

1. Simply the following:

A. $\sqrt{150}$

$$\sqrt{25} \cdot \sqrt{6}$$

$$\textcircled{5} \quad \boxed{5\sqrt{6}}$$

B. $\sqrt{99}$

$$\sqrt{9} \cdot \sqrt{11}$$

$$\textcircled{3} \quad \boxed{3\sqrt{11}}$$

C. $\sqrt{147}$

$$\sqrt{49} \cdot \sqrt{3}$$

$$\textcircled{7} \quad \boxed{7\sqrt{3}}$$

2. Abby scored 87, 93, 96, and 89 on her first four history tests. What score does she need to get on the next test to have an average of exactly 91% on her tests?

$$\textcircled{5} \quad \frac{365 + x}{5} = 91 \textcircled{5}$$

$$\begin{array}{r} 365 + x = 455 \\ -365 \quad -365 \\ \hline \end{array}$$

$$x = 90\%$$

3. What is the value of x in the system of equations below?

$$5x + 4y = 1$$

$$y = \textcircled{1 - x}$$

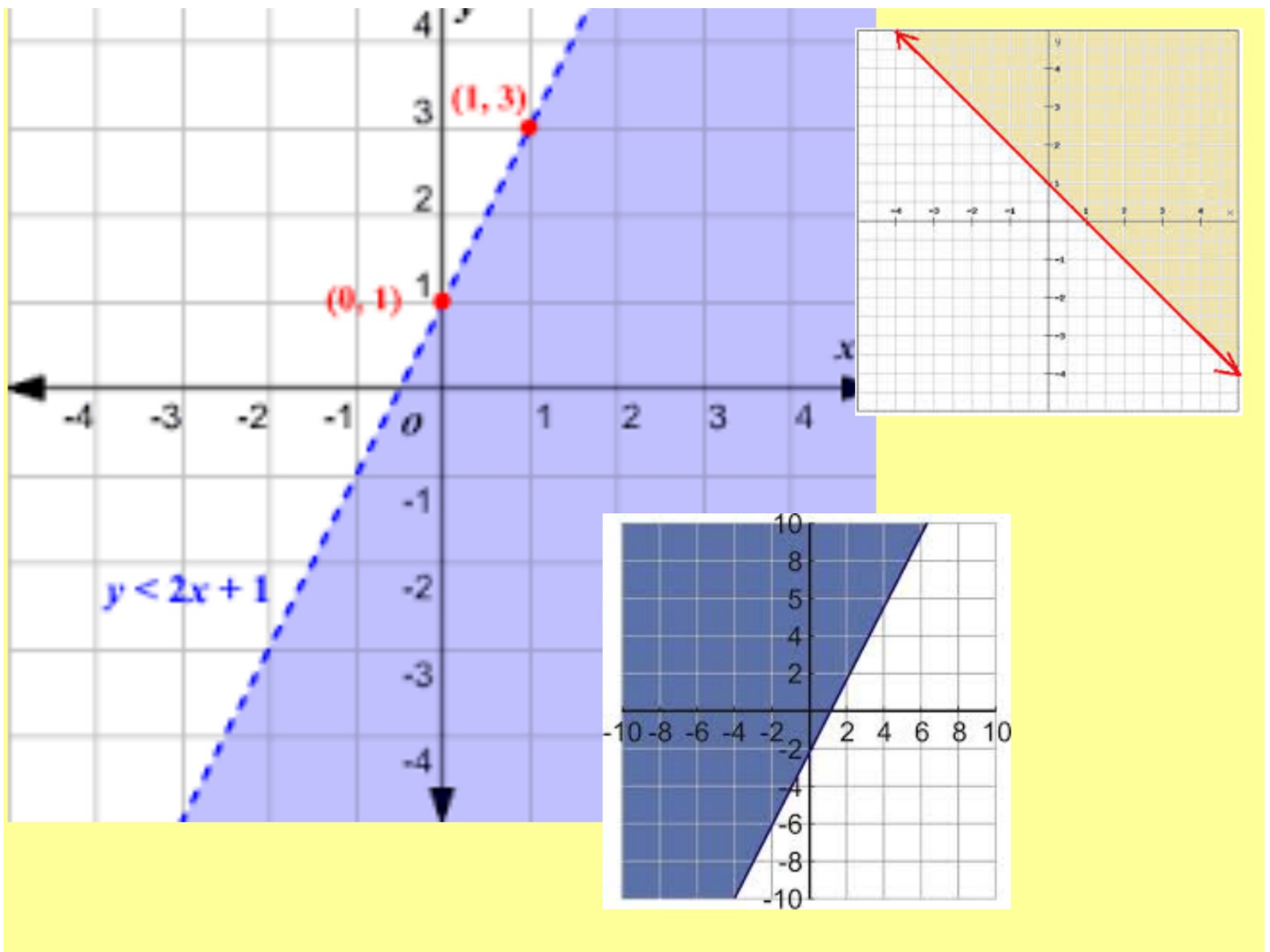
$$5x + 4(1 - x) = 1$$

$$\underline{5x} + 4 - \underline{4x} = 1$$

$$x + 4 = 1$$

$$\underline{-4} \quad \underline{-4}$$

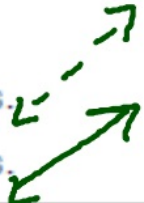
$$\boxed{x = -3}$$



$$x \geq 5$$

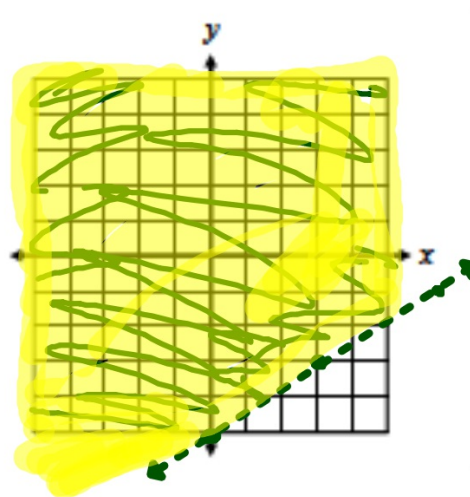
| Main Ideas/Questions | Notes/Examples | | | | | | | | | | | | |
|--|---|--|--------------------------------------|---------|--------|--|--|--|--------------------------------------|-----|----|----|-----|
| LINEAR INEQUALITY | | | | | | | | | | | | | |
| SOLUTION to a Linear Inequality | a region of ordered pairs | | | | | | | | | | | | |
| EXAMPLE | Determine which ordered pairs are solutions to the linear inequality below: $2x - 3y < 15$ | | | | | | | | | | | | |
| | <table border="1"><thead><tr><th>(2, 5)</th><th>(-1, -7)</th><th>(3, -4)</th><th>(0, 0)</th></tr></thead><tbody><tr><td>$2(2) - 3(5) < 15$ $4 - 15$ $-11 < 15$</td><td>$2(-1) - 3(-7)$ $-2 + 21 < 15$ $19 < 15$</td><td>$2(3) - 3(-4)$ $6 + 12 < 15$ $18 < 15$</td><td>$2(0) - 3(0)$ $0 - 0$ $0 < 15$</td></tr><tr><td>yes</td><td>NO</td><td>NO</td><td>yes</td></tr></tbody></table> | (2, 5) | (-1, -7) | (3, -4) | (0, 0) | $2(2) - 3(5) < 15$ $4 - 15$ $-11 < 15$ | $2(-1) - 3(-7)$ $-2 + 21 < 15$ $19 < 15$ | $2(3) - 3(-4)$ $6 + 12 < 15$ $18 < 15$ | $2(0) - 3(0)$ $0 - 0$ $0 < 15$ | yes | NO | NO | yes |
| (2, 5) | (-1, -7) | (3, -4) | (0, 0) | | | | | | | | | | |
| $2(2) - 3(5) < 15$ $4 - 15$ $-11 < 15$ | $2(-1) - 3(-7)$ $-2 + 21 < 15$ $19 < 15$ | $2(3) - 3(-4)$ $6 + 12 < 15$ $18 < 15$ | $2(0) - 3(0)$ $0 - 0$ $0 < 15$ | | | | | | | | | | |
| yes | NO | NO | yes | | | | | | | | | | |

Graphing linear inequalities is a way to show ALL the ordered pairs that are solutions! Steps to graph:

| | |
|--------|---|
| Step 1 | <p>Put the inequality in <u>slope</u> - <u>intercept</u> form.</p> <p>Be sure to flip the inequality symbol if you multiply or divide by a negative number!</p> |
| Step 2 | <p>Graph the line!</p> <ul style="list-style-type: none">• Use a <u>dotted</u> line for $<$ or $>$ symbols.• Use a <u>solid</u> line for \leq or \geq symbols.  |
| Step 3 | <p>Shade!</p> <ul style="list-style-type: none">• Shade <u>above</u> the line for $>$ or \geq symbols.• Shade <u>below</u> the line for $<$ or \leq symbols. |

Example: $2x - 3y < 15$

$$\begin{array}{r} \cancel{-2x} - 2x \\ \hline -3y < -2x + 15 \\ \hline < + \\ \hline -3 & -3 & -3 \\ \hline y > \frac{2}{3}x - 5 \end{array}$$

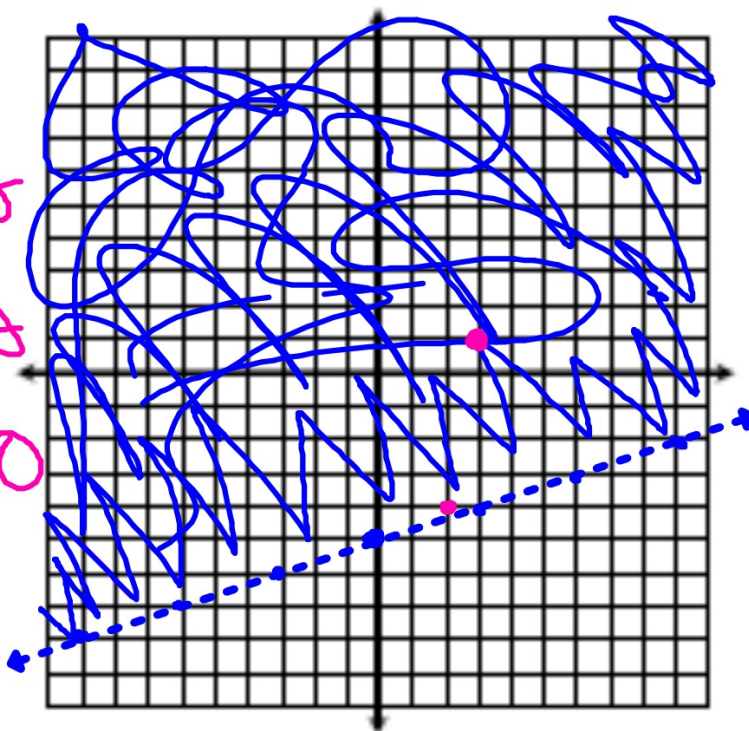


1. $y > \frac{1}{3}x - 5$

(3, 1) yes

(2, -4) yes

(0, -5) NO

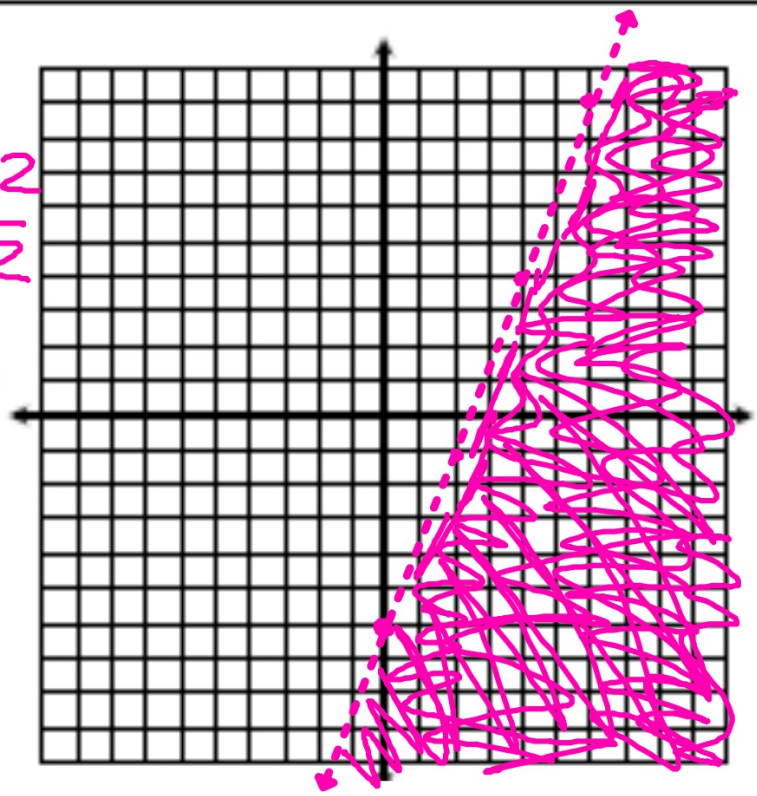


$$3. \quad 5x - 2y > 12$$

$$\frac{-5x \quad -5x}{-2y > -5x + 12}$$

$$\frac{-2y}{-2} > \frac{-5x + 12}{-2}$$

$$y < \frac{5}{2}x - 6$$



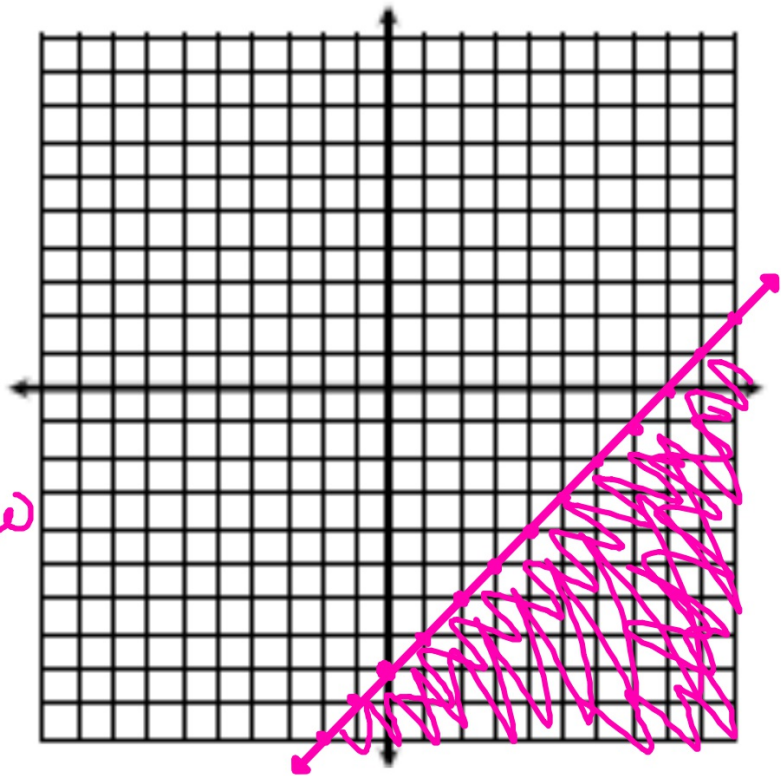
$$5. x - y \geq 8$$

$$\frac{-x}{-1} \quad \frac{-x}{-1}$$

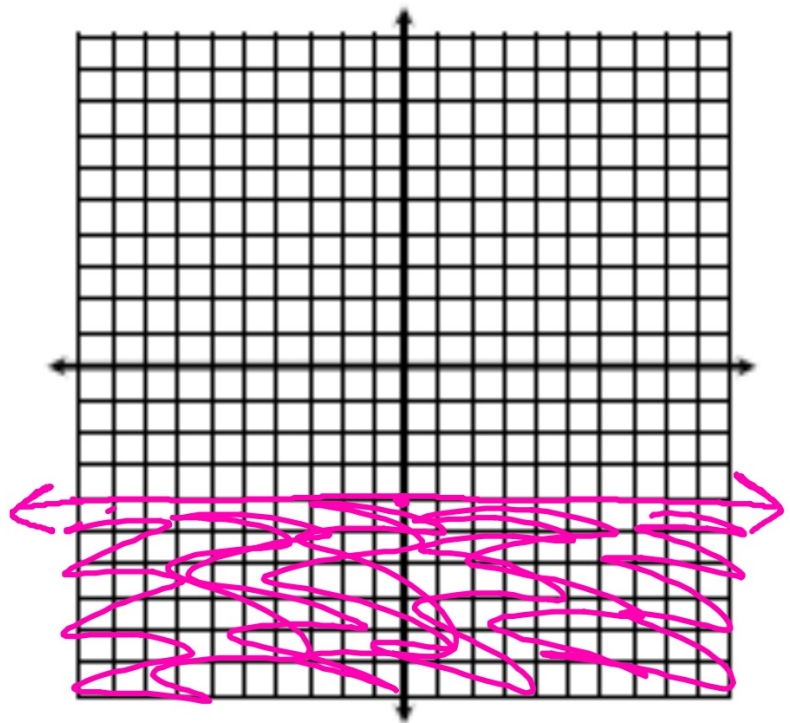
$$\frac{-y}{-1} \geq \frac{-x}{-1} + \frac{8}{-1}$$

$$y \leq x - 8$$

Solid
Shade below



7. $y \leq -4$



8. $x > 7$

Vertical
line

$>$ Shade to
the right

$<$ Shade to
the left

