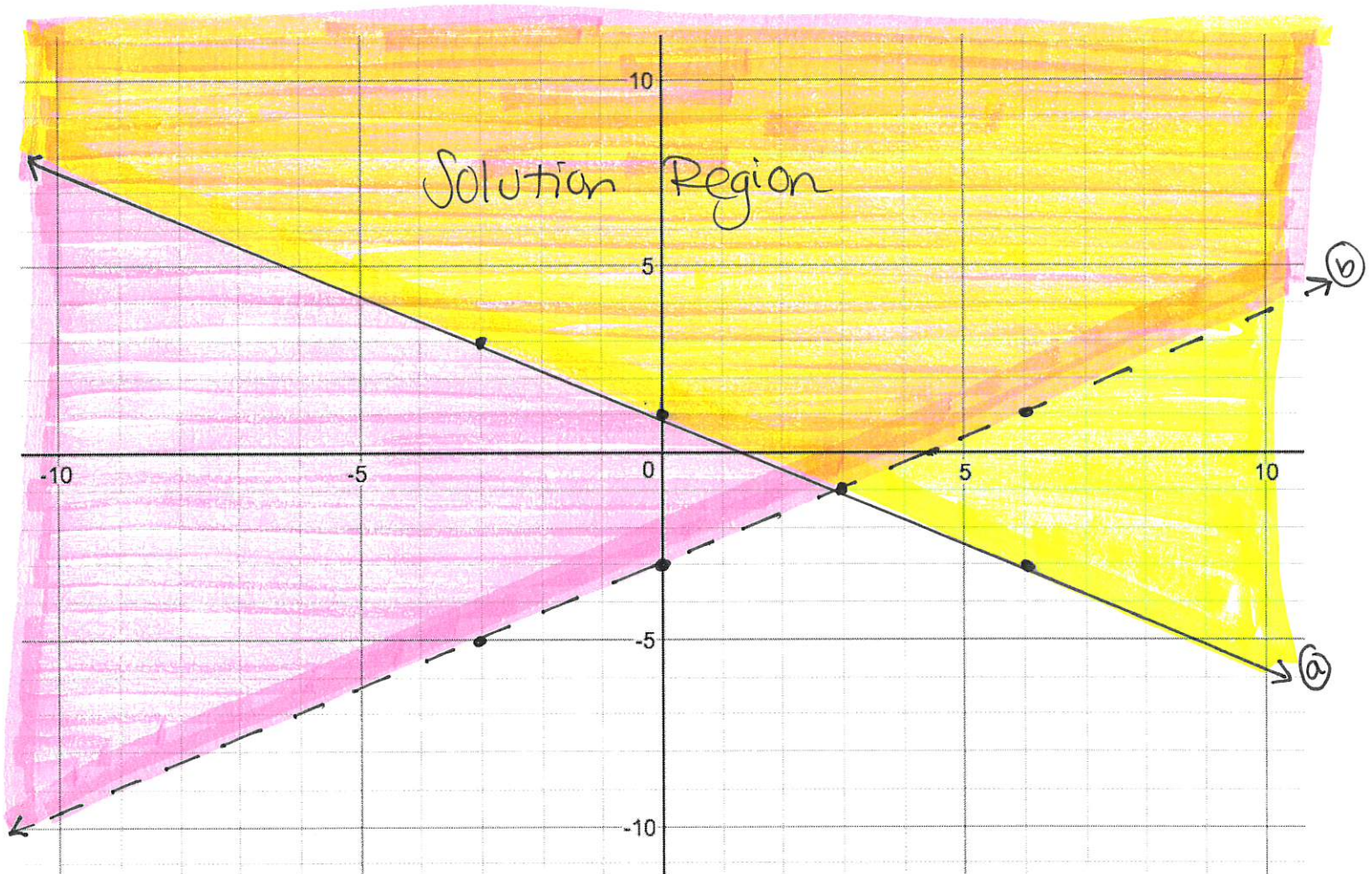


1. Graph the system of Inequalities:

$$y \geq -\frac{2}{3}x + 1 \quad \textcircled{a}$$

$$y > \frac{2}{3}x - 3 \quad \textcircled{b}$$



a. Write a solution point to the system. Justify that it is a solution to the system of inequalities.

Solutions vary

ex: $(0, 5)$

$$5 \geq -\frac{2}{3}(0) + 1$$

$$5 \geq 1 \quad \checkmark$$

$$5 > \frac{2}{3}(0) - 3$$

$$5 > -3 \quad \checkmark$$

b. Write point that is not a solution to the system. Justify that it is not a solution to the system of inequalities.

Non-solutions vary

ex: $(0, -5)$

$$-5 \geq -\frac{2}{3}(0) + 1$$

$$-5 \geq 1$$

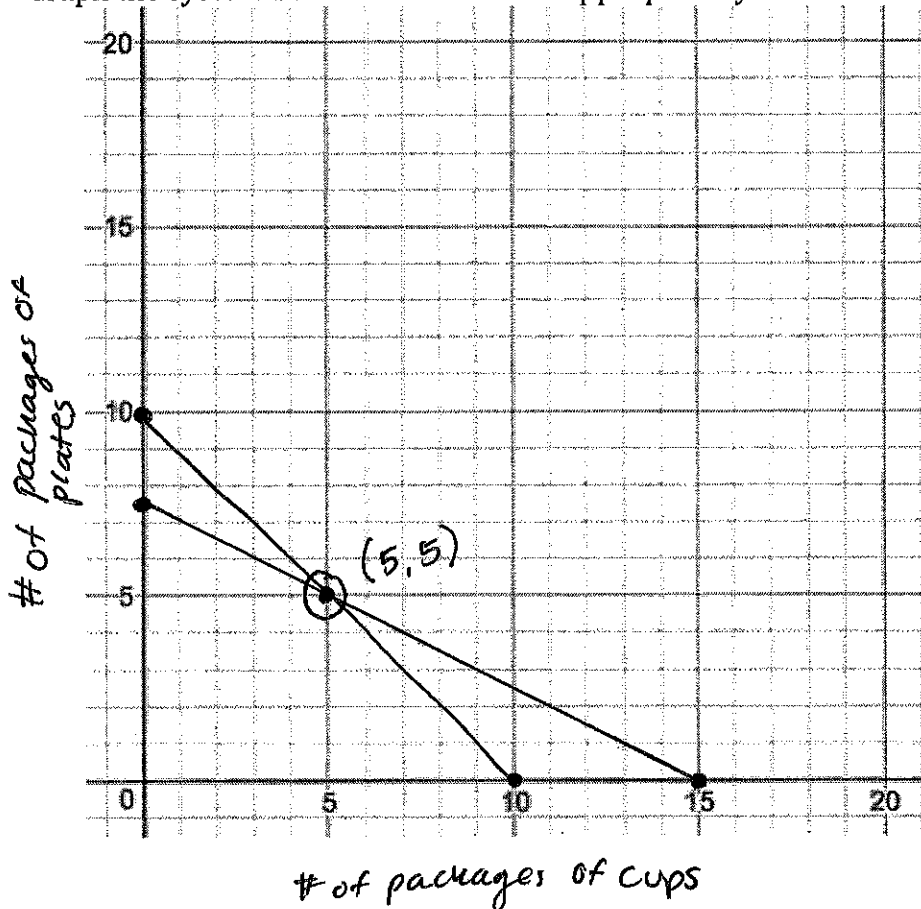
Not true!

2. Philippe is preparing for a Holiday party in a couple of weeks. He needs cups and plates to serve his guests. He buys 10 packages of supplies (both cups and plates). Each package of cups cost 2 dollars and each package of plates costs 4 dollars. Philippe sends 30 dollars at the store.
- a. Write the system of equations (2 equations) to the scenario below where x , is number of packages or cups and y , is the number of packages of plates.

$$10 = x + y$$

$$30 = 2x + 4y$$

- b. Graph the system below. Label the axis appropriately. Circle and label the solution point.



$$y = -x + 10$$

$$y = -\frac{1}{2}x + 7.5$$

- c. Solve using substitution or elimination method to verify your intersection point is correct.

Elimination:

$$\begin{array}{r} (x+y=10) \times -2 \\ 2x+4y=30 \\ \hline -2x-2y=-20 \\ \hline 2y=10 \\ y=5 \end{array}$$

$x+5=10$
 $x=5$

(5, 5)

Substitution:

$$-x+10 = -\frac{1}{2}x+7.5$$

$$\frac{2.5}{.5} = \frac{.5x}{-.5} \rightarrow y = -5+10$$

$$y=5$$

(5, 5)

- d. What does the solution mean in the context of the problem.

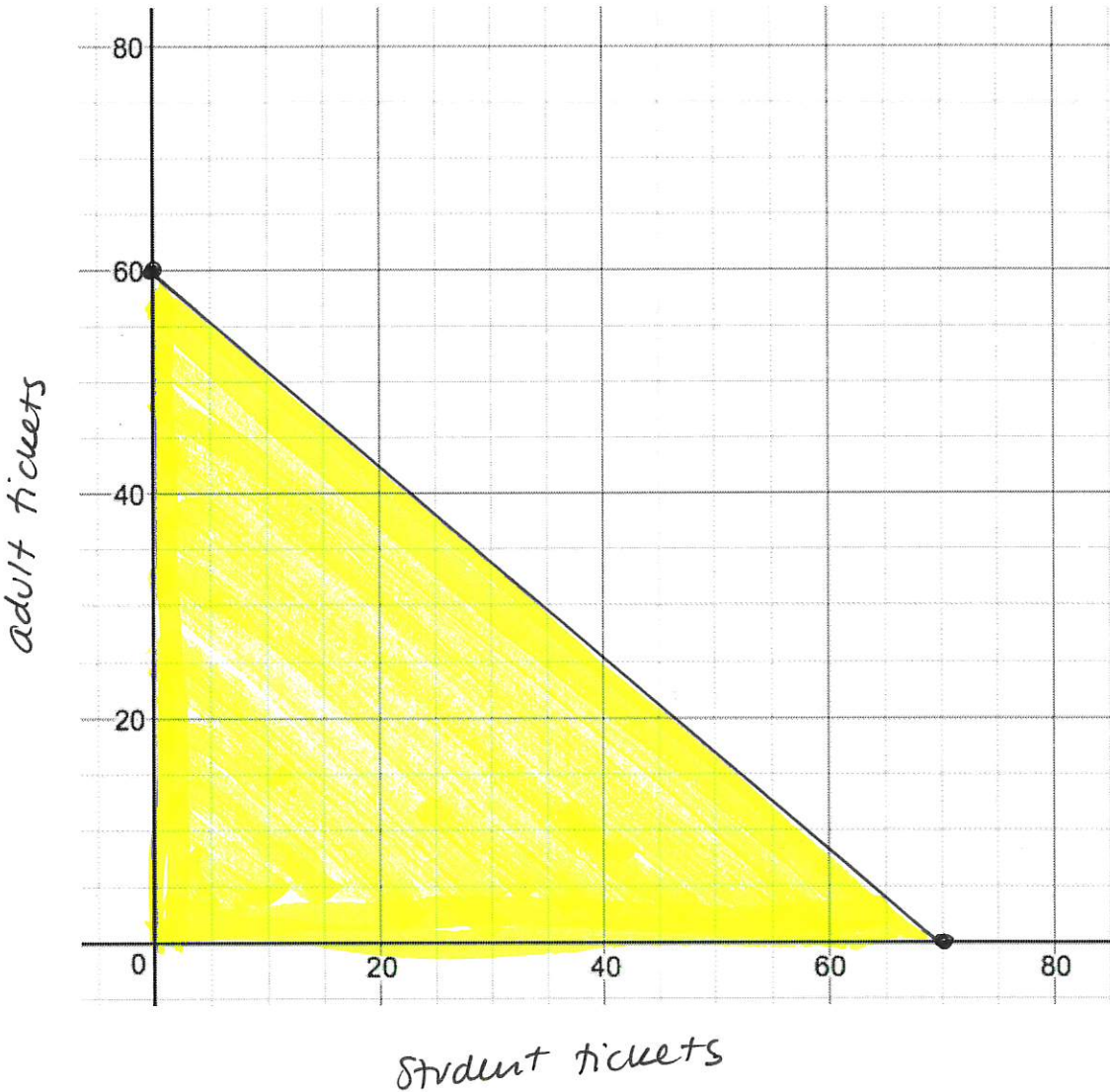
Philippe bought 5 packages of plates and 5 packages of cups for \$30.

3. Cynthia is planning a trip with her school to go to Great America. At the theme park there are two different kinds of tickets, tickets for adults (chaperones for the trip) and tickets for students. Tickets for students cost \$30 each. Ticket for the adult chaperones cost \$35.00 each.

a. If she can spend up to \$2100.00 on tickets, write the inequality that expresses her purchasing restrictions when she buys student tickets (x) and adult chaperone tickets (y)?

$$2100 \geq 30x + 35y$$

b. Graph the inequality on the graph below. $\rightarrow y \leq -\frac{6}{7}x + 60$

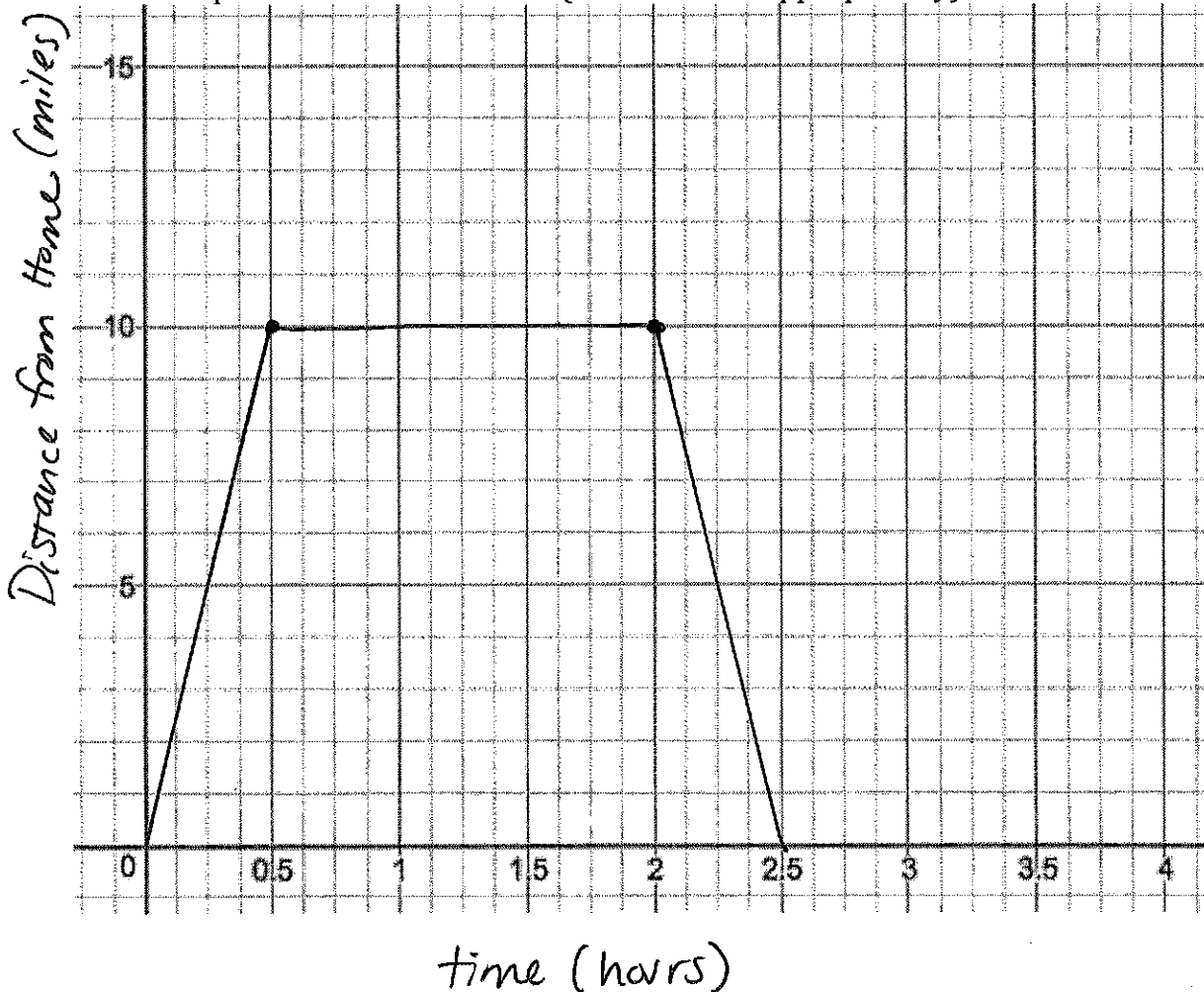


4. Claire wants to go lunch at a Bistro with her friends. She bikes at a pace of 20 miles per hour going away from her home to the park. After 30 minutes (.5 hours) of biking she eats lunch for 1.5 hours and then bikes back home at the same pace that she travelled to the restaurant. Let x represent time in hours away from home and $f(x)$ be the distance from home.

a. Write the piecewise function of the scenario below:

$$f(x) = \begin{cases} 20x, & \text{when } 0 \leq x \leq .5 \\ 10, & \text{when } .5 < x \leq 2 \\ 10 - 20(x - 2), & \text{when } 2 < x \leq 2.5 \end{cases}$$

b. Graph of the scenario below: (Label the axis appropriately)



- c. Find $f(1)$ and interpret that value in the context of the scenario above.

↳ in between .5 and 2 (piece #2 in function)

$$f(1) = \boxed{10 \text{ miles from home after 1 hour}}$$

(currently eating lunch at the restaurant)