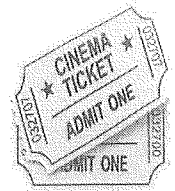# The Johnson's Budget

At the Johnson house they make a budget each month and stick to it!!  They like to have fun as a family so their entertainment budget is made up of $240 dollars.  For entertainment they go out to dinner, which costs $40, or they go to a movie/museum/small amusement park/zoo/etc, which costs $30.  They try to do more than 4 entertainment activities a month and to NEVER spend more than $240.

Write the <u>system of linear inequalities</u>:

Let d (x-axis)= _____
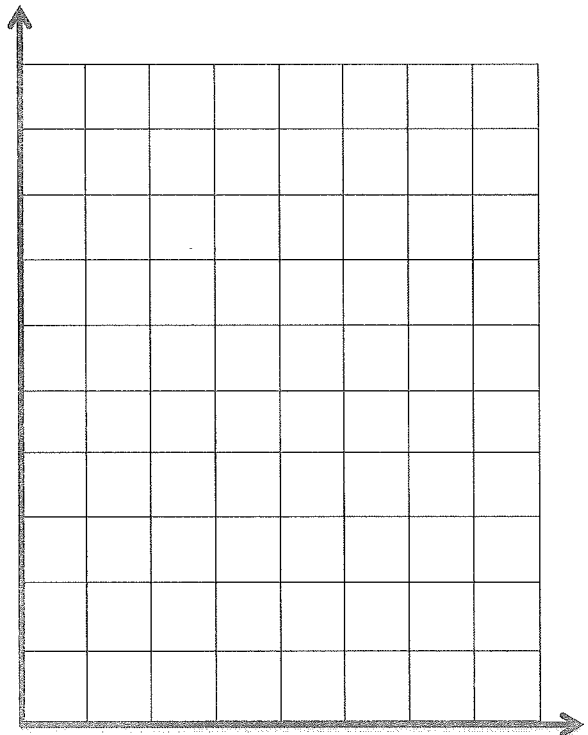
Let a (y-axis)= _____

$1^{st}$ linear inequality: _____

Interpret the inequality in a sentence:


$2^{nd}$ linear inequality: _____

Interpret the inequality in a sentence:

Graph the $1^{st}$ linear inequality

What are three solutions to the $1^{st}$ inequality:


Graph the $2^{nd}$ linear inequality

What are three solutions to the $2^{nd}$ inequality:


<u>Solution for the system of linear inequalities:</u>

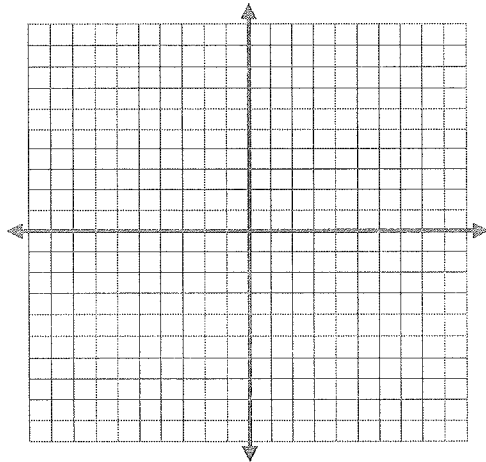What are three solutions to the system of inequalities:

What are three non-solutions to the system of inequalities:

Is (3, 4) a solution?  Explain?

Is (2, 2) a solution?  Explain?

Solving the system of linear inequalities by graphing:

$$\begin{cases} y > -2x + 7 \\ y - 2x \le 3 \end{cases}$$



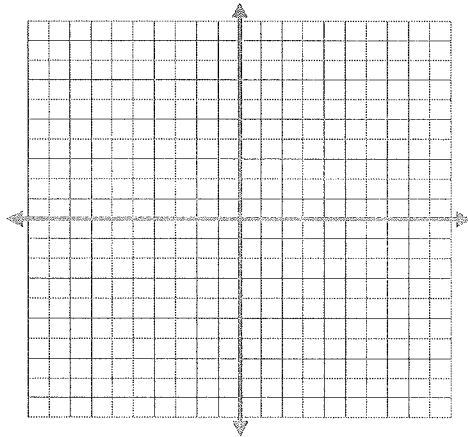### Steps to Solving Systems of Linear Inequalities

1.

**

**

2.

3.

What are __three solutions__ to the system of inequalities:

What are __three non-solutions__ to the system of inequalities:

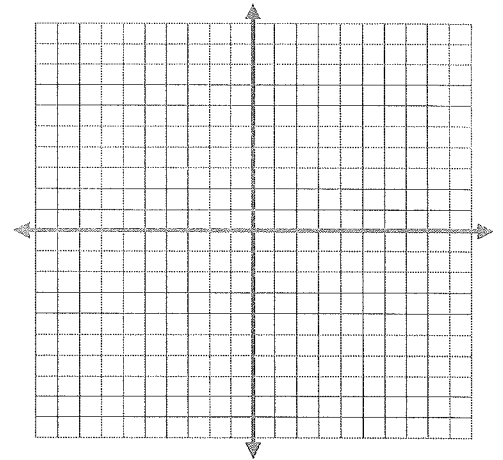Solve the system of linear inequalities by graphing. Identify three solutions and one non-solution.

1) $\begin{cases} y > -3x + 4 \\ y \leq 2x - 6 \end{cases}$
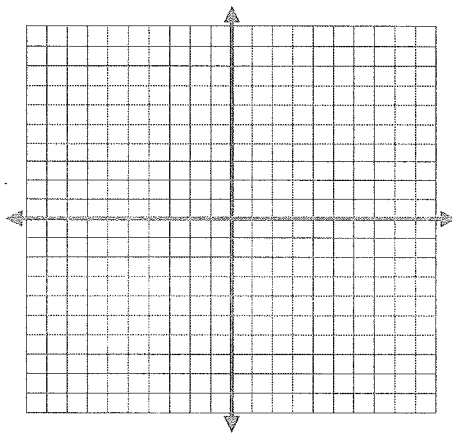
Identify three solutions:

Identify one non-solution:

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

Identify three solutions:

Identify one non-solution:
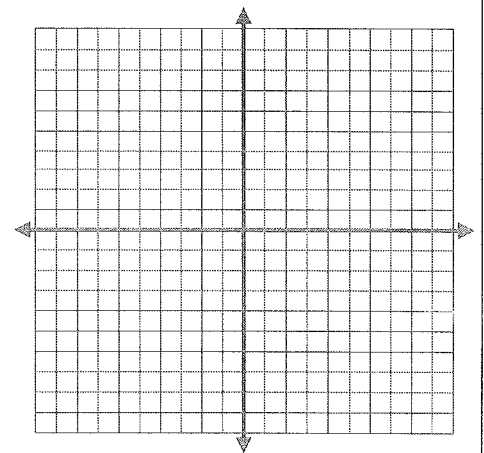
3) $\begin{cases} y > -2x + 4 \\ x + 2y \leq 2 \end{cases}$

Identify three solutions:

Identify one non-solution:

4) $\begin{cases} 3y < -x + 6 \\ 2x - y \leq 5 \end{cases}$

Identify three solutions:

Identify one non-solution:

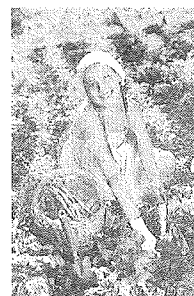## Solve the real-world situation by graphing linear inequalities.

Elizabeth makes $10 per hour babysitting and $5 per hour gardening. She wants to make at least $100 a week, but can work no more than 15 hours a week.
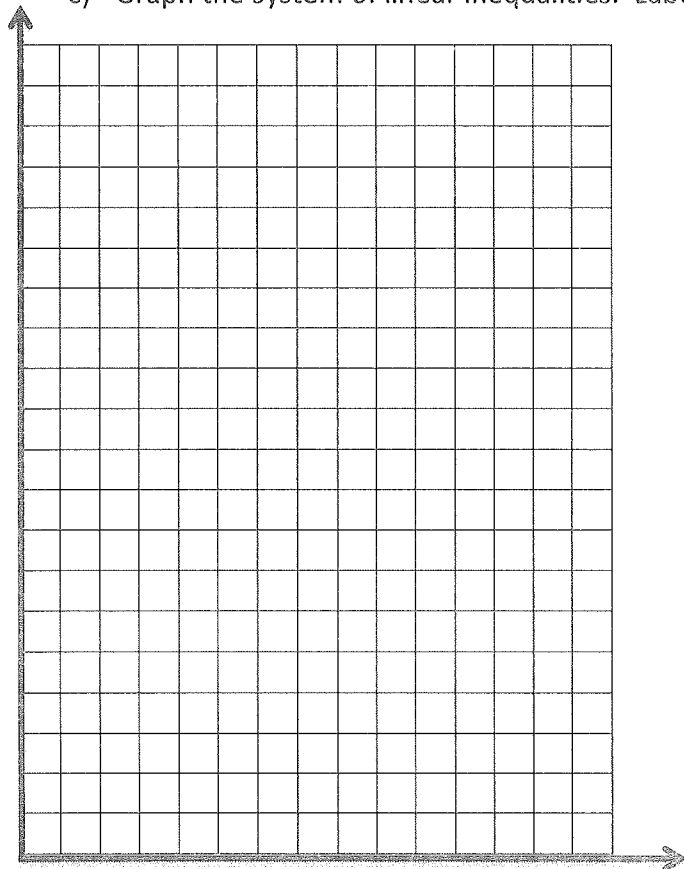
a) Identify your variables.

b) Write the system of linear inequalities that can be used to represent this situation.

c) Graph the system of linear inequalities.  Label your x- and y-axis

d) Describe and list five possible combinations of hours that Elizabeth could work at each job.

*Ticket out the Door*

*If you were Elizabeth what would you plan on doing and why?*