You go to Best Buy to get some CD's and/or some DVD's. CD's are $9 each and DVD's are $12 each.

$C = \#$ CD's
$D = \#$ DVD's

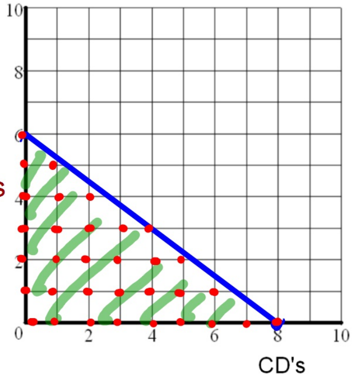
1. Write an inequality to represent spending no more than $72. $9C + 12D \leq 72$

2. Graph this inequality.

DVD's

$9C + 12D \leq 72$

How many ways can you spend no more than $72?



No negative numbers are possible and CD's and DVD's must be integer values only.

The 33 points in red represent all the ways to spend no more than $72.

In addition to the restriction that you can spend no more than $72 you also want at least 4 CD's.

Write this additional contraint as an inequality.

$C \geq 4$

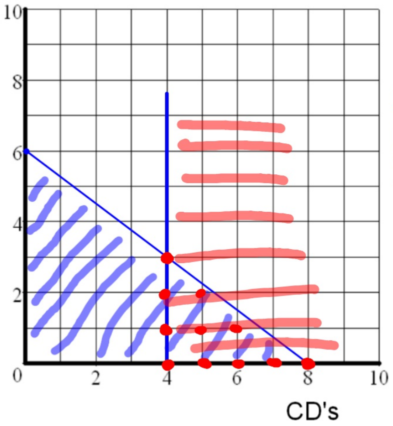
Now, how many ways can you meet both conditions?

DVD's

$9C + 12D \leq 72$

Additional Constraint:

$C \geq 4$



If you graph both inequalities on the same x-y plane you'll find all the points that satisfy both inequalities at the same time in the area that gets shaded twice, once for each inequality.

the 11 points in red represent all the ways to meet both constraints at the same time.

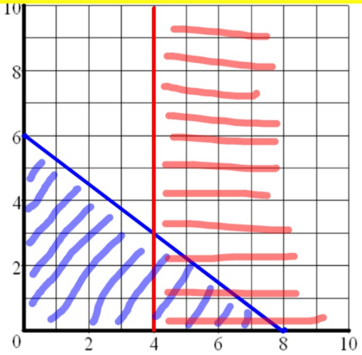
SYSTEM OF LINEAR INEQUALITIES

DVD's

$9C + 12D \le 72$

Additional Constraint:

$C \ge 4$



CD's

Sec 7-6:

System of Linear Inequalities:

Two or more linear inequalities together.

Is (2, -3) a solution to this inequality?

x y

$4x + 3y > -2$

Yes, this makes the inequality true.

$4(2) + 3(-3)$

$8 - 9$

$-1 > -2$

This statement is True

Is (1, 4) a solution to this system of inequalities?

No, this point doesn't make BOTH inequalities true.

$y \ge 6x - 5$

$4 \ge 6(1) - 5$

$4 \ge 1$

This is True

$4x - 3y > 10$

$4(1) - 3(4)$

$4 - 12$

$-8 > 10$

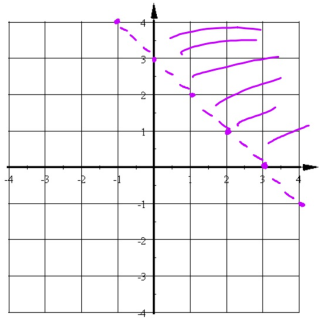
This is False

Solution to a System of Linear Inequalities:

Orderd pairs that make both inequalities true at the same time.

What is the solution to this inequality?

$y > -x + 3$



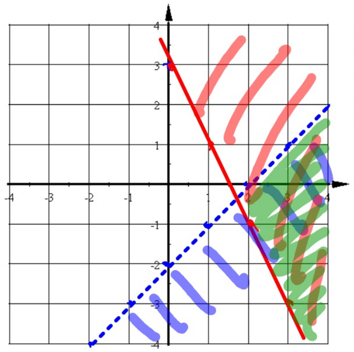
The solution to a linear inequality on the x-y plane are the points in the Shaded Area.

Points on the line are solutions ONLY if it is a Solid Line ($\leq$ or $\geq$)

What is the solution to this system of inequalities?

$y < x - 2$

$y \geq -2x + 3$



The solution to this system of inequalities is the are that is shaded for both inequalities at the same time: The GREEN area.

Solution to a System of Linear Inequalities:

Orderd pairs that make both inequalities true at the same time. OR

The region of the graph that is shaded twice, once for each inequality. In other words,

Where the shaded regions overlap.