

Review 6.5 and 6.6

Key

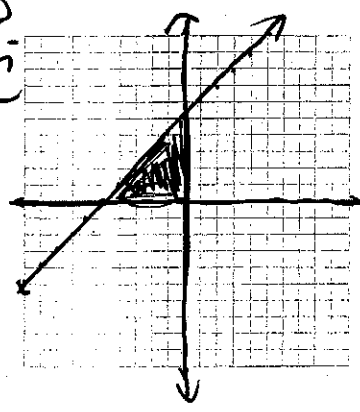
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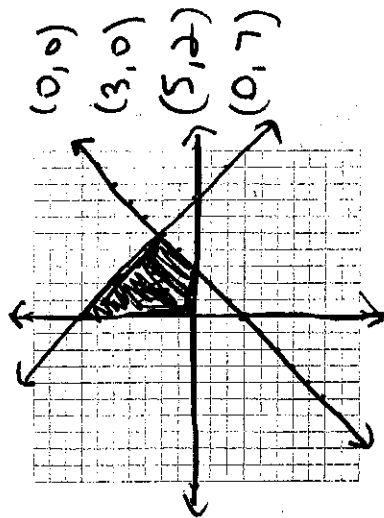
More practice with Linear Inequalities...

Graph the feasible regions and list 3 possible solutions.

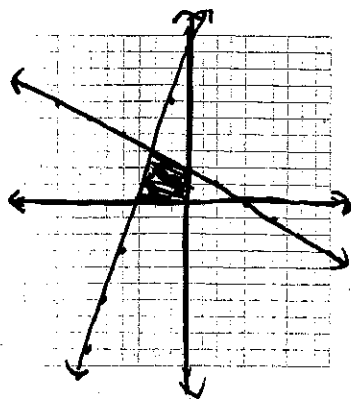
1.
$$\begin{cases} y \leq -x + 5 \\ x \geq 0 \\ y \geq 0 \end{cases}$$



2.
$$\begin{cases} x + y \leq 7 \\ x - y \leq 3 \\ x \geq 0 \\ y \geq 0 \end{cases}$$

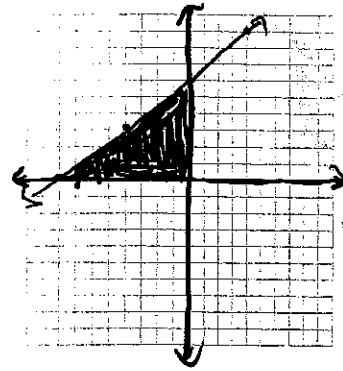


3.
$$\begin{cases} y \geq 2x - 4 \\ x + 3y \leq 9 \\ x \geq 0 \\ y \geq 0 \end{cases}$$



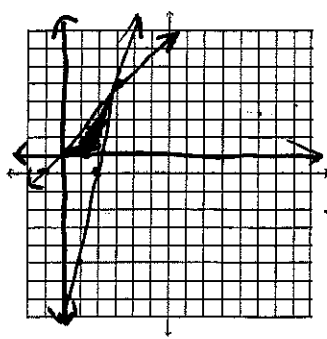
- (0,0)
- (0,3)
- (1,0)

4.
$$\begin{cases} 4x + 3y \leq 24 \\ x \geq 0 \\ y \geq 0 \end{cases}$$



- (2,2)
- (6,0)
- (0,3)

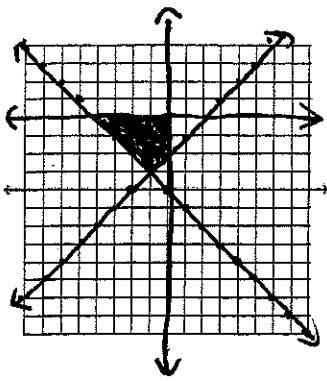
5.
$$\begin{cases} 5y + 4x \leq 35 \\ 5y + x \geq 20 \\ y \leq 6 \\ x \geq 1 \end{cases}$$



- (1,4)
- (2,5)
- (1,5)
- (1,1)

$$y \leq -\frac{4}{5}x + 7$$

$$y \geq -\frac{1}{5}x + 4$$



- (2,0)
- (2,1)
- (3,2)

6.
$$\begin{cases} x + y \geq 2 \\ x \geq y \\ x \leq 4 \\ y \geq 0 \end{cases}$$

7. A manufacturer makes two types of calculators, a scientific model and a graphics model. Each model is assembled in two stages. The time required for the scientific model in the first stage is 2 hours, and 5 hours are required in the second stage. The graphics model requires 4 hours in the first stage and 2 hours in the second stage. The maximum work hours available per week is 84 hours. The manufacturer makes a profit of \$25 for each scientific model and \$40 for each graphics model.

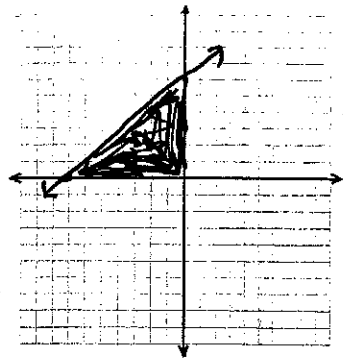
a. Write a system of inequalities (3)

(X) sci = 7x
 (Y) graph = 6y
 ① x ≥ 0 ② y ≥ 0 ③ $7x + 6y \leq 84$
 $y \leq -\frac{7}{6}x + 14$

c. Provide 3 realistic combinations of calculators he can sell.

- (0,0)
- (0,14)
- (12,0)

b. Graph the constraints



every box : 2

8. The area of a parking lot is 600 square meters. A car requires 6 square meters. A bus requires 30 square meters. The attendant can handle only 60 vehicles. If a car is charged \$2.50 and a bus \$7.50, how many of each should be accepted to maximize income?

$$x = \text{car} \quad y = \text{bus}$$

a. Write a system of inequalities (4)

$$6x + 30y \leq 6000$$

$$y \leq \frac{1}{3}x + 20 \quad x + y \leq 60$$

$$y \leq -x + 60 \quad x \geq 0$$

$$y \geq 0$$

c. Provide 3 realistic combinations of vehicles that fit in the lot.

$$(0, 0)$$

$$(0, 20)$$

$$(50, 10)$$

$$(60, 0)$$

9. Suppose you want to buy some tapes and cd's. You can afford as many as 10 tapes or 7 cd's. You want at least 4 cd's and at least 10 hours of recorded music. Each tape holds 45 minutes of music, and each cd holds an hour.

a. Write a system of inequalities

$$x = \text{tapes} \quad x \leq 10 \quad 45m \leq 1hr$$

$$y = \text{cds}$$

$$y \leq 7$$

$$y \geq 4$$

$$\frac{3}{4}x + y \geq 10$$

c. Provide 3 realistic combinations of cds and tapes.

$$(8, 4)$$

$$(10, 4)$$

$$(10, 7)$$

$$(4, 7)$$

10. The Pro Tour Tennis Company manufactures two types of tennis racquets- the Pro model and the Extra Light model. The company can only make 120 total racquets per day; and can only make between 50 and 70 Pro models and between 20 and 60 Extra Light models.

a. Write a system of inequalities

$$x + y \leq 120$$

$$50 < x < 70$$

$$20 < y < 60$$

c. Provide 3 realistic combinations of tennis racquets.

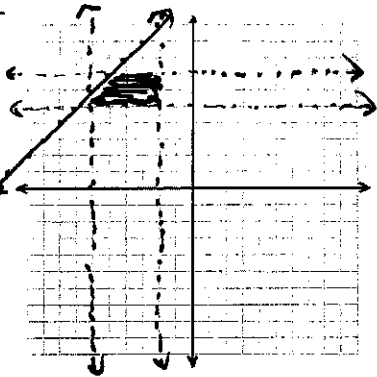
$$(50, 20)$$

$$(50, 60)$$

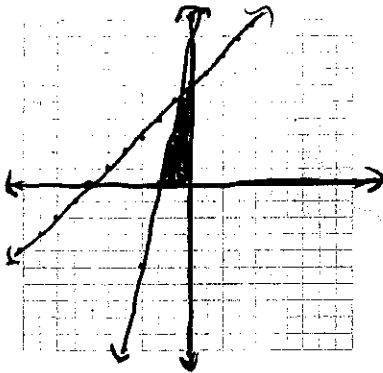
$$(70, 20)$$

$$(70, 50)$$

b. Graph the constraints



b. Graph the constraints



b. Graph the constraints

