

A carpenter makes bookcases in two sizes, large and small. It takes 6 hours to make a large bookcase and 2 hours to make a small one. The carpenter can only spend 24 hours per week making bookcases and must make at least two of each size per week. The profit on a large bookcase is \$160 and the profit on a small bookcase is \$50. How many of each size must be made each week to provide the carpenter with the maximum profit?

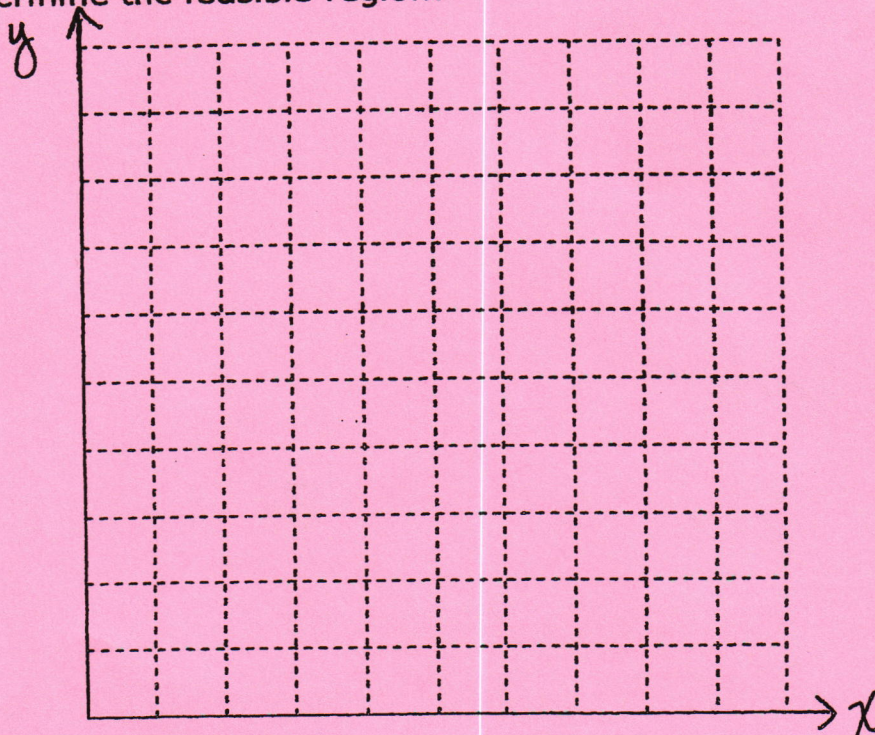
a. Identify your variables.

Let $x =$ _____

Let $y =$ _____

b. Write a system of inequalities to represent the constraints.

c. Graph the system to determine the feasible region.



Identify the vertices (the "corners") of the feasible region.

1. Find the determinant:

A) $\begin{bmatrix} 8 & 5 \\ -6 & 3 \end{bmatrix}$

B) $\begin{bmatrix} 2 & 5 & -3 \\ 1 & 4 & 7 \\ 1 & 0 & -1 \end{bmatrix}$

C) $\begin{bmatrix} 4 & 6 & -1 \\ 1 & x & 4 \\ 2 & 3 & 0 \end{bmatrix}$

2. Solve by Completing the Square

A) $3x^2 - 9x = 36$

B) $x^2 + 5x - 17 = 0$

3. Factor

A) $81x^2 - 16$

B) $6x^2 - x - 15$

You Must show work for credit on this page