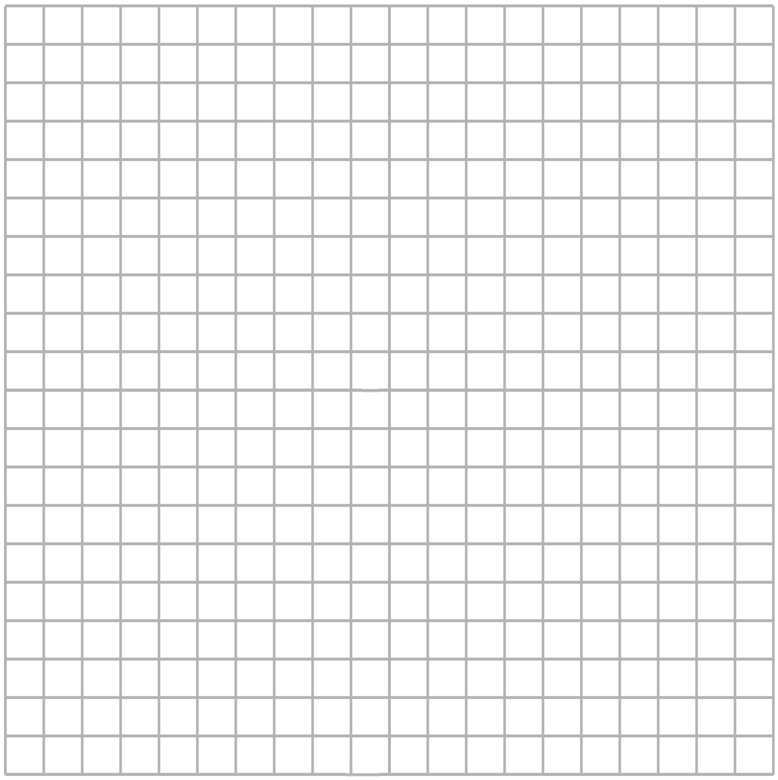
Step 2 Define the variables that affect the quantity to be optimized and state any restrictions.

Step 3 Write a system of linear inequalities to describe all the constraints of the problem and graph the feasible solution. Graph the feasible solution.



Step 4 Write the objective function.

Step 5 Write the coordinates of the vertices of the feasible region. Test the objective function.

Assignment p. 341 #1-6 Quiz: Next Day!