

Algebra 1

6.6

Solve systems of linear inequalities by graphing

\* Ch. 5.6

Apply systems of linear inequalities

linear inequality\*  
system

$$y < mx + B$$

boundary

open

$>$

$<$

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closed

$\geq$

$\leq$

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y = constant (horizontal)

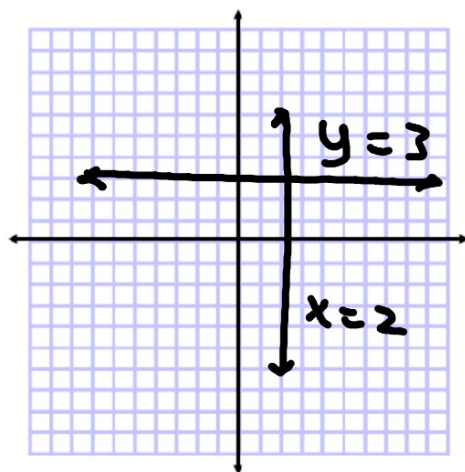
$$y = 3$$

x = constant (vertical)

$$x = 2$$

whiteboards

Test = true



$$7 > -2 \cdot 3 + 1$$

**Example 1** Solve by Graphing

$$7 > -6 + 1$$

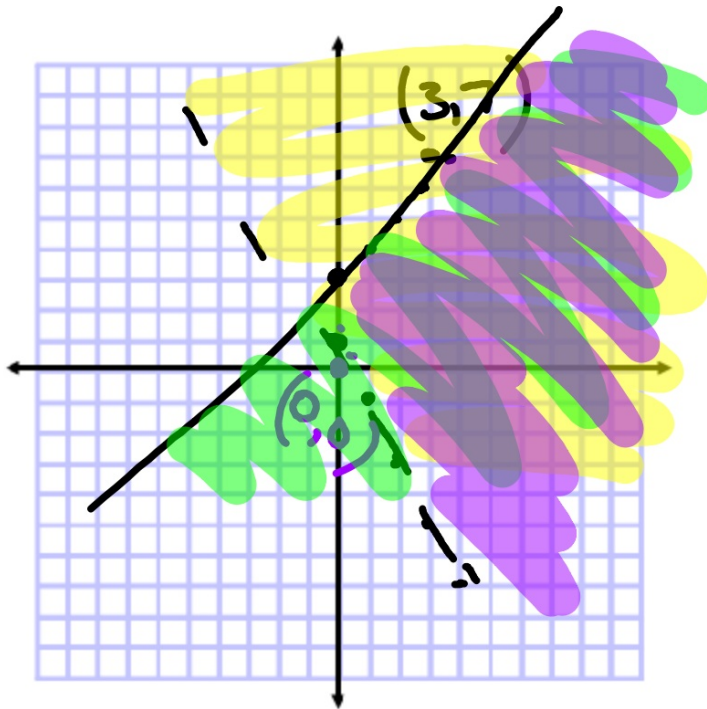
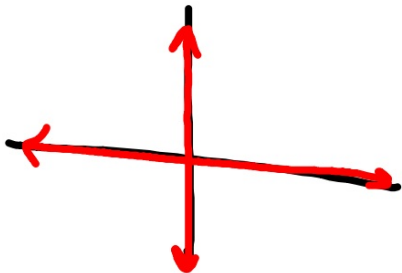
Solve the system of inequalities by graphing.

$$y > -2x + 1$$

$$y \leq x + 3$$

$$0 \leq 0 + 3$$

$$0 \leq 3$$



1. graph boundary (solid or dotted?)
2. choose a test point and shade T
3. repeat for other inequality
4. Answer?

### Guided Practice

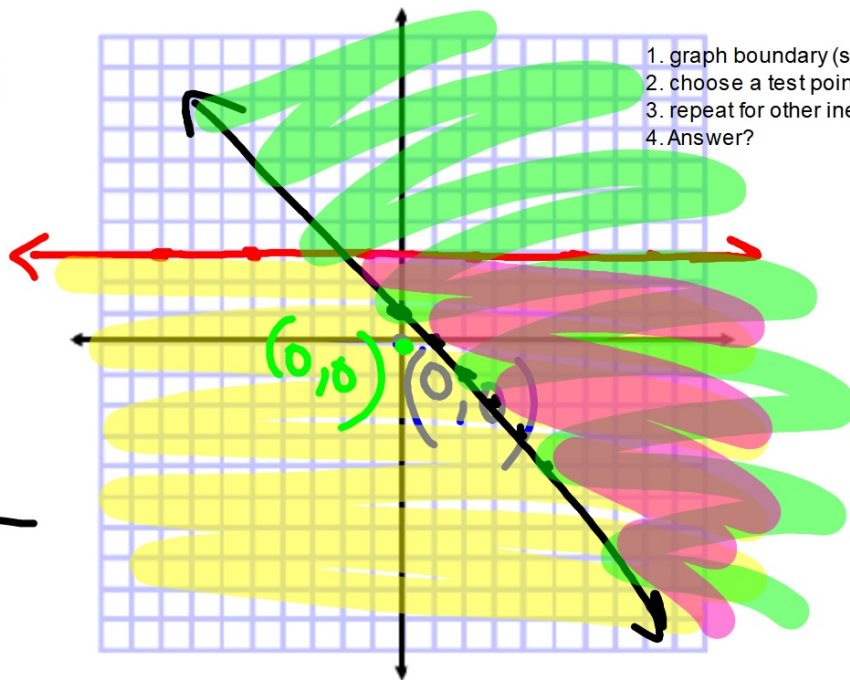
$y < 3$       $0 \leq 3$

$x + y \geq 1$

$0 + 0 \geq 1$

$y = 3$       $0 \geq 1$

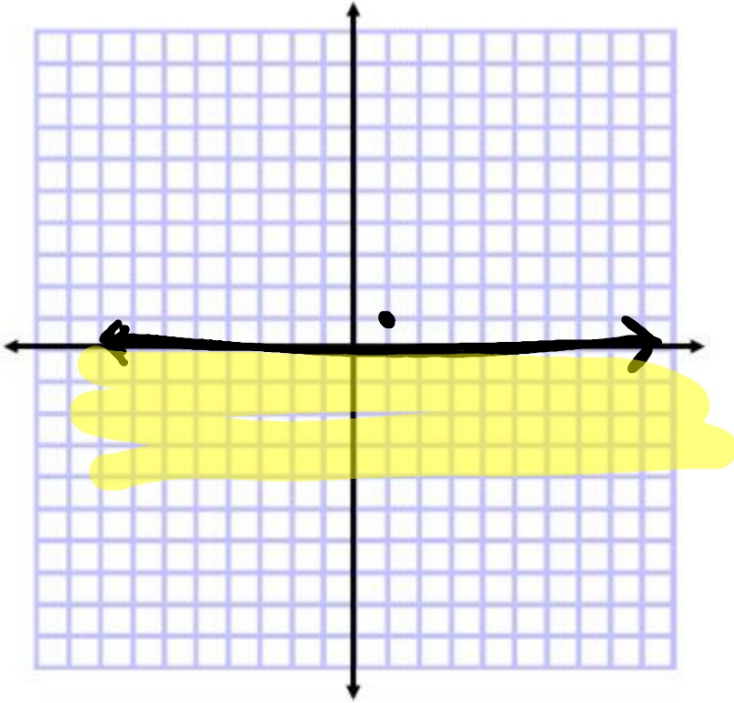
$$\begin{array}{r} x + y = 1 \\ -x \quad -x \\ \hline y = -x + 1 \end{array}$$



1. graph boundary (solid or dotted?)
2. choose a test point and shade T
3. repeat for other inequality
4. Answer?

$$y \leq 0$$

$$x \leq 0$$



$$2 \cdot 2 + 2 \geq 2$$

$$4 + 2 \geq 2$$

$$16 \quad 2x + y \geq 2$$

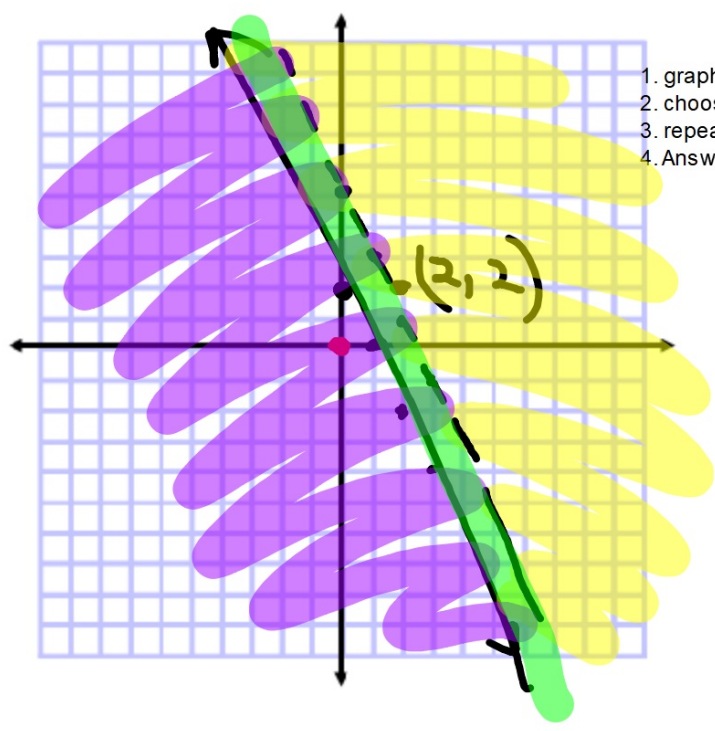
$$2x + y < 4$$

$$2 \cdot 0 + 0 < 4$$

$$2x + y \leq 4$$

$$-2x \quad -2x$$

$$y \leq -2x + 4$$

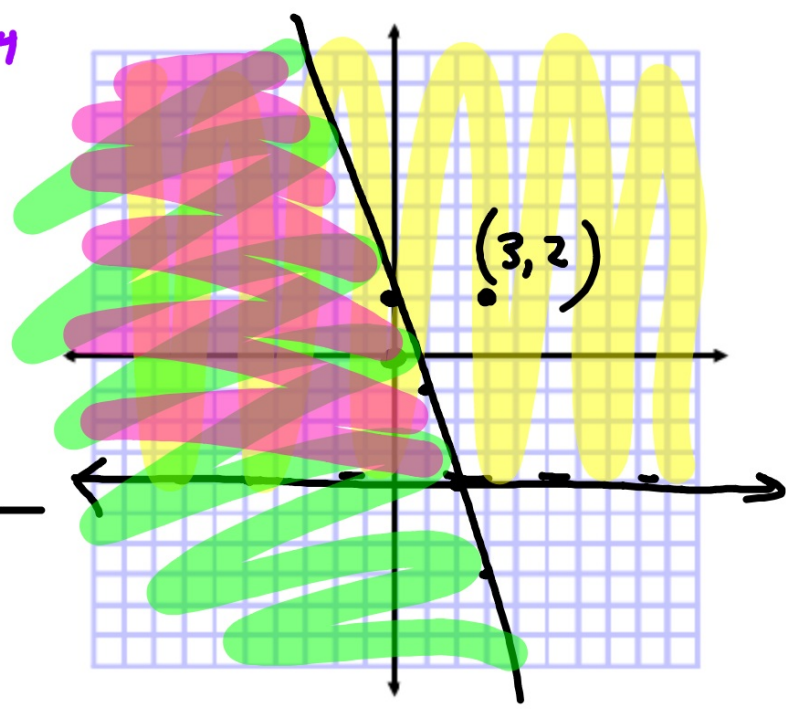


1. graph boundary (solid or dotted?)
2. choose a test point and shade T
3. repeat for other inequality
4. Answer?

Whiteboard  
16.  $y \geq -4$   $0 \geq -4$

$$3x + y \leq 2$$
$$3 \cdot 3 + 2 \leq 2$$
$$9 + 2 \leq 2$$
$$y = -4$$

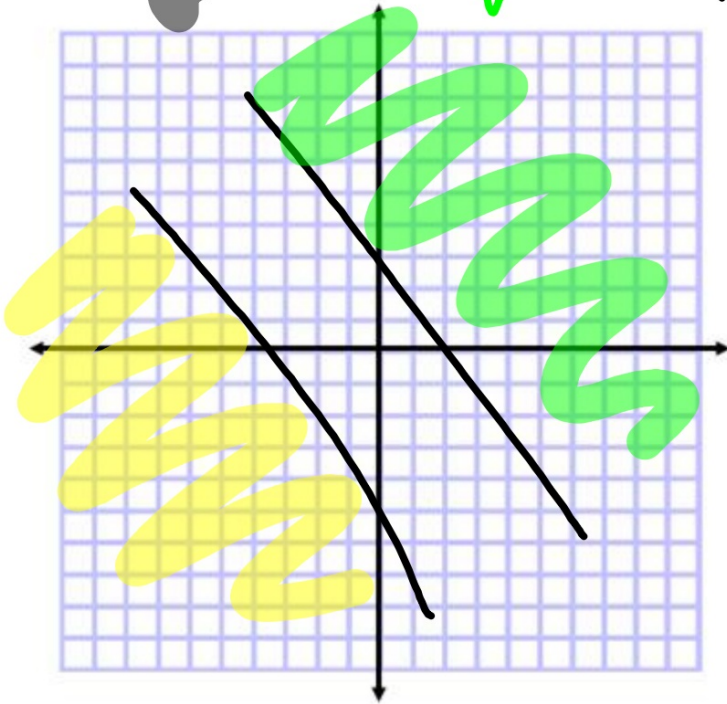
$$3x + y = 2$$
$$\begin{array}{r} -3x \quad -3x \\ \hline y = -3x + 2 \end{array}$$



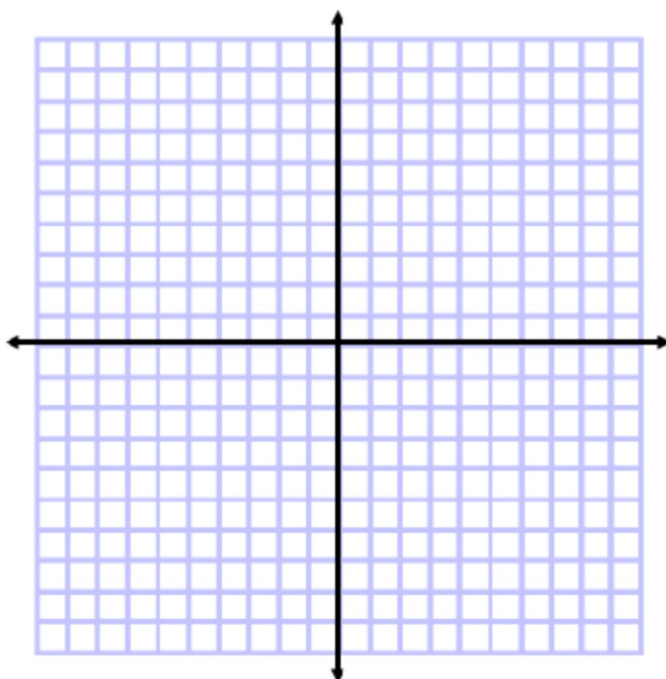
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**1D.**  $x + y > 2$   
 $-4x + 2y < 8$





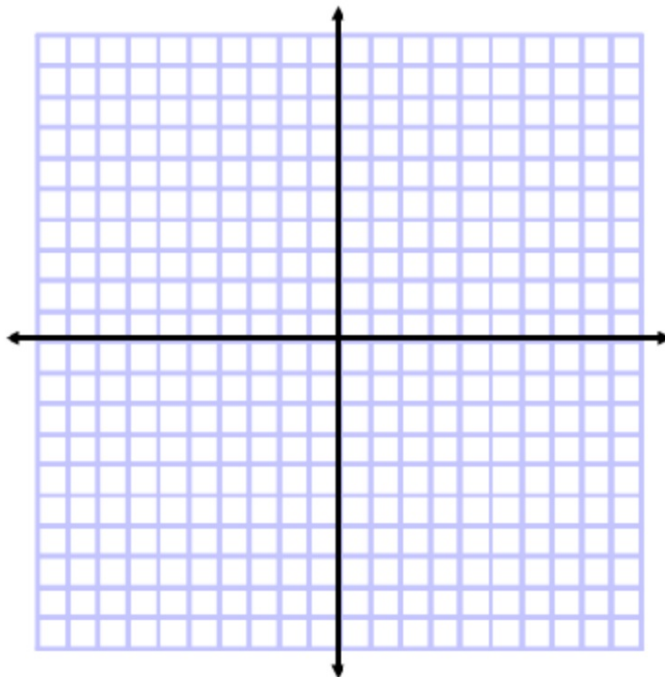
Where is it shaded by both?

**Example 2 No Solution**

Solve the system of inequalities by graphing.

$$3x - y \geq 2$$

$$3x - y < -5$$

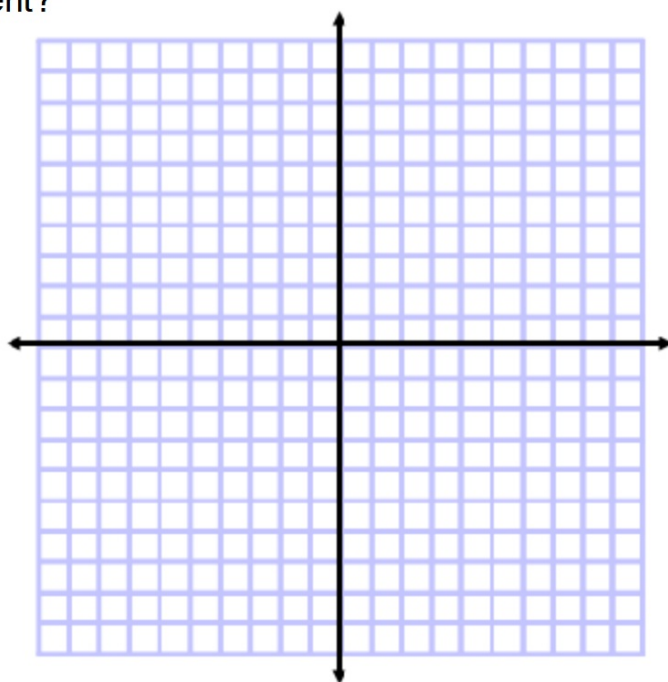


How is this problem different?

**Guided**Practice

**2A.**  $y > 3$

$y < 1$



**2B.**  $x + 6y \leq 2$   
 $y \geq -\frac{1}{6}x + 7$

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