Lesson Title 4.1 Solving Linear Systems by Graphing NOTES **B2A2 Date** _____

OBJECTIVE 1: Deciding Whether an Ordered Pair is a Solution

TASK 1: Determine whether the ordered pairs are solutions of the systems provided. Show your set up as your work for explaining your answer.

a) $\begin{matrix} 4x - y = 2 \\ y = 3x \end{matrix}$ (12, 6)

$4(12) - (6) = 2$

$48 - 6 \neq 2$ X

NO

b) $\begin{matrix} 4x - y = 2 \\ y = 3x \end{matrix}$ (4, 12)

$4(4) - 12 = 2$

$16 - 12 = 2$

$4 \neq 2$ X

NO

OBJECTIVE 3: Finding the Number of Solutions of a System without Graphing

STEPS

1. Identify the slope (m) to know if it is the same or not.
2. If the slopes are...
   a. The same
      - But different y-intercept then no solution, lines are parallel
      - And y-intercept is the same then infinite solutions, coinciding lines
   b. NOT the same
      - One solution: the two lines intersect at one point (x, y)

CALCULATOR TIPS

1) Solve both equations for y

2) Type both equations into y = (top left of calculator) y_1 & y_2

3) Graph to make sure you can see the point of intersection

4) 2^{nd} trace (top right of calculator)

5) #5 Intersect

6) First curve? Move the cursor left and right until you are close to the point of intersection

7) Second curve? Move the cursor left and right until you are close to the point of intersection

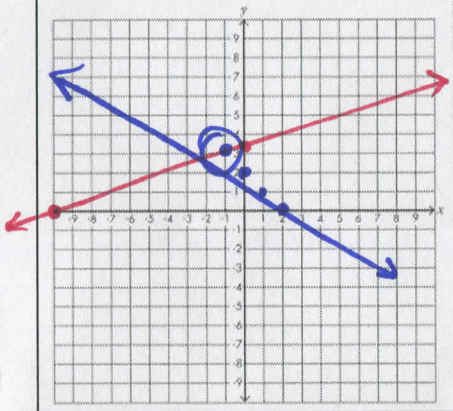
8) Guess? Move the cursor left and right until you are as close as you can get to the point of intersection

9) Write your solution in coordinate form, (x, y).

TASK 2: Solve the system of equations by graphing. Start by creating a table of coordinates (you may use your calculator to help you.

$-x + 3y = 10$

$x + y = 2$



x	-x + 3y = 10	y
0	-0 + 3y = 10	10/3
-10	-(-10) + 3y = 10	0
1	-(1) + 3y = 10	11/3

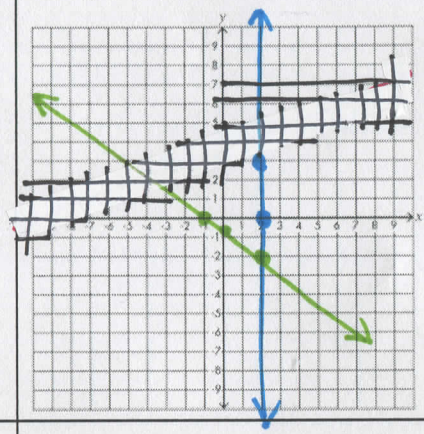
x	x + y = 2	y
0	0 + y = 2	2
2	2 + y = 2	0
1	1 + y = 2	1

(-1, 3)

TASK 3: Solve the system of equations by graphing. Start by creating a table of coordinates (you may use your calculator to help you.

$2x + 3y = -2$

$x = 2$



x	2x + 3y = -2	y
0	2(0) + 3y = -2	-2/3
-1	2(-1) + 3y = -2	0
2	2(2) + 3y = -2	-2

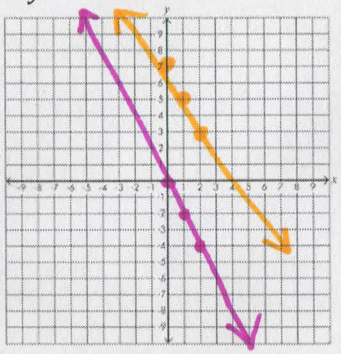
x	x = 2	y
2		3
2		4
2		5

(2, -2)

TASK 4: Solve the system of equations by graphing. Start by creating a table of coordinates (you may use your calculator to help you.

$2x + y = 7$

$2y = -4x$



x	2x + y = 7	y
0	2(0) + y = 7	7
1	2(1) + y = 7	5
2	2(2) + y = 7	3

x	2y = -4x	y
0	2y = -4(0)	0
1	2y = -4(1)	-2
2	2y = -4(2)	-4

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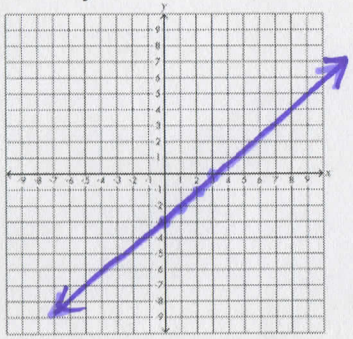
TASK 5: Solve the system of equations by graphing. Start by creating a table of coordinates (you may use your calculator to help you.

$x - y = 3$

$-x + y = -3$



x	x - y = 3	y
0	0 - y = 3	-3
1	1 - y = 3	-2
2	2 - y = 3	-1

x	-x + y = -3	y
0	-0 + y = -3	-3
1	-1 + y = -3	-2
2	-2 + y = -3	-1

coinciding lines

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TASK 6: Without graphing, determine the number of solutions of the system.

$\frac{1}{2}x - y = 2$

$x = 2y + 5$

Step 1: *Solve for y on both equations to determine the slope (m): y = mx + b.*

m: $\frac{1}{2}$ $\quad -y = -\frac{1}{2}x + 2 \quad y = \frac{1}{2}x - 2$ $\quad x - 5 = 2y \quad \frac{1}{2}x - \frac{5}{2} = y$

Step 2: Determine the number of solutions based on the slope and y-intercept.

b: $-2 \neq -\frac{5}{2}$ $\quad // \quad \leftrightarrow$

Number of Solutions: 0

TASK 7: Without graphing, determine the number of solutions of the system.

$5x + 4y = 6$

$x - y = 3$

$4y = -5x + 6$

$y = -\frac{5}{4}x + \frac{6}{4}$

m: $-\frac{5}{4} \neq 1$ b: $\frac{6}{4} \neq -3$

$-y = -x + 3$

$y = x - 3$

Number of Solutions: 1

Still need help with: