

Name:

Date:

Period:

### Solving a System of Inequalities

A **system** of inequalities is the graphing of two or more inequalities on the same axes. The solution set, marked with an "S", is the area of the graph where the **shading intersects**. Using two different colored pencils illustrates this very well.

#### Guided Example:

Graph the following inequalities on the same axes:

$$x + y \geq 4$$

$$y + 3 \leq 2x$$

m = \_\_\_\_\_ b = \_\_\_\_\_

solid or dotted  
above or below

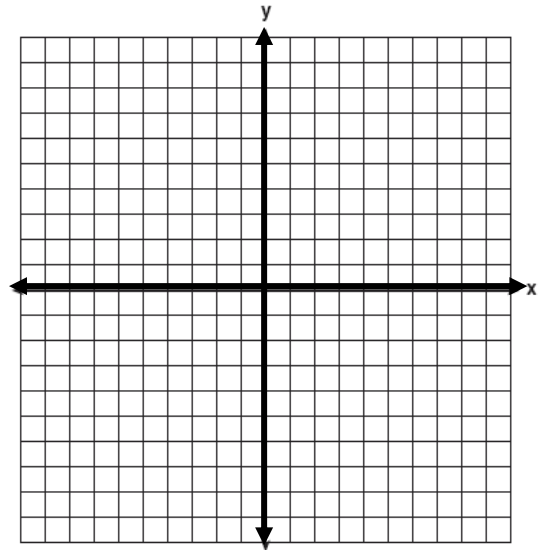
m = \_\_\_\_\_ b = \_\_\_\_\_

solid or dotted  
above or below

Pick a point in the solution set and prove that it satisfies **BOTH** inequalities.

$$x + y \geq 4$$

$$y + 3 \leq 2x$$



1. Solve the following system of linear inequalities graphically:

$$x + 2y \leq 8$$

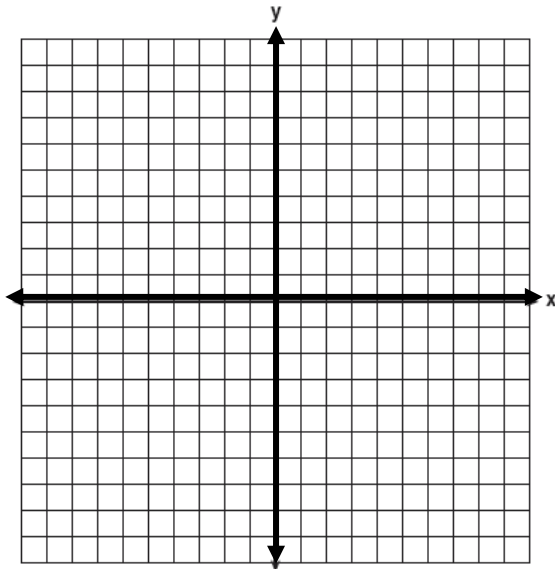
$$y < x + 4$$

m = \_\_\_\_\_ b = \_\_\_\_\_

solid or dotted  
above or below

m = \_\_\_\_\_ b = \_\_\_\_\_

solid or dotted  
above or below



Name a point in the solution set and **prove** that it satisfies **BOTH** inequalities.

$$x + 2y \leq 8$$

$$y < x + 4$$

2. Solve the following system of linear inequalities graphically:

$$y \geq x$$

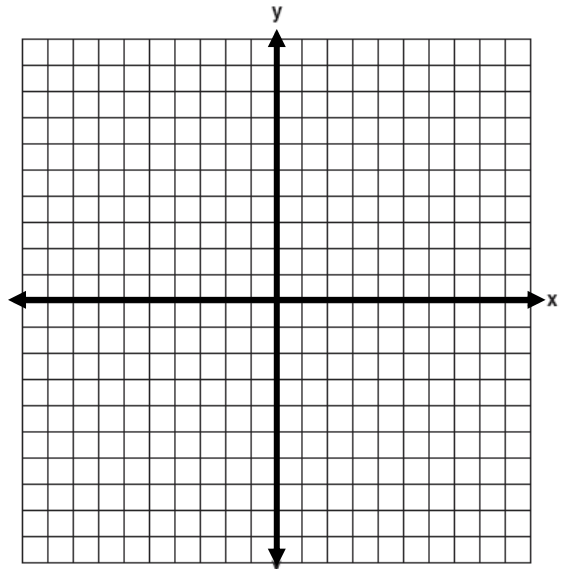
$$y < 2x + 3$$

m = \_\_\_\_\_ b = \_\_\_\_\_

solid or dotted  
above or below

m = \_\_\_\_\_ b = \_\_\_\_\_

solid or dotted  
above or below



Name a point in the solution set and **prove** that it satisfies **BOTH** inequalities.

$$y \geq x$$

$$y < 2x + 3$$

3. Consider the following system of inequalities:

$$y > -4$$

$$m = \underline{\hspace{2cm}} \quad b = \underline{\hspace{2cm}}$$

solid or dotted  
above or below

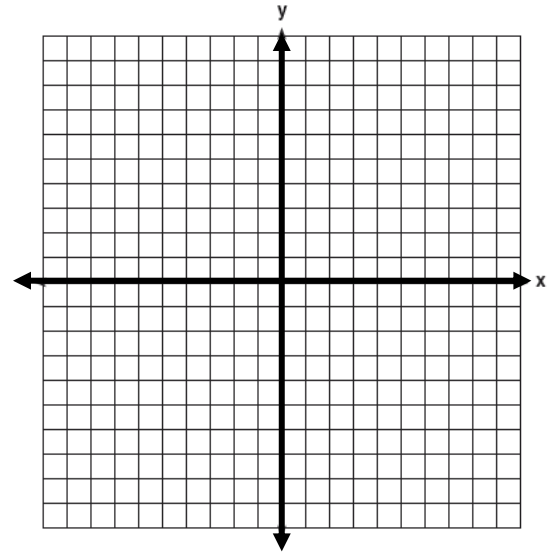
$$x \leq 3$$

$$m = \underline{\hspace{2cm}} \quad x\text{-intercept} = \underline{\hspace{2cm}}$$

solid or dotted  
above or below

Is the point (3, 2) a solution to this problem? Explain.

Is the point (-2, -4) a solution to this problem? Explain.




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Determine if the given points are solutions to the system of inequalities. Justify your answers.

4.  $2x - 3y > 10$   
 $x + 4y < 6$

a. (2, -1)

b. (4, -7)

c. (-3, 5)

5.  $x + 2y \leq 12$   
 $x - y > 5$

a. (4, 1)

b. (6, -5)

c. (-10, 6)