

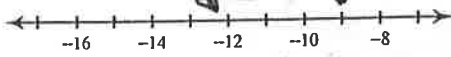
Inequalities and Systems of Inequalities Workday

Date

Period

Solve each inequality and graph its solution.

1) $-4(n-10) \geq 76$

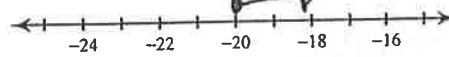


$$-4n + 40 \geq 76$$

$$-4n \geq 36$$

$$n \leq -9$$

2) $76 \geq -4(m+1)$

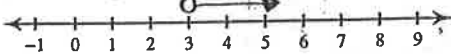


$$76 \geq -4m - 4$$

$$80 \geq -4m$$

$$-20 \leq m$$

3) $-8(2x+1) - 8 < -8x - 40$

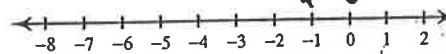


$$-16x - 8 - 8 < -8x - 40$$

$$-16x - 16 < -8x - 40$$

$$-8x < -24 \quad x > 3$$

4) $4(1+6x) \leq -8x+4$



$$4 + 24x \leq -8x + 4$$

$$0 \leq -32x$$

$$0 \geq x$$

Is the point $(-2, 0)$ a solution to the system of inequalities?

5) $y \leq -\frac{5}{2}x - 3$

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

$$0 \leq 2 \quad \text{T}$$

$$y \leq \frac{1}{2}x + 3$$

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

$$0 \leq 2 \quad \text{T}$$

yesIs the point $(2, 1)$ a solution to the system of inequalities?

6) $x + 3y > -3$

$$2 + 3 > -3$$

$$5x + 3y < 9$$

$$5 > -3 \quad \text{T}$$

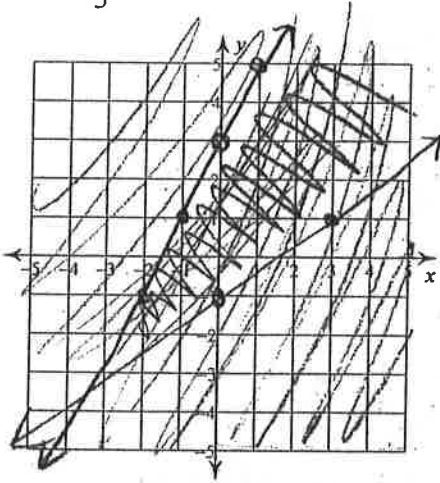
$$10 + 3 < 9$$

$$13 < 9 \quad \text{F}$$

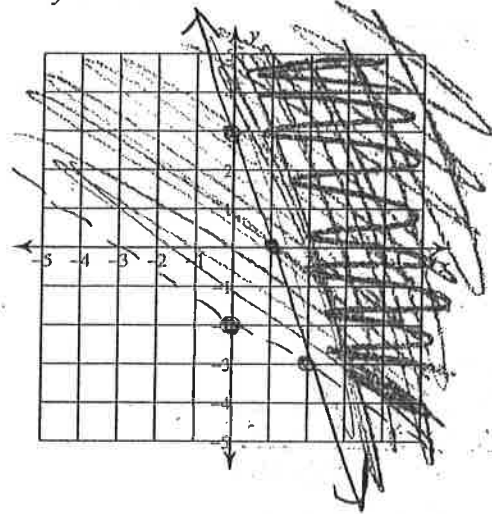
no

Sketch the solution to each system of inequalities.

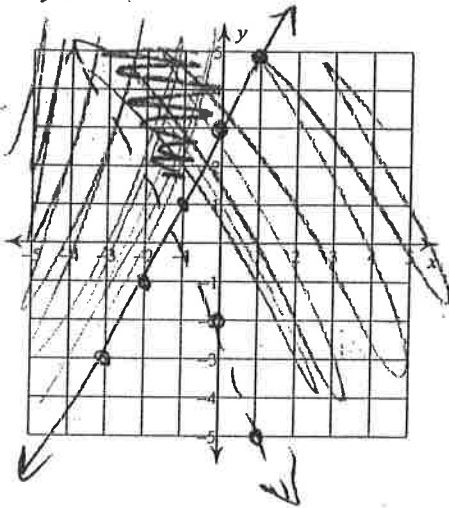
7) $y \leq 2x + 3$
 $y \geq \frac{2}{3}x - 1$



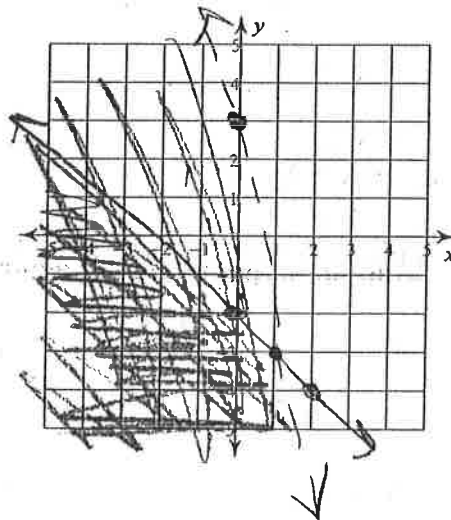
8) $y > -\frac{1}{2}x - 2$
 $y \geq -3x + 3$



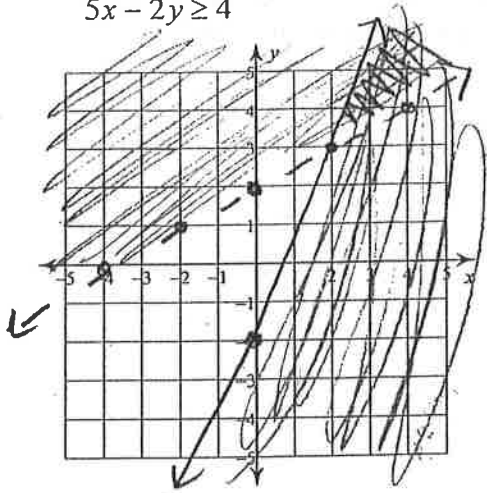
9) $y \geq 2x + 3$
 $y > -3x - 2$



10) $y \leq -x - 2$
 $y < -6x + 3$



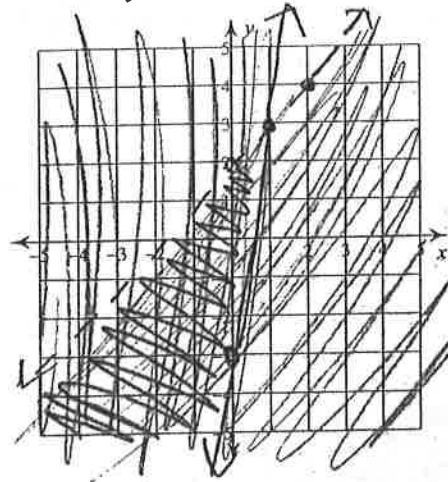
$$11) \begin{cases} x - 2y < -4 \\ 5x - 2y \geq 4 \end{cases}$$



$$\begin{array}{r} x - 2y < -4 \\ -x \quad -x \\ \hline -2y < -x - 4 \\ -2 \quad -2 \quad -2 \\ \hline y > \frac{1}{2}x + 2 \end{array}$$

$$\begin{array}{r} 5x - 2y \geq 4 \\ -5x \quad -5x \\ \hline -2y \geq -5x + 4 \\ -2 \quad -2 \\ \hline y \leq \frac{5}{2}x - 2 \end{array}$$

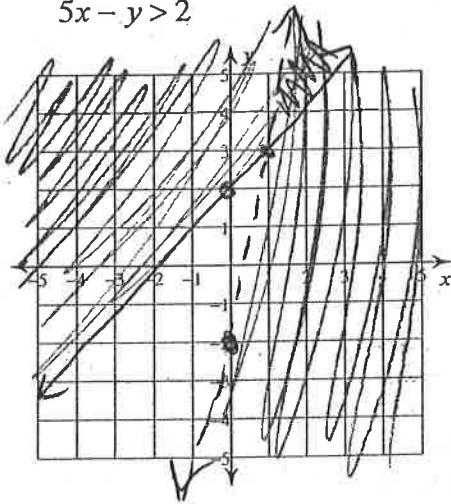
$$12) \begin{cases} x - y > -2 \\ 6x - y \geq 3 \end{cases}$$



$$\begin{array}{r} x - y > -2 \\ -x \quad -x \\ \hline -y > -x - 2 \\ -1 \quad -1 \\ \hline y < x + 2 \end{array}$$

$$\begin{array}{r} 6x - y \geq 3 \\ -6x \quad -6x \\ \hline -y \geq -6x + 3 \\ -1 \quad -1 \\ \hline y \leq 6x - 3 \end{array}$$

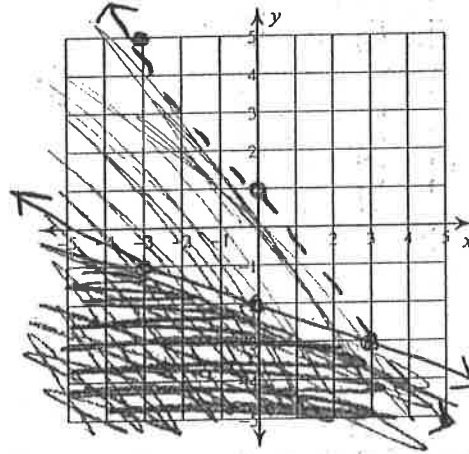
$$13) \begin{cases} x - y \leq -2 \\ 5x - y > 2 \end{cases}$$



$$\begin{array}{r} x - y \leq -2 \\ -x \quad -x \\ \hline -y \leq -x - 2 \\ -1 \quad -1 \\ \hline y \geq x + 2 \end{array}$$

$$\begin{array}{r} 5x - y > 2 \\ -5x \quad -5x \\ \hline -y > -5x + 2 \\ -1 \quad -1 \\ \hline y < 5x - 2 \end{array}$$

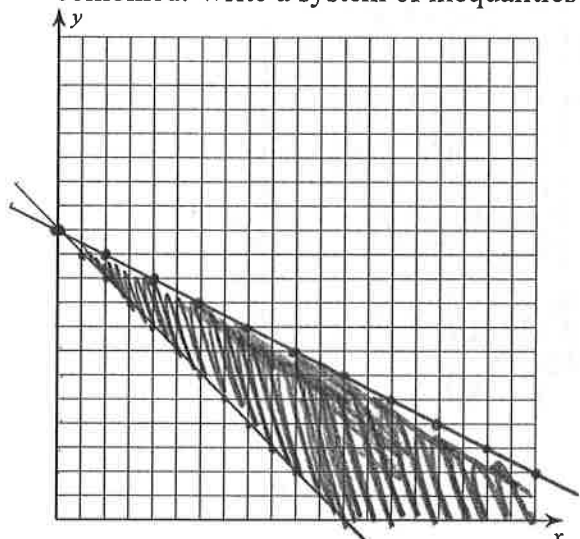
$$14) \begin{cases} x + 3y \leq -6 \\ 4x + 3y < 3 \end{cases}$$



$$\begin{array}{r} x + 3y \leq -6 \\ -x \quad -x \\ \hline 3y \leq -x - 6 \\ 3 \quad 3 \\ \hline y \leq -\frac{1}{3}x - 2 \end{array}$$

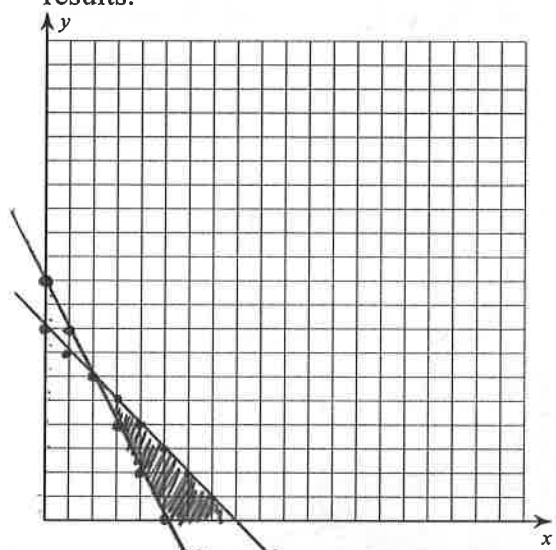
$$\begin{array}{r} 4x + 3y < 3 \\ -4x \quad -4x \\ \hline 3y < -4x + 3 \\ 3 \quad 3 \\ \hline y < -\frac{4}{3}x + 1 \end{array}$$

- 15) Tony is doing a project for his agriculture class and is planting a small farm with corn and beans. The dot n
 Corn costs \$2 per acre to plant and beans cost \$4 per acre to plant. Tony has a budget of \$48 for his
 small farm. In order to get the grade he needs, Tony has to plant at least 12 acres of all of his crops
 combined. Write a system of inequalities to represent Tony's situation and graph the solutions.



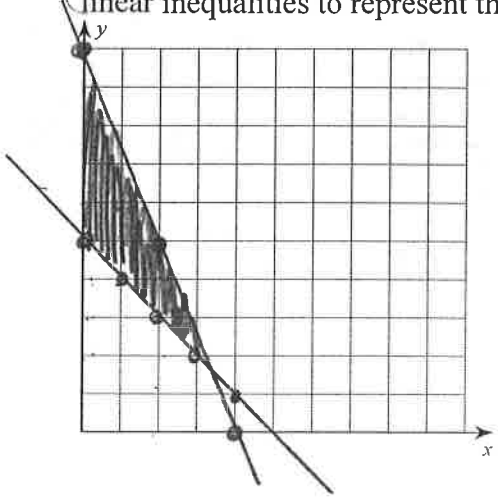
$$\begin{array}{r} 2x + 4y \leq 48 \\ -2x \qquad -2x \\ \hline 4y \leq -2x + 48 \\ \frac{4y}{4} \leq \frac{-2x + 48}{4} \\ y \leq -\frac{1}{2}x + 12 \end{array} \qquad \begin{array}{r} x + y \geq 12 \\ -x \qquad -x \\ \hline y \geq -x + 12 \end{array}$$

- 16) Sandy is selling cookies and cupcakes for a fundraiser. She makes \$2 for every cupcake and \$1 for every cookie that she sells. She wants to earn at least \$10 on her first day. She is limited on supplies so she can sell no more than 8 total items in a day. Write a system of linear inequalities and graph the results.



$$\begin{array}{r} 2x + 1y \geq 10 \\ -2x \qquad -2x \\ \hline y \geq -2x + 10 \end{array} \qquad \begin{array}{r} x + y \leq 8 \\ -x \qquad -x \\ \hline y \leq -x + 8 \end{array}$$

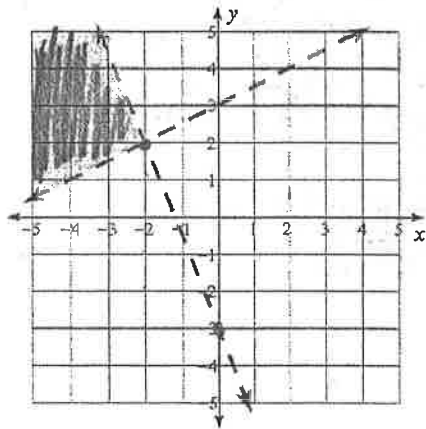
- 17) Vance has \$20 and wants to buy food and treats for his dog. Dog food costs \$5 per pound and treats are \$2 per pound. He wants to buy at least 5 pounds worth of food and treats total. Write a system of linear inequalities to represent the situation and graph the system.



$$\begin{array}{r} 5x + 2y \leq 20 \\ -5x \qquad -5x \\ \hline 2y \leq -5x + 20 \\ \frac{2y}{2} \leq \frac{-5x + 20}{2} \\ y \leq -\frac{5}{2}x + 10 \end{array} \qquad \begin{array}{r} x + y \geq 5 \\ -x \qquad -x \\ \hline y \geq -x + 5 \end{array}$$

Write the system of linear inequalities represented by the graph.

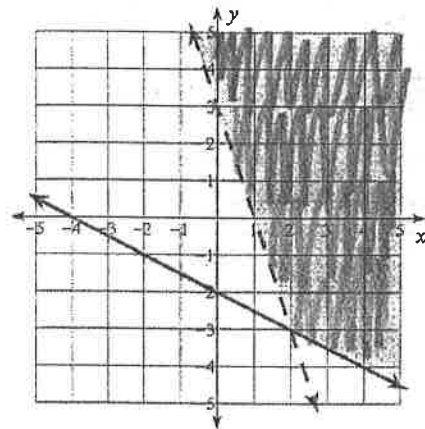
7.



$$y > \frac{1}{2}x + 3$$

$$y < -\frac{5}{2}x - 3$$

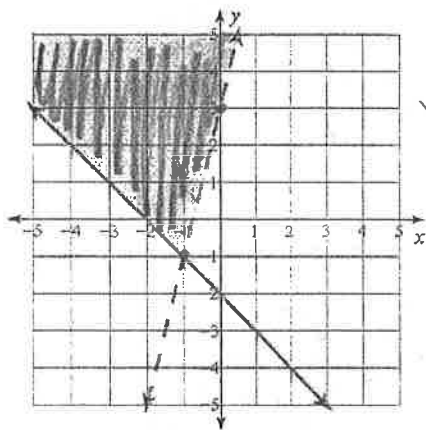
8.



$$y > -3x + 3$$

$$y \geq -\frac{1}{2}x - 2$$

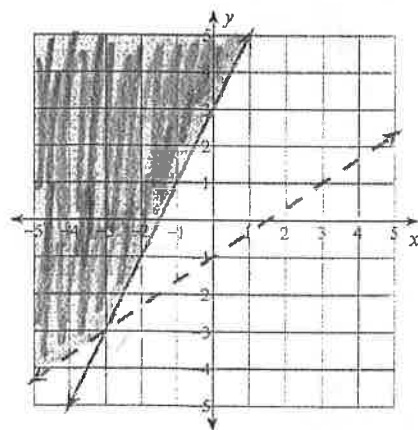
9.



$$y > 4x + 3$$

$$y \geq -x - 2$$

10.

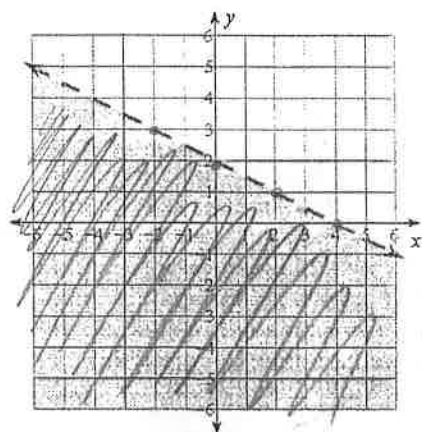


$$y \geq 2x + 3$$

$$y > \frac{2}{3}x - 1$$

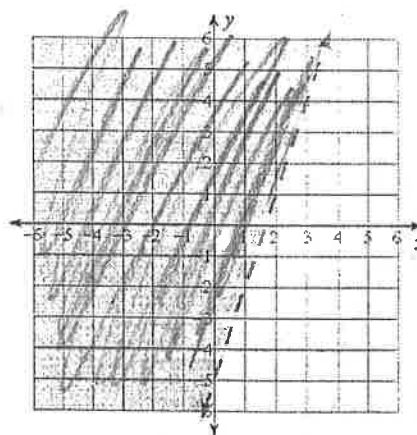
Write the linear inequality represented by the graph.

1.



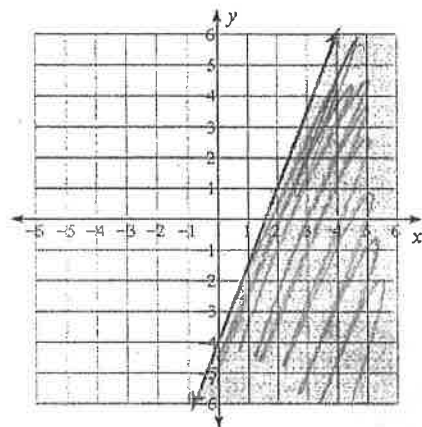
$$y < -\frac{1}{2}x + 2$$

2.



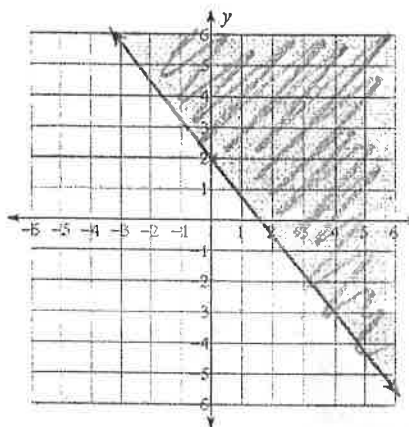
$$y > 3x - 5$$

3.



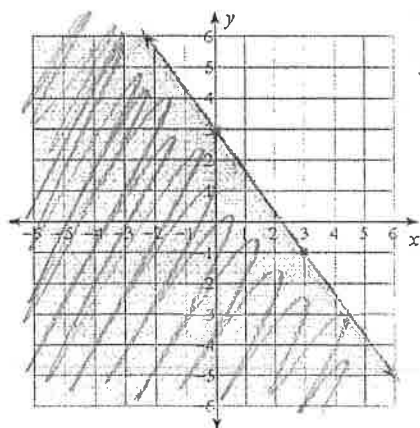
$$y \leq \frac{5}{2}x - 4$$

4.



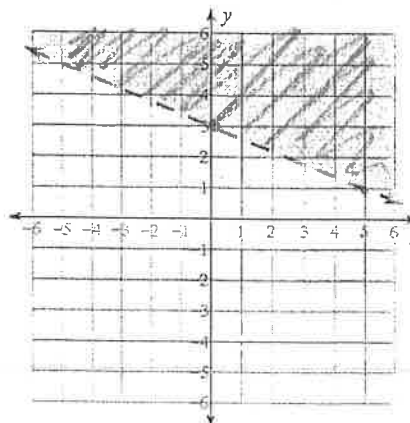
$$y \geq -\frac{5}{4}x + 2$$

5.



$$y \leq -\frac{4}{3}x + 3$$

6.



$$y > -\frac{2}{5}x + 3$$