Name: _____ **Date** _____ **#39 Solve a system of inequalities**

Graph and determine if the point (1, 2) is one of the solutions.

1. $\begin{cases} y < 2x + 4 \\ y > 2x - 5 \end{cases}$

$0 < 2(0) + 4$
$0 < 4$ true

$0 > 2(0) - 5$
$0 > -5$ True
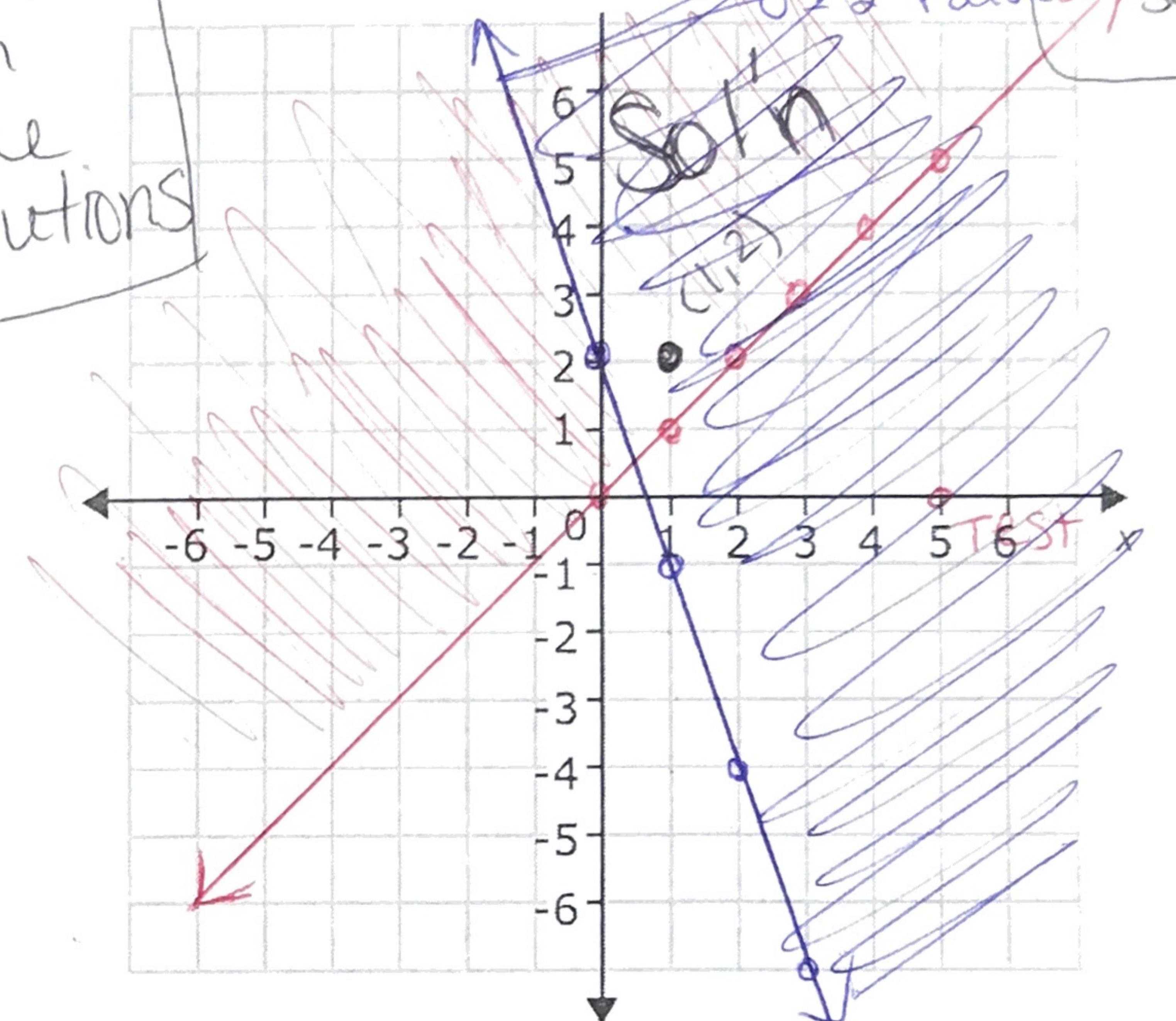
Yes, (1,2) is in the solutions

Sol'n

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

$0 \geq 5$ False

$0 \geq -3(0) + 2$
$0 \geq 2$ False
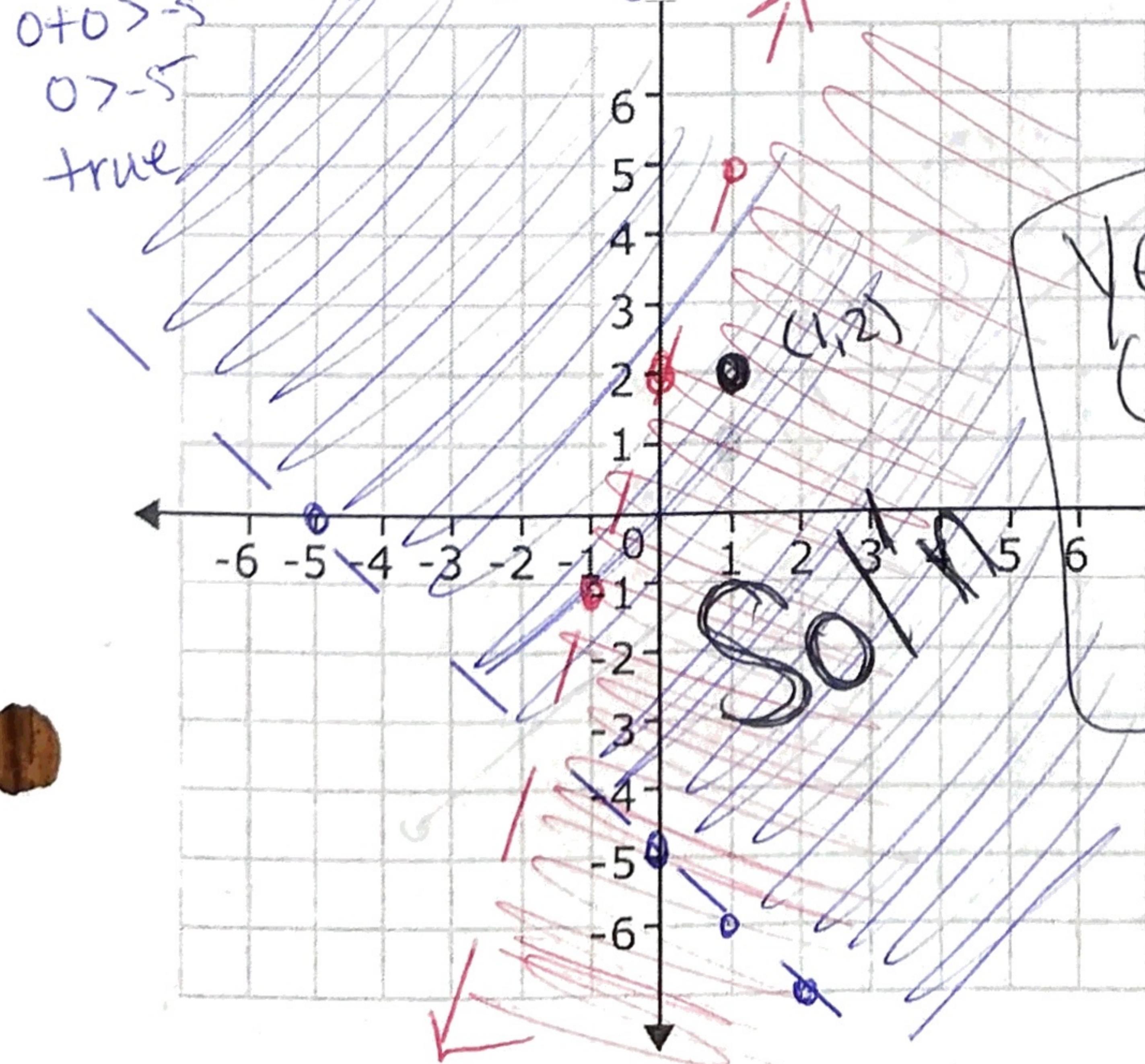
Yes, (1,2) is in the Sol'n

Sol'n

(1,2)

TEST

Graph and label the solution set S.

5. $\begin{cases} y - 3x < 2 \\ y + x > -5 \end{cases}$
   $\overset{+3x}{} \quad \overset{+3x}{}$ $y < 3x + 2$

$0 - 3(0) < 2$
$0 < 2$
True

$-x \quad -x$
$y > -x - 5$

$0 + 0 > -5$
$0 > -5$
true

Yes, (1,2) is in the Solutions

Sol'n

(1,2)
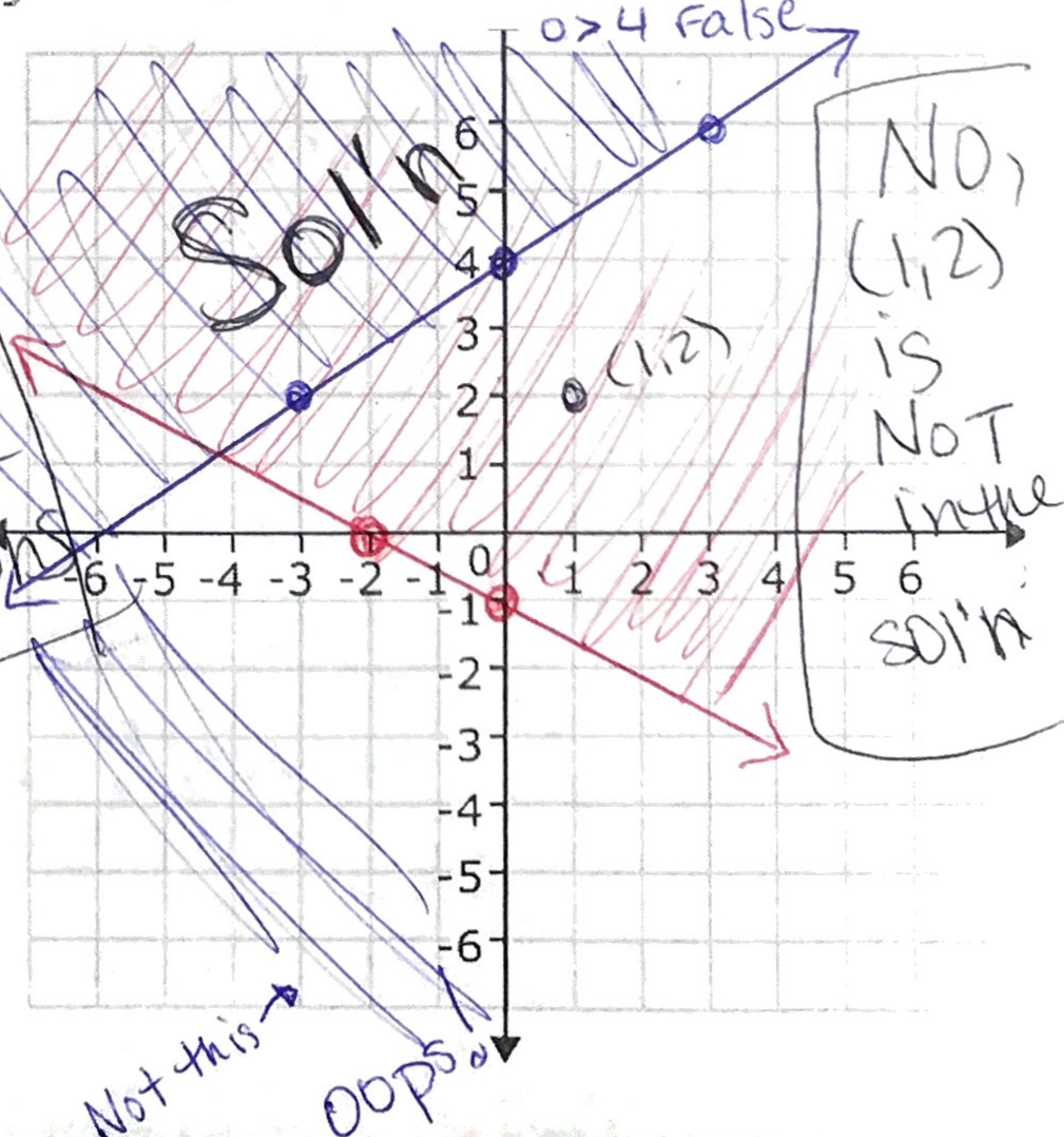
6. $\begin{cases} x + 2y \geq -2 \\ y \geq 2/3x + 4 \end{cases}$

$0 + 2(0) \geq -2$ x int
$0 \geq -2$ $x + 2(0) \geq -2$ y int
True $x \geq -2$ $0 + 2y \geq -2$
      $\frac{2}{2} \quad y \geq -1$

$0 \geq 2/3(0) + 4$
$0 > 4$ False

NO, (1,2) is NOT in the sol'n

Sol'n

(1,2)

Not this →   Oops

7. A class is going on a field trip to a Mexican restaurant. They have to speak everything in Spanish to earn credit. There are only two menu items, tacos (x) and enchiladas (y). They can order no more than 15 items and can order at most $36 worth of food. Tacos cost $2 each and enchiladas cost $4.
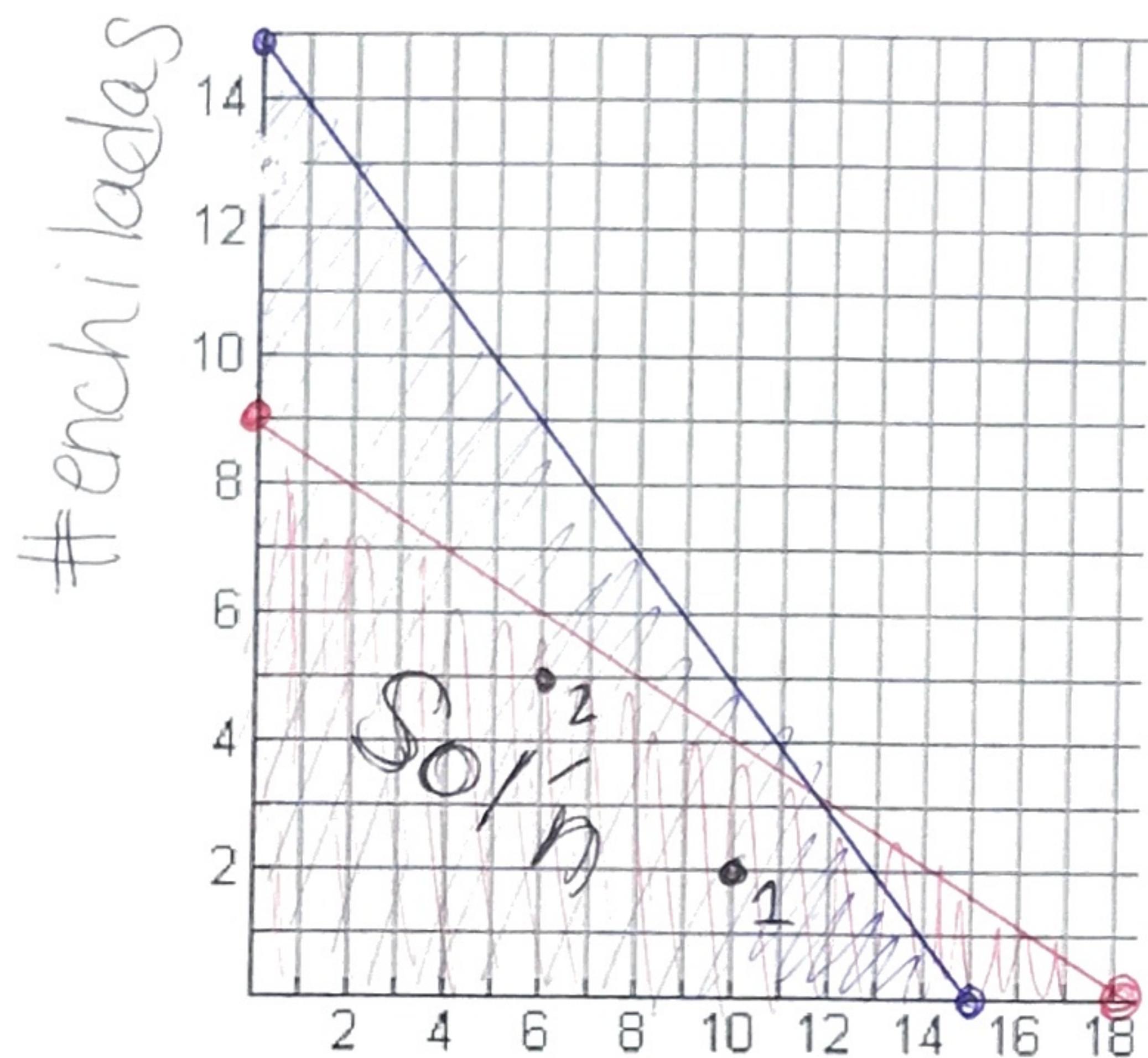
Write a system of inequalities.

$$\begin{cases} x + y \leq 15 \\ 2x + 4y \leq 36 \end{cases}$$

x int
$\frac{2x}{2} = \frac{34}{2}$ x = 18

y int
$\frac{4y}{4} = \frac{36}{4}$ y = 9

Graph and give a solution for the students

1) 10 tacos & 2 enchiladas

   or

2) 6 tacos & 5 enchiladas

   or ..... ∞ many choices you could make

\#enchiladas (vertical axis)

\#tacos (horizontal axis)

So/'n

8. George and Sally are getting married. They will have at least, 20 people at the rehearsal dinner. Each person who attends the rehearsal dinner is a part of the wedding party and will receive a gift. The bride and groom's families have decided to split the expenses and hope to spend less than $280. George's family (x) will pay $12 per gift and Sally's family will pay $8 per gift.

Write a system of inequalities.
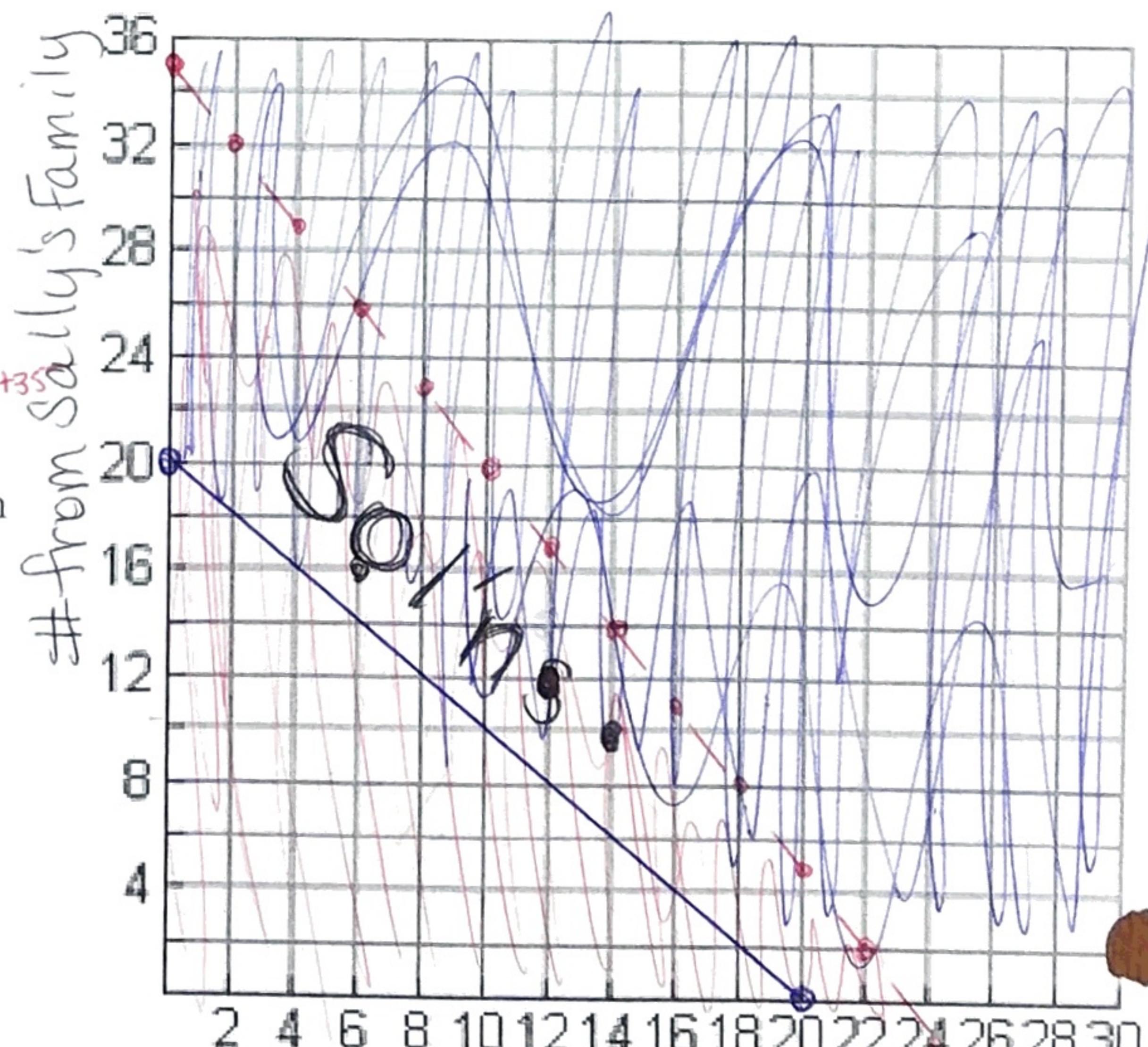
$$\begin{cases} x + y \geq 20 \\ 12x + 8y < 280 \end{cases}$$

-12x

$8y < -12x + 280$ $y < -\frac{3}{2}x + 35$

Give the families a solution to how many people to invite to be in the wedding party from each family.

Could be fair & say 12 from each

or
Could say George's family is paying more so 14 for George & 10 for Sally

or Maybe Sally's family is bigger so 6 George & 16 sally

\#from Sally's family (vertical axis)

\#from George's family (horizontal axis)

So/'n