

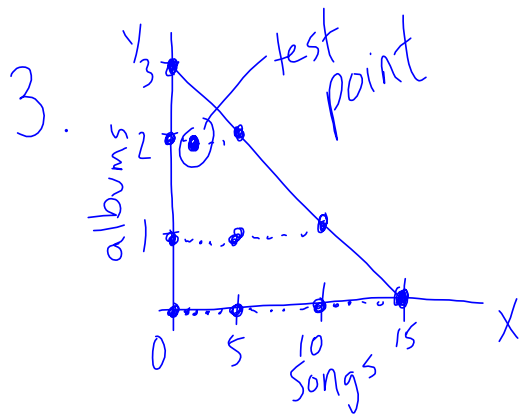
9.1 Linear Inequalities in Two Variables

Do Investigation on pg. 464-465 #1-11.

1.

Songs	Albums
0	3
0	2
0	1
0	0
1	2
1	1
1	0
2	2
2	1
2	0

2. $|x + 5y = 15$



5. $|x + 5y \leq 15$
 $1(2) + 5(2) \leq 15$
 $2 + 10 \leq 15$
 $12 \leq 15 \checkmark$

What about (3, 3)?

$$1(3) + 5(3) \leq 15$$

$$3 + 15 \leq 15$$

$$18 \leq 15 \times$$

Key Ideas

Boundary line - the associate line from the inequality.

ex) $1x + 5y \leq 15$

B.L.: $1x + 5y = 15$

- solid line - \leq or \geq

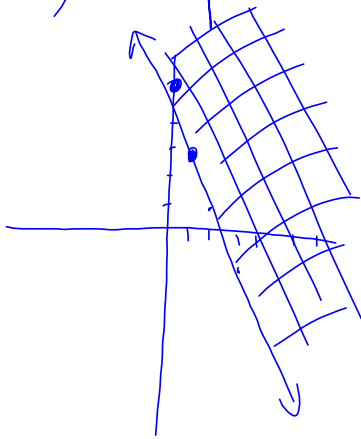
- dotted line - $<$ or $>$

Solution region - the shaded area that incl. all poss. solutions to the ineq.

- shade above : \geq or $>$

- shade below : \leq or $<$

ex) Graph $4x + 2y \geq 10$. Is $(1, 3)$ a solution?



$$\frac{2y}{2} \geq \frac{-4x + 10}{2}$$

$$y \geq -2x + 5$$

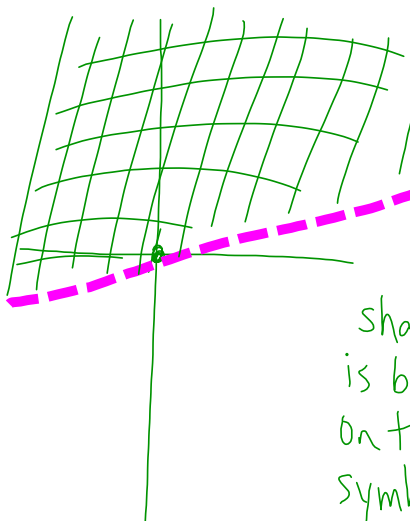
$$4(1) + 2(3) \geq 10$$

$$4 + 6 \geq 10$$

$$10 \geq 10$$

Yes, the point is on the line.

ex) Solve $5x - 20y < 0$. Is $(1, 2)$ in the solution?



$$\frac{-20y}{-20} < \frac{-5x}{-20}$$

$$y > \frac{1}{4}x$$

shading is based on this symbol.

$$\frac{1}{4}x < y$$

$$5(1) - 20(2) < 0$$

$$5 - 40 < 0$$

$$-35 < 0$$

Yes.

pg. 469 Your Turn

Write the inequality shown.

$$y = mx + b \quad y - y_1 = m(x - x_1) \quad Ax + By + C = 0$$

$$y \geq -2x - 2 \longrightarrow 2x + y + 2 \geq 0$$
$$2x + y \geq -2$$

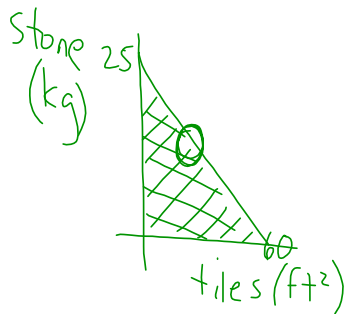
ex) Tile costs \$2.50/ft²

Stone costs \$6/kg.

Our budget is \$150.

Write the inequality.

Your Turn
pg 471.



$$2.50x + 6y \leq 150$$

Could we buy 18 of each?

$$2.50(18) + 6(18) \leq 150?$$

$$153 \leq 150 \quad \underline{\text{NO}}$$

pg. 472-475

#1, 3-9 (practice)

#10*, 11, 12, 14, 15 (apply)

#16, 17, 21 (extend)