Math 11 Chapter 3: Linear Program Geometric Solution Sheet (2 Variables)

1. WRITE THE LINEAR PROGRAM

a. <u>Definition of Variables:</u> x = ____

y = ____

b. <u>Objective Function:</u> *Clearly indicate if the problem requires minimize or maximize*

M____________________: **Z =** ______________________________

(Write Minimize or Maximize in space above) *(Write the objective function)*

c. <u>Subject to Constraints</u>: (*include non-negativity constraints; add more lines at right if needed*)

C1: ______________________________

C2: ______________________________

C3: ______________________________

C4: ______________________________

C5: ______________________________

2. SOLVE THE LINEAR PROGRAM

a. Graph the lines corresponding to constraints
and label the lines C1, C2, C3, . . . as appropriate
Scale and label the axes appropriately
USE A <u>RULER</u> and draw graph in pencil –
you may need to redraw and rescale if you do not select the scale appropriately on the first try.

b. Shade feasible region

c. Identify and label all critical points (vertices, corners) of the feasible region.
Solve <u>algebraically</u> for the intersections.
Use a separate sheet or back of page to do the algebra. If you find the corners by counting boxes instead of algebraically, then check the corner in each constraint to be sure you found the intersection point accurately.

d. Evaluate objective function at each critical point
Determine which critical point is optimal. *Show your work in the table below.*

Critical Point	Intersection of	Objective Function

3. STATE YOUR ANSWER IN A SENTENCE that describes the optimal solution.

- Explain the optimal values of each variable and the optimal value of the objective function, *stating everything in the context of the problem and including appropriate units in the answer.*

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