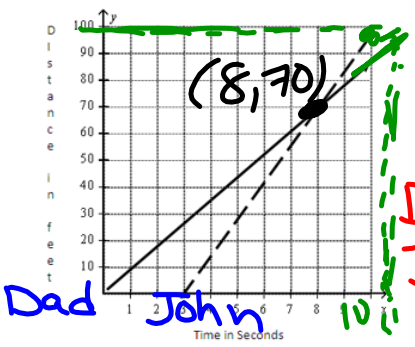
Unit 5 Day 2: Number of Solutions to Systems

Review:

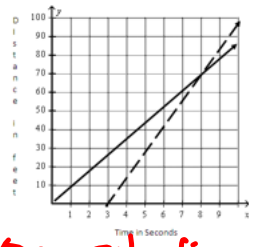
John and his father participate in a race. The graph provides information about how far John and his father ran over time. Write a story about who won the race; be descriptive about how the race was run.



John starts at 3sec. & Dad starts at 0. John gave his dad a head start
Dad was in the lead (line is above John's) until they're next to each other at 8 seconds when John passed. John won (passed Dad)

3 Types of Solutions to Systems:

What's happening in the race in the last 2 graphs?



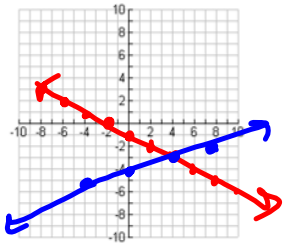
One solution (where they met)

same speed
no meeting
(no solution)

always in same place (infinite number of solutions)

Seeing the 3 Types of Solutions

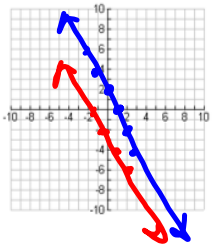
a.) Graph the two equations on the graph provided. y= -1/2x-1 and y=1/4x-4



What is unique about the point (4, -3)?

Both lines contain this point (that's the solution!)

b.) Graph the next two equations on the graph provided: y= -2x+2 and y= -2x-2



These lines are parallel.

What do you look for in order to identify this type of lines?

if they have same slope

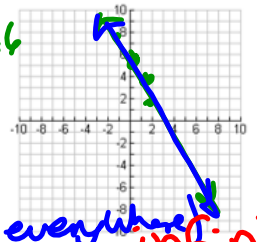
Since the lines never intersect this system of linear equations has no solution

c.) Graph and find the solution:

2x + y = 6

-2x -2x y = -2x+6

y = -2x + 6



What is the solution to this system?

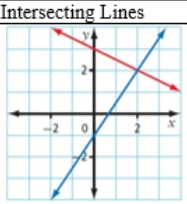
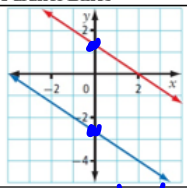
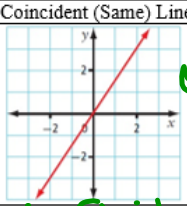
Explain why you came to this conclusion.

infinite solutions

(they intersect everywhere!)

If the lines have the same slope and y-intercept the solution is infinite solutions (share all same points)

Summary:

	Intersecting Lines	Parallel Lines	Coincident (Same) Lines
			
Number of Solutions	one	no solutions	infinite solutions
Slopes	different	same	same
Y-Intercepts	same/diff.	different	same

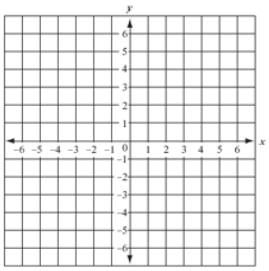
same line

Practice/Closure Day 2

1. Solve the system of equation.

$2x + 2y = 10$

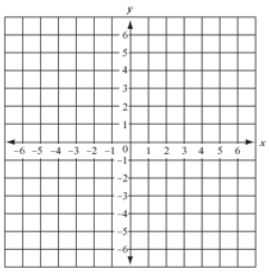
$y = -x + 5$



2. Solve the system.

$y = 5x - 7$

$-x - 5y = -15$



Without graphing, determine if the following system has one solution, no solution, or infinitley many solutions.

3. $2x + y = 6$ and $3y = -6x + 9$

4. $y = -3x - 4$ and $3x + y = -4$

5. $y = -x$ and $y = x - 1$