Algebra 1 Name:

Unit 7 – Day 4 Practice

1) Serena is ordering lunch from Tony's Pizza Parlor. John told her that when he ordered from Tony's last week, he paid $34 for two 16 inch pizzas and two drinks. Jodi told Serena when she ordered one 16 inch pizza and three drinks, it cost $23. What is the cost of one 16 inch pizza and one drink?

p: cost per 16 in pizza
d: cost per drink

$1(2p + 2d = 34)$
$-2(1p + 3d = 23)$

$+ \quad 2p + 2d = 34$
$- \quad 2p - 6d = -46$
$-4d = -12$
$\frac{-4d}{-4} = \frac{-12}{-4}$
$d = 3$

$2p + 2(3) = 34$
$2p + 6 = 34$
$-6 \quad -6$
$\frac{2p}{2} = \frac{28}{2}$
$p = 14$

The pizza costs $14 and one drink costs $3.

2) Jenna is deciding between two cell phone plans. The first plan has a $50 signup fee and costs $20 per month. The second plan has a $40 signup fee and costs $25 per month.

a. After how many months will the total costs be the same? What will the cost be?

$y = 20x + 50$
$y = 25x + 40$

$20x + 50 = 25x + 40$
$x = 2$
$y = 20(2) + 50$
$y = 90$

x: # of months
y: total cost

The 2 plans cost $90 at 2 months.

b. If Jenna has to sign a one year contract, which plan will be cheaper?

$x = 12$ months

1st: $y = 20(12) + 50 = \$290$
2nd: $y = 25(12) + 40 = \$340$

Plan 1 is cheaper

3) The graph below shows the money saved by Lisa and Dan over the summer.

a. How long did it take for them to save the same amount of money? How much money did they both save?

It takes 5 days to save $300.

b. When did Lisa have more money saved?

After 5 days

c. When did Dan have more money saved?

Before 5 days

- no more quizzes
- Unit 7 Test on Thursday
- midterm next Friday
- missing work due Friday
- make up quizzes/tests
  - → Wed. @ 7:15 am in 9225
  - → Thurs. @ 3:30 pm in 305
- Unit 7 Requiz
  - → Wed @ 7:45 in 9224
  - → Thurs @ 7:45 in 9110
  - → Mon @ 7:45 in 9224/9110

tomorrow - review
Thursday - test and notebook check

Foundations of Algebra Unit 7

Day 5 - Graphing Systems of Inequalities

Steps for Graphing Systems of Inequalities

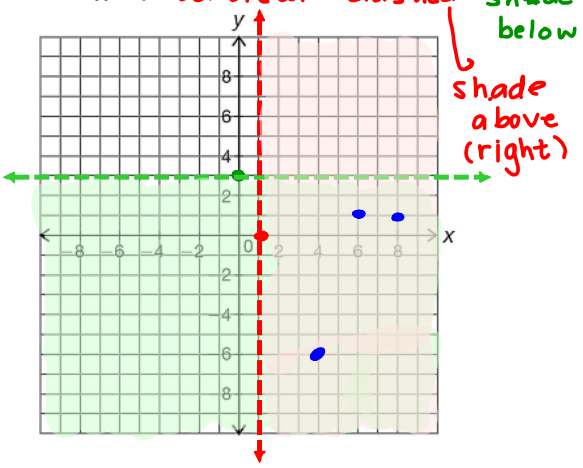
Step 1: Graph the boundary lines of each inequality. Use dashed lines if the inequality is < or >. Use a solid line if the inequality is ≤ or ≥.

Step 2: Shade the appropriate half plane for each inequality.

Step 3: Identify the solution of the system of inequalities as the intersection of the half planes from Step 2.

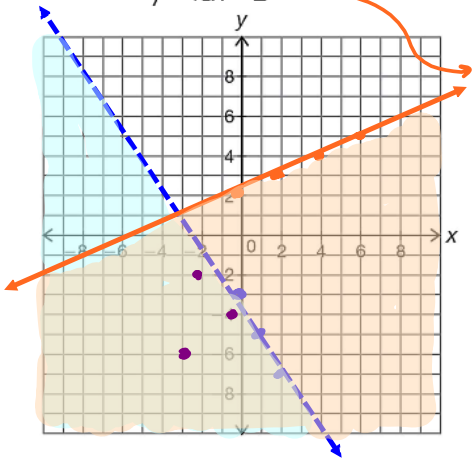
Symbol	Type of Line	Shading
<	Dashed	Below boundary line
>	Dashed	Above boundary line
≤	Solid	Below boundary line
≥	Solid	Above boundary line

A. $y < 3$ horizontal – dashed
$x > 1$ vertical – dashed shade below
shade above (right)



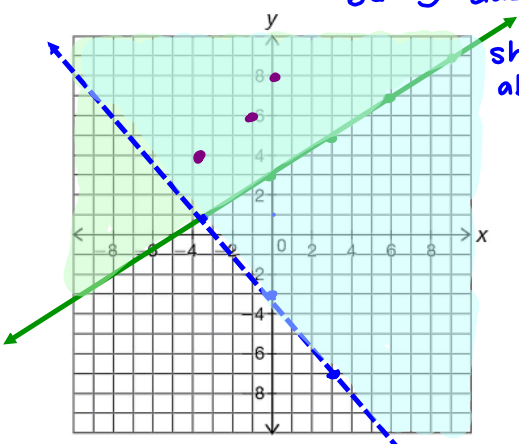
Solutions include: (6,1) (8,1) (4,-6)

B. $y < -2x - 3$ $m = -\frac{2}{1}$ $b = -3$ dashed shade below
$y \leq \frac{1}{2}x + 2$ $m = \frac{1}{2}$ $b = 2$ solid line shade below



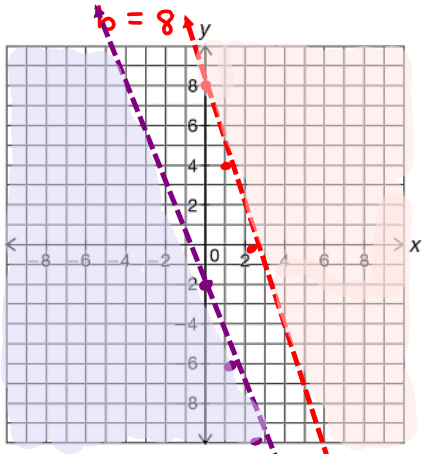
Solutions include: (-2,-2) (0,-4) (-3,-6)

C. $y \geq 2/3x + 3$ → $m = \frac{2}{3}$ $b = 3$ solid shade above
$y > -4/3x - 3$ → $m = -\frac{4}{3}$ $b = -3$ dashed shade above



Solutions include: (0,8) (-4,4) (-1,6)

D. $y > -4x + 8$ $m = -\frac{4}{1}$ shade above dashed
$y < -4x - 2$ $m = -\frac{4}{1}$ $b = -2$ dashed shade below



Solutions include: no solution

Graphing a System of Inequalities in Standard Form → Solve for y

Think Back.....What is the "Golden Rule" of inequalities?

If you multiply or divide both sides by a negative, you must flip the inequality.

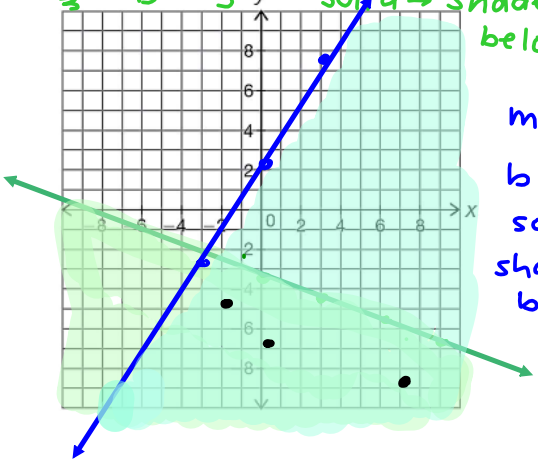
E. $x + 3y \leq -9$ $5x - 3y \geq -9$

$\frac{3y}{3} \leq \frac{-x}{3} - \frac{9}{3}$ $\frac{-3y}{-3} \geq \frac{-5x}{-3} - \frac{9}{-3}$

$y \leq -\frac{1}{3}x - 3$ $y \leq \frac{5}{3}x + 3$

$m = -\frac{1}{3}$ $b = -3$ solid → shade below

$m = \frac{5}{3}$ $b = 3$ solid shade below



Solutions: (6,-8) (-2,4) (0,-6)

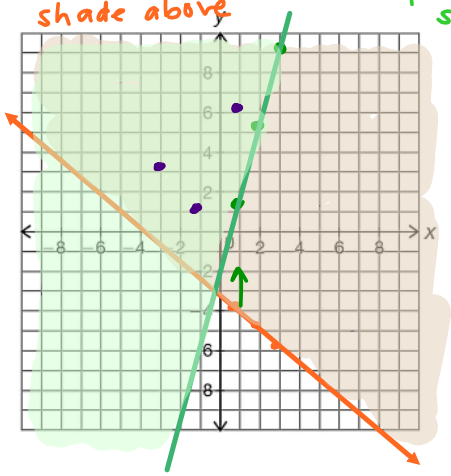
F. $x + y \geq -3$ $4x - y \leq -2$

$y \geq -x - 3$ $\frac{-y}{-1} \leq \frac{-4x}{-1} - \frac{2}{-1}$

$y \geq 4x + 2$

$m = -\frac{1}{1}$ $b = -3$ solid line shade above

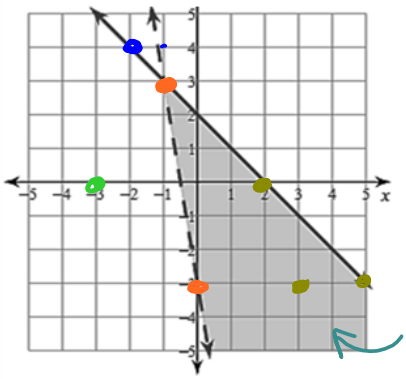
$m = \frac{4}{1}$ $b = 2$ solid line shade above



Solution: (-2,2) (-4,4) (0,7)

Warning...Potential Misconception!!!

$x + y \leq 2$
$6x + y > -3$



Do you think the point (-1, 3) is a solution to the inequality?

not a solution

(2,0) yes
(0,-3) no
(-3,0) no
(-2,4) no
(3,-3) yes
(5,-3) yes

double shaded area

Determining Solutions Located on a Boundary Line

If a point lies on a **solid** line, it is a solution.

If a point lies on a **dashed** line, it is not a solution.

It must be true or a solution for both inequalities/boundary lines to be a solution!