Name: _____ Date: _____

Learning Goal 9.1	Solving linear inequalities.

Graphing Linear Inequalities

Solution Region

what side of the line is included in the solution set

Boundary

↑ linear function represented by the inequality.

$2(-2)+3(4) = -4+12 = 8 \not\leq 6$

Example Graph $2x + 3y \leq 6$ and determine whether $(-2, 4)$ is part of the solution.

↑ standard.

1. Change to slope-int

$y = mx + b$

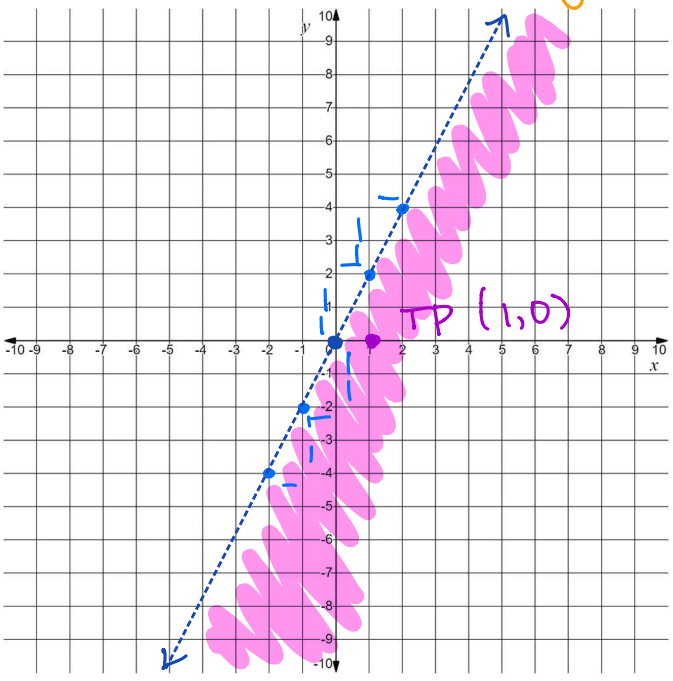
$\frac{3y}{3} \leq \frac{-2x+6}{3}$

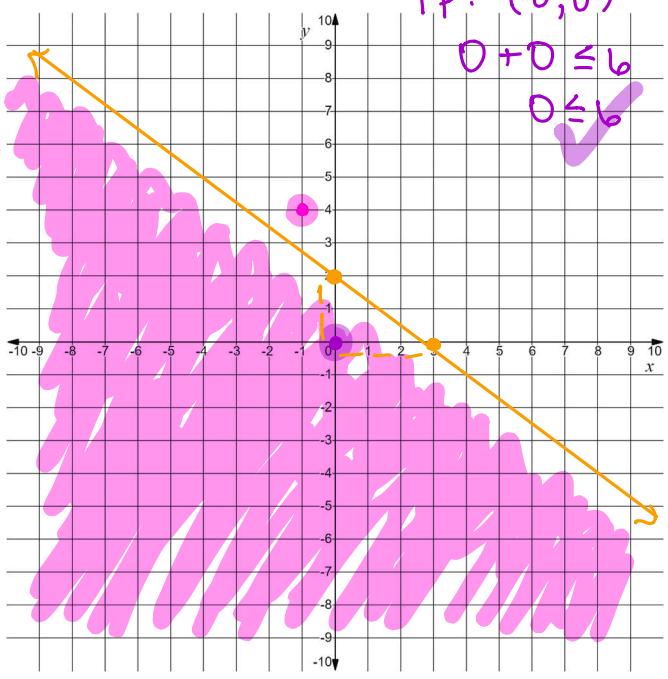
$y \leq -\frac{2}{3}x + 2$

2. Find x/y-int

x: $2x = 6$, $x = 3$

y: $3y = 6$, $y = 2$





Example Graph $10x - 5y > 0$.

x-int: $y = 0$, $10x = 0$, $x = 0$

$\frac{-5y}{-5} > \frac{-10x}{-5}$

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

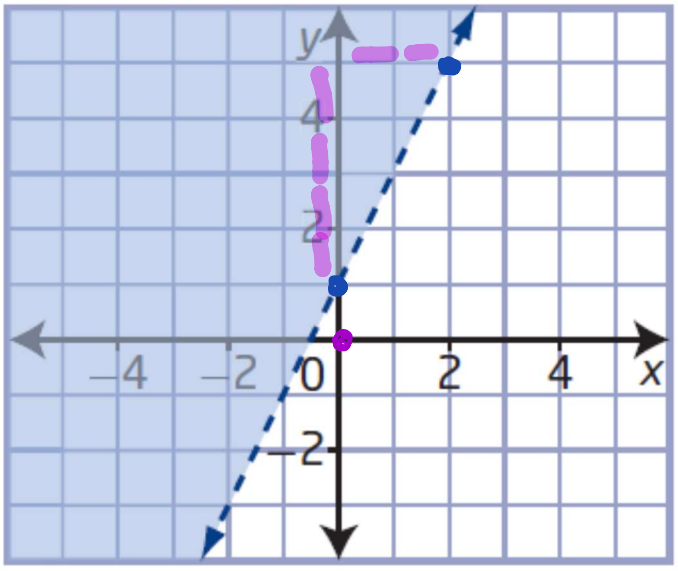
TP: $10(1) - 5(0)$

$10 - 0 > 0$

$10 > 0$

Assignment p. 471 #1 – 4, 6, 8, 9, 11, 13, 17 Quiz Next Day!

Example Write and inequality to represent the graph.



1. Find the equation that represents the line.

slope: $\frac{+4}{+2} = 2$ y-int: $y = 1$

$y = 2x + 1$

TP (0,0) – False!

$0 \quad 0 + 1$

$0 > 1$ ← make this false!

$y > 2x + 1$

Example Sam has \$30 to buy snacks for his class. Apples cost \$0.75 each and muffins are \$1.25.

a. Define the variables and write a linear equation to represent the possible combinations of snacks that he can purchase.

Let a = the # of apples purchased

m = the # of muffins purchased.

$0.75a + 1.25m = 30$ ← the amount of money available.

cost of all the apples bought ↑ cost of all the muffins bought

b. Are there any restrictions on the variables? Explain.

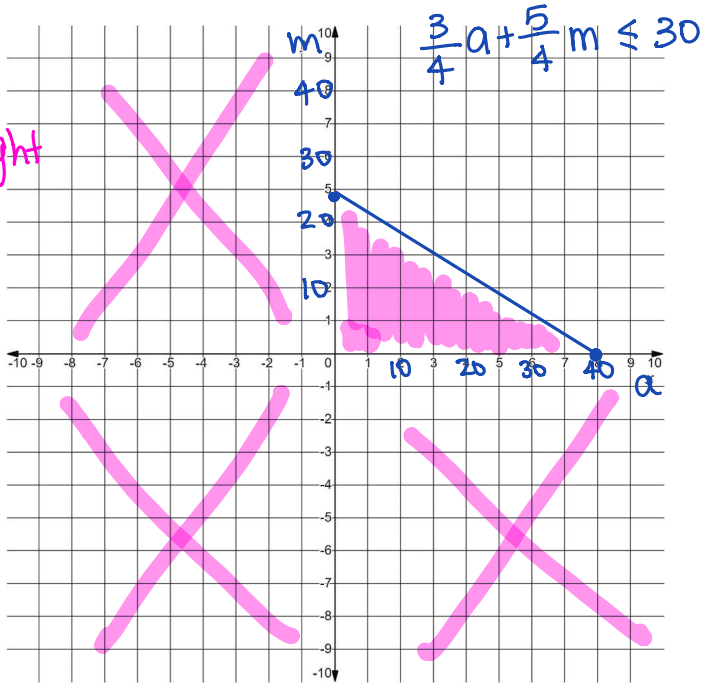
Neither a nor m can be negative

$a \geq 0$ $\quad \frac{3}{4}a + \frac{5}{4}m = 30$

$m \geq 0$ $\quad 3a + 5m = 120$

m-int $(a=0)$ $\quad 5m = 120$, $m = 24$

a-int $(m=0)$: $\quad 3a = 120$, $a = 40$



c. Graph your equation and shade the solution region.

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