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.

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

C	D	\$

33

$9C + 12D \le 72$

You could try to find all the values of C and D that make this inequality true but it isn't easy to find all 33.

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.

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

2. Graph this inequality.

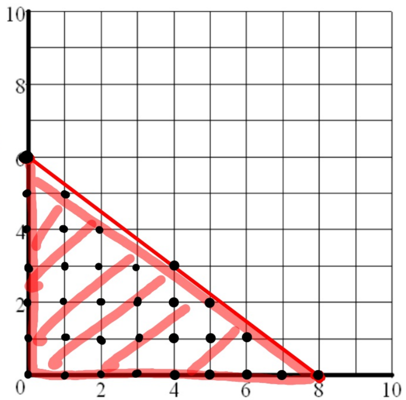
3. How many different ways can you spend no more than \$72.
   33

DVD's

$9C + 12D \le 72$

C-int = 8

D-int = 6



CD's

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

The 33 dots represents all the points that make the inequality true.

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

Now, how many ways can you meet both conditions?

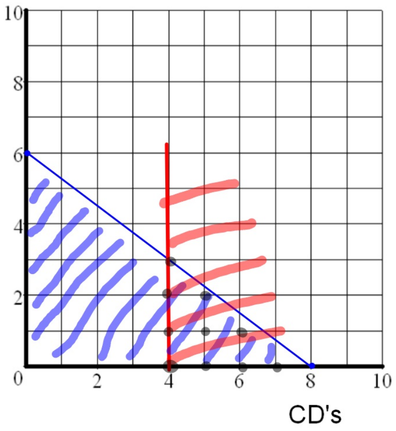
11

DVD's

$9C + 12D \leq 72$

Additional Constraint:

$C \geq 4$



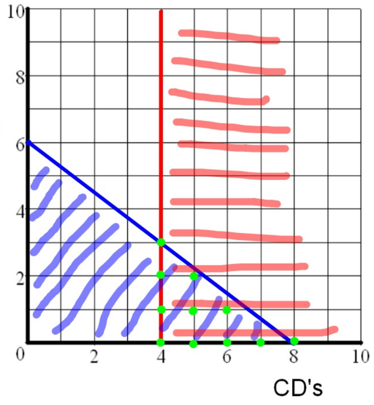
SYSTEM OF LINEAR INEQUALITIES

DVD's

$9C + 12D \leq 72$

Additional Constraint:

$C \geq 4$



The 11 points in green are the only combinations of CD's and DVD's that meet BOTH constraints at the same time!

Solve this system of equations by graphing.

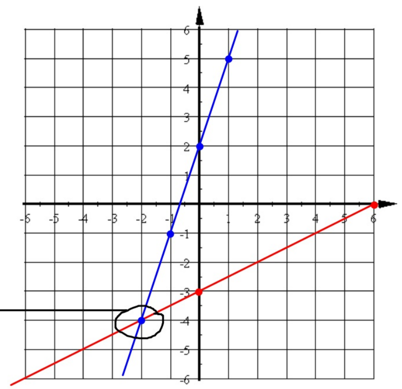
$y = 3x + 2$

$5x - 10y = 30$

x -int = 30/5 = 6

y - int = 30/-10 = -3

Solution: (-2, -4)



Sec 7-6:

System of Linear Inequalities:

Two or more linear inequalities together.

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

$4x + 3y > -2$

Yes, this makes the inequality true.

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

$-1 > -2$

FALSE

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

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

$y \geq 6x - 5$

$4 \geq 6(1) - 5$

$4 \geq 1$

True

$4x - 3y > 10$

$4(1) - 3(4)$

$-8 > 10$

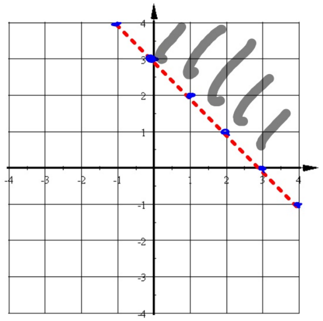
FALSE

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?

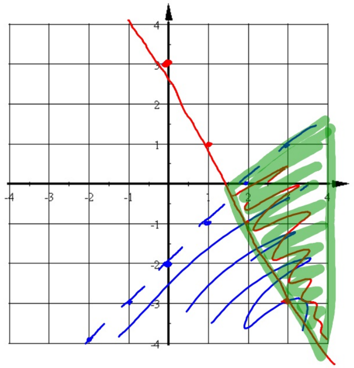
$y > -x + 3$



What is the solution to this system of inequalities?

$y < x - 2$

$y \geq -2x + 3$



Solution to a System of Linear Inequalities:

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

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

Where the shaded regions overlap.

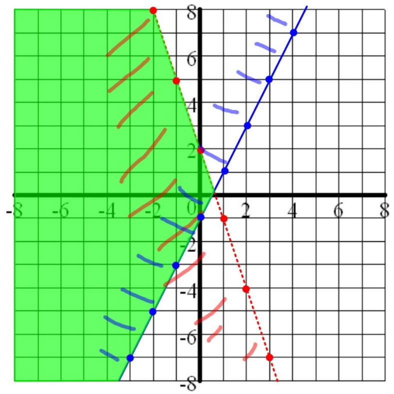
Graph each system of linear inequalities. Shade the Solution Region with a colored pencil or highlighter.

1. $y < -3x + 2$
   $y \geq 2x - 1$

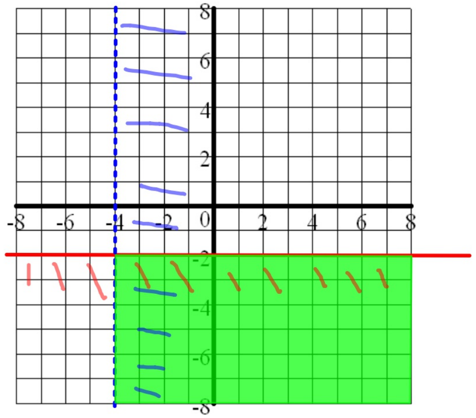
2. $y \leq -2$
   $x > 4$

1. $y < -3x + 2$
   $y \geq 2x - 1$

The green area is the solution region.



2. $y \leq -2$
$x > 4$



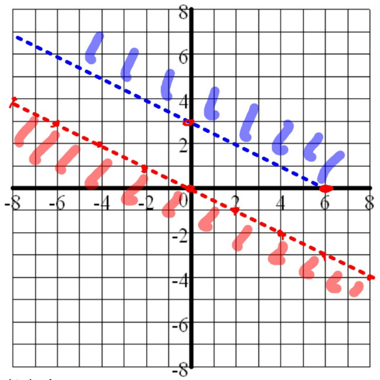
The green area is the solution region.

Graph each system of linear inequalities. Shade the Solution Region with a colored pencil or highlighter.

3. $y < -\frac{1}{2}x$
$4x + 8y > 24$

4. $y \geq \frac{2}{3}x - 2$
$-4x + 6y \geq 6$

3. $y < -\frac{1}{2}x$
$4x + 8y > 24$

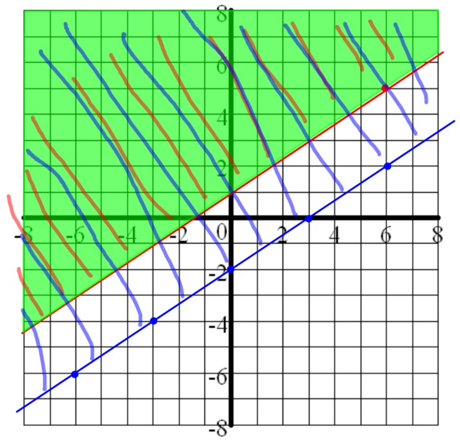


NO SOL

There is no area that is shaded twice!

4. $y \geq \frac{2}{3}x - 2$
$-4x + 6y \geq 6$

$y \geq \frac{2}{3}x + 1$



The green area is the solution region.

Write a system of inequalities such that the solution is the area between two parallel lines.

An example could be:

y > 2x +1

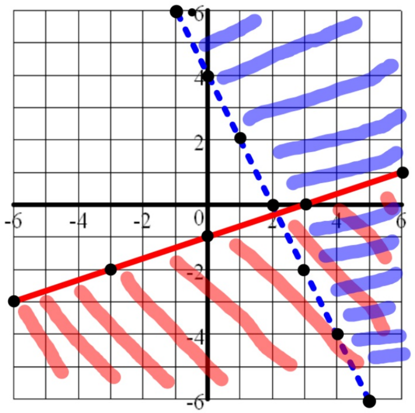
y < 2x + 5

You would shade above the lower of the two parallel lines and below the higher of the two parallel lines.
These graphs would overlap in between.

You can now finish Hwk #3

Due tomorrow

Write the system of inequalities for this graph:



Blue

$y > -2x + 4$

$y \leq \frac{1}{3}x - 1$