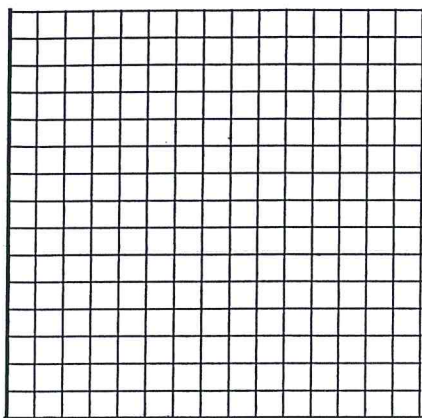


You need to buy some filing cabinets. You know that cabinets from Staples cost \$10 per unit, requires six square feet of floor space, and holds eight cubic feet of files. Cabinets from Target cost \$20 per unit, requires eight square feet of floor space, and holds twelve cubic feet of files. You have been given a budget of \$140 and the office has room for no more than 72 square feet of cabinets.

a) Write a system of Four inequalities to represent the constraints given.

b) Graph this system of inequalities.



c) Find the coordinates of the vertices of the solution region.

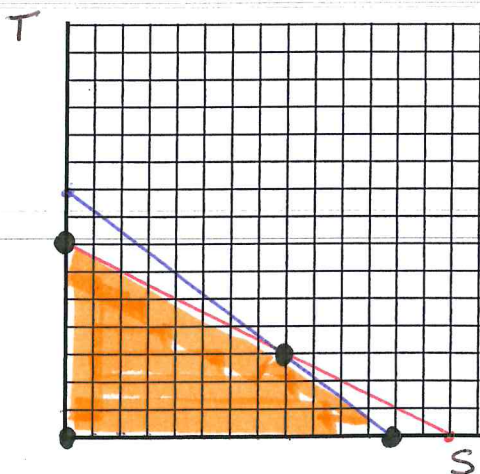
d) How many of each cabinet should you purchase in order to maximize storage volume?

ANSWERS

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S = # cabinets from Staples
 T = # cabinets from Target

$$10S + 20T \leq 140$$

$$S\text{-INT} = 14$$

$$T\text{-INT} = 7$$

$$6S + 8T \leq 72$$

$$S\text{-INT} = 12$$

$$T\text{-INT} = 9$$

$$T \geq 0$$

$$S \geq 0$$

POINT of
 intersection
 (8,3)

c) Find the coordinates of the vertices of the solution region.

(0,0) (12,0) (8,3) (0,7)

d) How many of each cabinet should you purchase in order to maximize storage volume?

$$8S + 12T = V$$

8 cabinets from Staples
 and 3 cabinets from Target
 gives a Max. Vol. of 100 ft³

(S,T)	$8S + 12T$
(0,0)	0
(12,0)	96
(8,3)	100
(0,7)	84