

Name: _____



LINEAR PROGRAMMING -- ALGEBRA 2

Complete each linear programming problem. **Make a labeled graph for each problem and include any other work.** List what the variables represent, the constraints (**including the hidden ones**), the objective function, the vertices, and finally the ordered pair and value of the optimal solution.

Problem 1: She’s Got the “Write” Stuff

Jamie has just finished writing a research paper. She has hired a typist who will type the paper on the computer for her. The typist charges \$3.50 per page if no charts or graphs are used and \$8.00 per page if a chart or graph appears on the page. Jamie knows there will be at most 40 pages having no charts or graphs. There will be no more than 16 pages with charts or graphs, and the paper will be 50 pages or less. What is the greatest possible cost to have the paper typed? How many pages with graphs and how many without graphs would cause this greatest cost?

Variables (in words): $x =$ _____ $y =$ _____

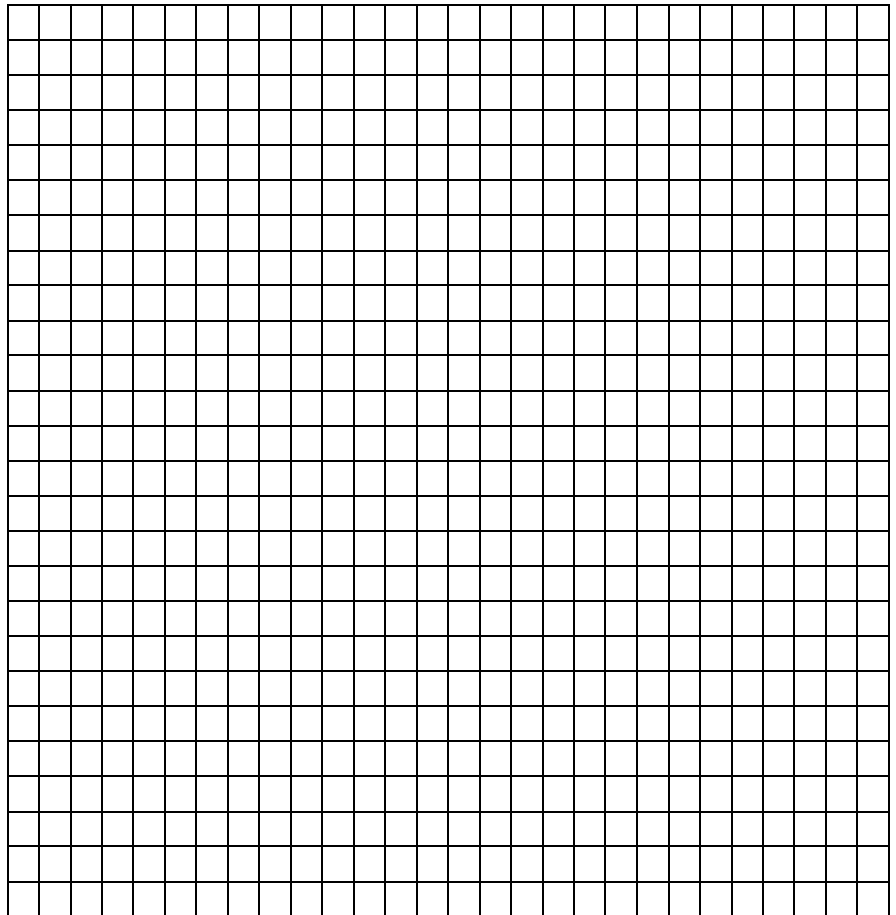
Constraints:

Objective Function:

Vertices: of Feasible Region:

Ordered Pair of Optimal Solution:

Maximum Cost of the Paper:





Problem 2: Batter Up

BingBATaBoom, Inc. manufactures two different quality wood baseball bats, the *Battlefield* and the *Dingbat*. The *Battlefield* takes 8 hours to trim and turn and 2 hours to finish it. It has a profit of \$17. The *Dingbat* takes 5 hours to trim and turn and 5 hours to finish, but its profit is \$29. The total time per day available for trimming and turning is 80 hours and for finishing is 50 hours. How many of each type of bat should be produced to have the maximum profit? What is this maximum profit?

Variables (*in words*): $x =$

$y =$

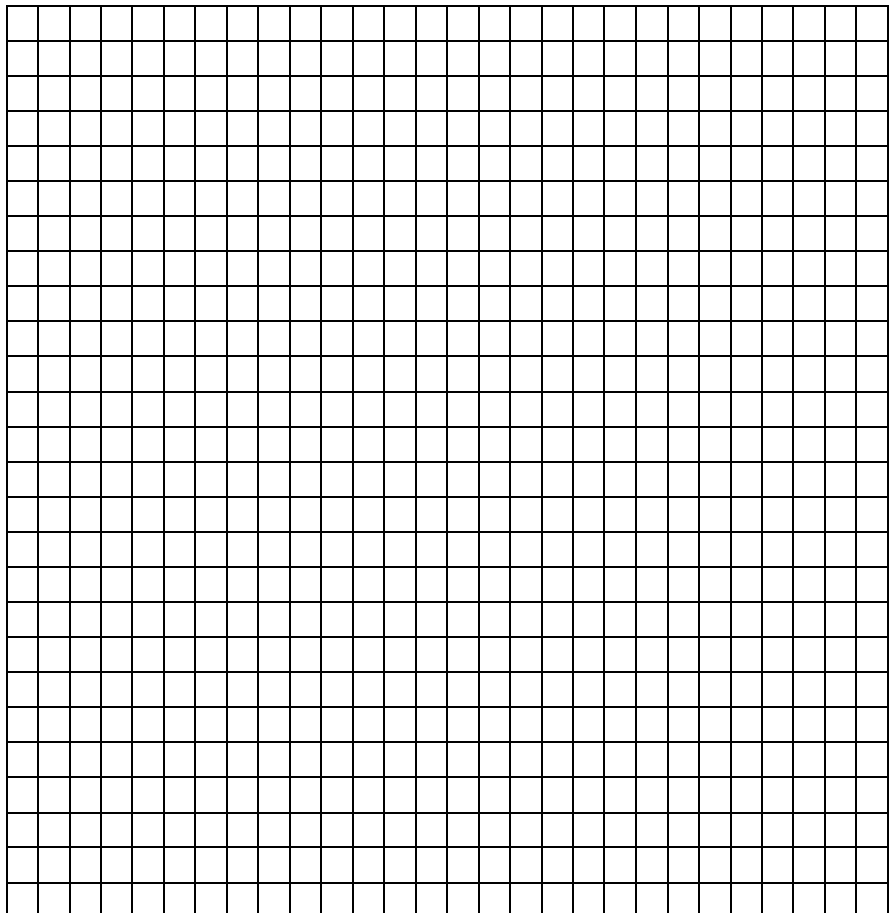
Constraints:

Objective Function:

Vertices: of Feasible Region:

Ordered Pair of Optimal Solution:

Maximum Profit:



Problem 3: Get the CARrect Answer



The Gala Events Center has a rectangular parking lot measuring 20 m by 50 m. Only 60% of the lot is usable space. A car requires 6 square meters of space and a bus requires 30 square meters of space. The attendant can handle no more than 60 vehicles. If the parking fees are \$2.50 for cars and \$7.50 for buses, how many of each type of vehicle should the attendant accept to maximize income? What is the maximum income?

Variables (*in words*): $x =$

$y =$

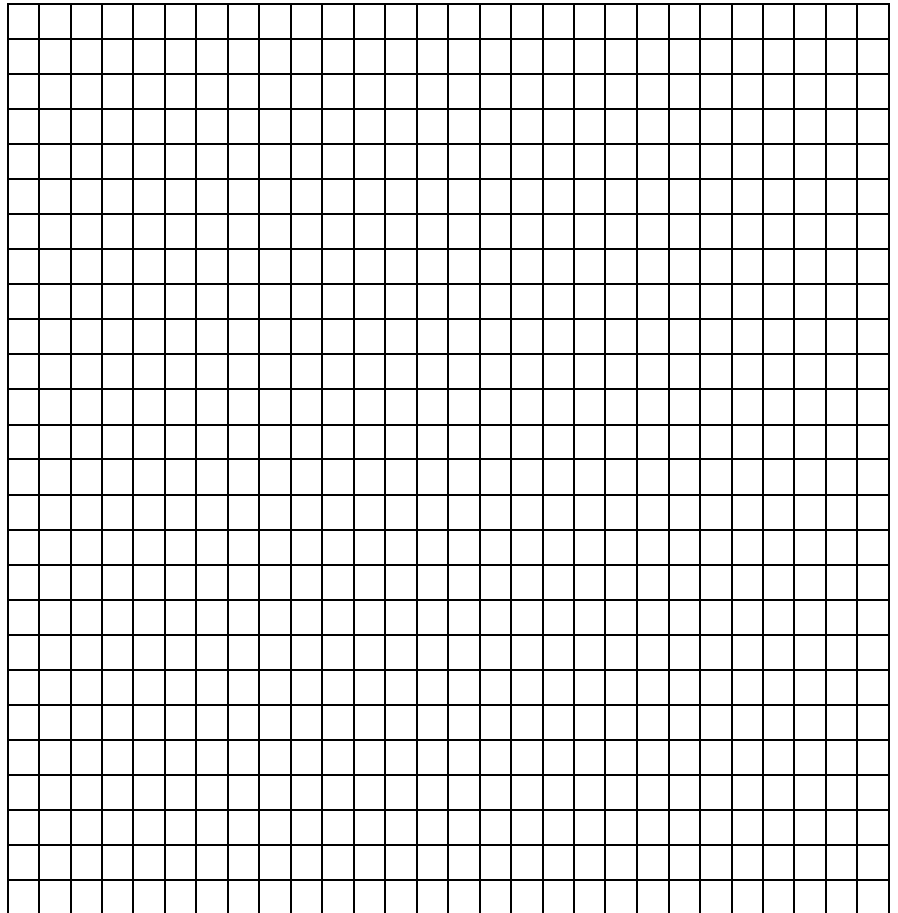
Constraints:

Objective Function:

Vertices: of Feasible Region:

Ordered Pair of Optimal Solution:

Maximum Income:





Problem 8: Spike for a Goal

A sporting goods manufacturer *Soc-It-To-Ya* makes a profit of \$5 on soccer balls and a profit of \$4 on volleyballs. Cutting requires 2 hours to make 75 soccer balls and 3 hours to make 60 volleyballs. Sewing needs 3 hours to make 75 soccer balls and 2 hours to make 60 volleyballs. Cutting has 500 hours available and Sewing has 450 hours available. How many soccer balls and volleyballs should be made to maximize profit? What is this profit?

Variables (in words): $x =$

$y =$

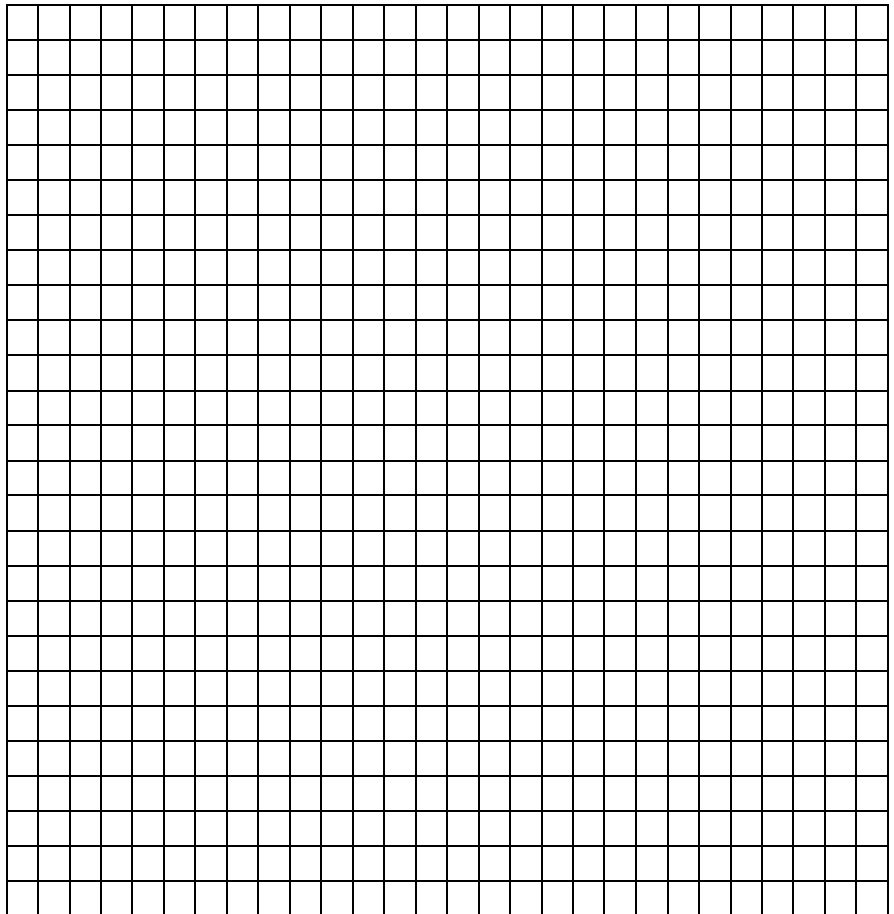
Constraints:

Objective Function:

Vertices: of Feasible Region:

Ordered Pair of Optimal Solution:

Maximum Profit:



Hint: You will need to think about how long it takes to make ONE soccer ball or volleyball (Fractions!)