Classwork

Linear Systems LS2

Solving Linear Systems by Graphs and Tables

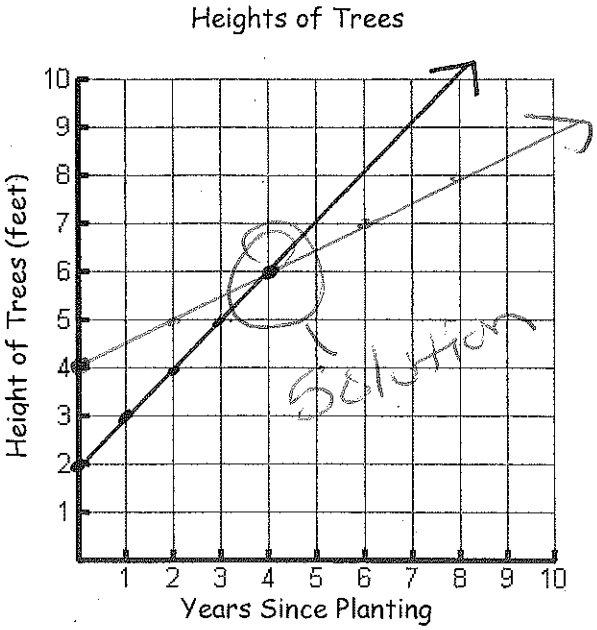
Name Key Wedn: 1/15th

Explore - Day 2

Date _____ Period _____

The system $\begin{cases} y = x + 2 \\ y = \frac{1}{2}x + 4 \end{cases}$ compares the heights of two trees, y represents height, and x represents the years since planting. Complete the table and graph the equations to represent the situation.

x	$y = x + 2$	$y = \frac{1}{2}x + 4$
2	4	5
3	5	5.5
4	6	6
5	7	6.5
6	8	7



1. After how many years will the trees be the same height? What is that height?

After 4 years, both trees are 6 feet tall

2. Write the point of intersection as an ordered pair.

(4, 6)

If an ordered pair is a solution, then the ordered pair will make both equations true.

3. Verify that your ordered pair is a solution by substituting values of x and y in each equation.

f s s

$y = x + 2$
$6 = 4 + 2$
$6 = 6$ ✓

$y = \frac{1}{2}x + 4$
$6 = \frac{1}{2}(4) + 4$
$6 = 2 + 4$
$6 = 6$ ✓

Tell whether the ordered pair is a solution of the given system. fss

4. (4, 1); $\begin{cases} x + 2y = 6 \\ x - y = 3 \end{cases}$ yes

$x + 2y = 6$: $4 + 2(1) = 6$, $6 = 6$ ✓

$x - y = 3$: $4 - 1 = 3$, $3 = 3$ ✓

5. (-1, 2); $\begin{cases} 2x + 5y = 8 \\ 3x - 2y = 5 \end{cases}$ No

$2x + 5y = 8$: $2(-1) + 5(2) = 8$, $-2 + 10 = 8$, $8 = 8$ ✓

$3x - 2y = 5$: $3(-1) - 2(2) = 5$, $-3 - 4 = 5$, $-7 \neq 5$ Not a solution

Complete the table for the system of equations. f s s or calculator y= 2nd table

6. $\begin{cases} y = -2x + 9 \\ y = x + 3 \end{cases}$

x	y = -2x + 9	y = x + 3
0	9	3
1	7	4
2	5	5
3	3	6

7. What is the solution to the system above? How do you know that?

(2,5) This is the ordered pair that is a solution to both equations and where they are equal.

8. Mark and Martha are lab partners who just completed two tables for their Biology lab. Unfortunately, some water from the nearby sink ruined parts of their table. Mark and Martha compared what they could still read from the two tables. Help them determine the solution to the system of equations.

Mark's Table

x	-7	8	3	-5
y	-25	35	15	-17

Martha's Table

x	-5	-7	18	0
y	-17	-23	52	-2

Solution: (-5, -17)

☆ same x same y

9. Solve the system of equations. Hint: Use your knowledge about slope to help complete the tables.

$\begin{cases} y = -x \\ y = -2x - 5 \end{cases}$

y = -x:

m = -1

x	-13	-12	-11	-10	-9	-8	-7	-6	-5
y	13	12	11	10	9	8	7	6	5

-1 -1

y = -2x - 5:

m = -2

x	5	6	7	8	9	10	11	12	13
y	-19	-17	-19	-21	-23	-25	-27	-29	-31

-2 -2

Solution to this system of equations: (-5, 5)

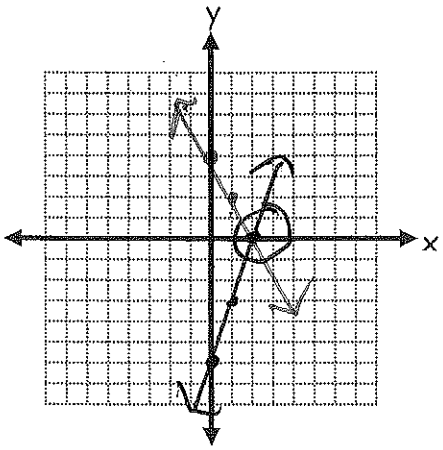
Not in table

Calc, 2nd trace 5

Graph the following systems of equations. Name the solution to each system of equations as an ordered pair.

10. $\begin{cases} y = 3x - 6 \\ y = -2x + 4 \end{cases}$

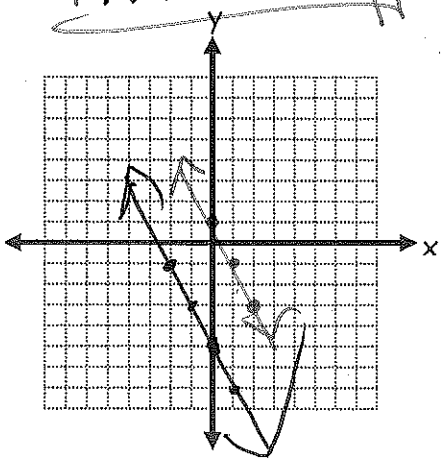
(2, 0)



11. $\begin{cases} y = -2x - 5 \\ y = -2x + 1 \end{cases}$ $m=-2$ $b=-5$ $m=-2$ $b=1$

★ parallel

No Solution



12. $\begin{cases} 5x + 2y = 10 \\ y = 5 - \frac{5}{2}x \end{cases}$ $m=-\frac{5}{2}$ $b=5$

Infinitely many solutions

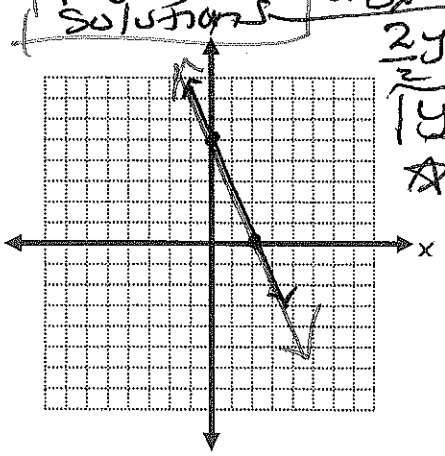
$5x + 2y = 10$

$-5x \quad -5x$

$\frac{2y}{2} = \frac{-5x}{2} + \frac{10}{2}$

$y = -\frac{5}{2}x + 5$

★ same equation



13. How should you verify that your solutions are correct?

use FSS → Substitute the solution x + y values back into both equation and verify it is true for both

Example: (2, 0) #10 above

$y = 3x - 6$

$0 = 3(2) - 6$

$0 = 0$ ✓

$y = -2x + 4$

$0 = -2(2) + 4$

$0 = -4 + 4$

$0 = 0$ ✓

true for both