Test Review:

Solving linear systems:

An equation that makes a line when graphed

What is a linear equation?

Two (or more) linear equations can be graphed on the same coordinate plane

What is a linear system?

What is a solution to a linear system?

A point (or a line) that is a solution to all the equations at the same time

$(6, -2)$ for example

Variable confusion:

in a linear System, ALL 3 are true

- Sometimes a variable means "an unknown but fixed number"
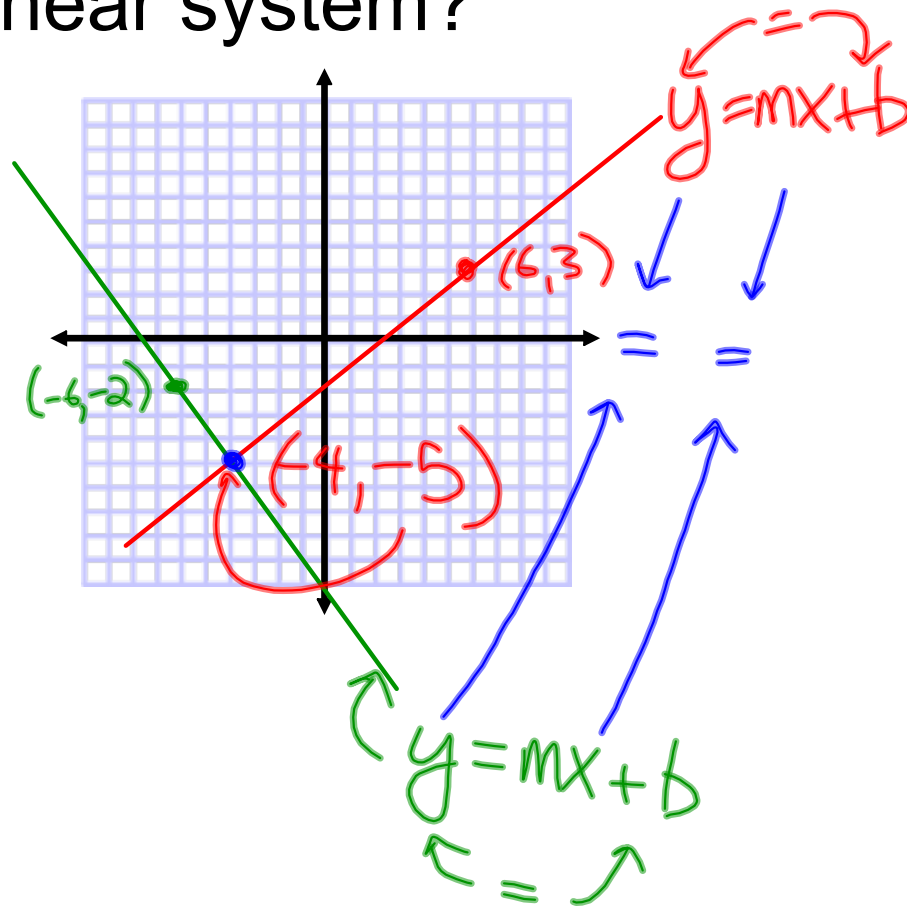
  X = how old I was when I got my dog

- Sometimes a variable means "a number that's known but has different values at different times"

  X = the number of students in the classroom

- Sometimes the same variable shows up in more than one equation

  X = the amount of money I have

  X = $5 + the money my mom gave me for lunch today

What does it mean to be a solution to a linear system?

$y = mx + b$

$(6,3)$

$(-6,-2)$

$(-4,-5)$

$y = mx + b$

An ordered pair $(-2,4)$

What does a linear system look like on a graph? two (or more) lines

Where is the solution on a graph? WHERE THE LINES INTERSECT

What is the solution?

the ordered pair at the intersection-point that is a solution to BOTH equations

Example:

months   # of books

x	y (Bill)	y (Bilbo)
0	15	7
1	17	11
2	19	15
3	21	19
4	23	23

Bill has 15 books, and gets 2 each month
Bilbo has 7 books, and gets 4 each month
How many months will it take for
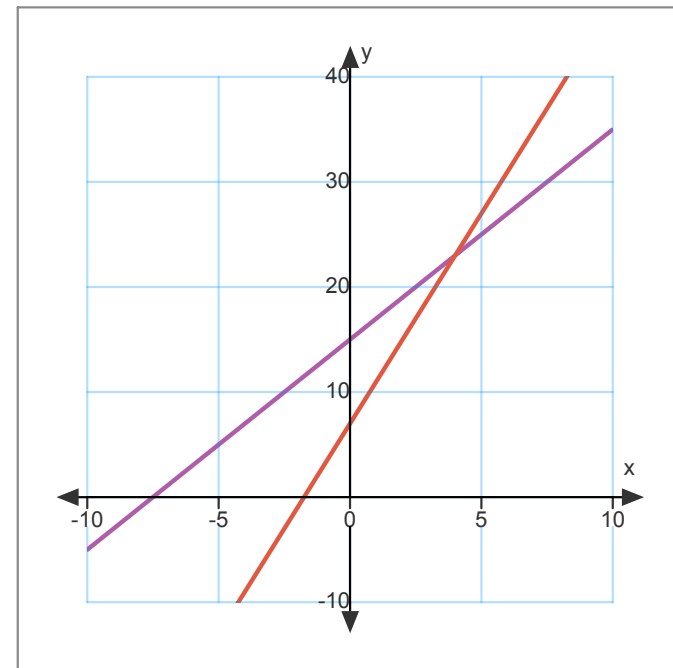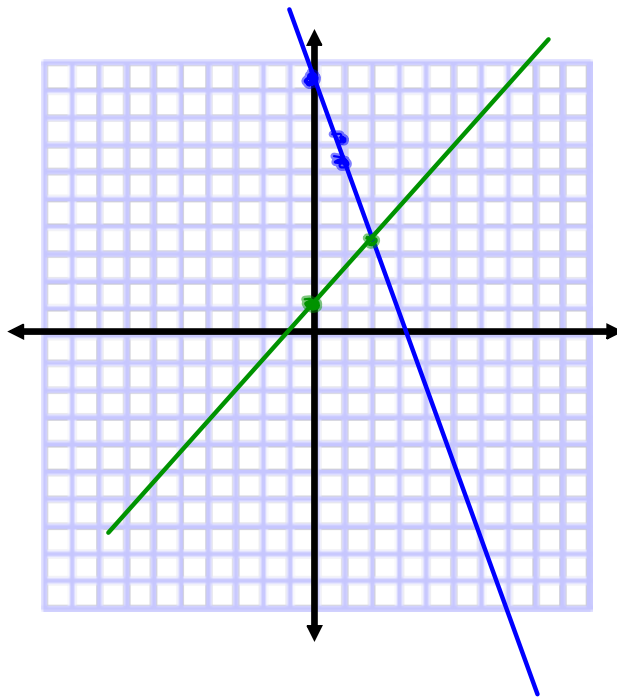them to have the same # of books?

④

(4, 23)

$$y = 2x + 15$$

$$y = 4x + 7$$

What are the equations?

Table of solutions ...

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Solving linear systems by graphing:

$6x + y = 19$ $\quad y = -6x + 19$

$5x - 2y = -4$ $\quad -2y = -5x - 4$

$$\frac{-2y}{-2} = \frac{-5x - 4}{-2}$$

Remember - what is a solution to a linear system? ordered pair - intersection of lines

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

Steps:

1. Graph both lines

2. Identify / estimate point of intersection

3. Check the point in both equations $(2, 7)$

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

$$7 = \frac{5}{2}(2) + 2$$

$$7 = 5 + 2$$

$$\checkmark 7 = 7$$

$$y = -6x + 19$$

$$7 = -6(2) + 19$$

$$7 = -12 + 19$$

$$\checkmark 7 = 7$$

Tell whether the ordered pair is a solution of the linear system.

1. $(4, 1)$;

$x + 2y = 6$

$3x + y = 11$

NO

2. $(-2, 1)$;

$5x - 2y = -12$

$x + 3y = 1$

$5(-2) - 2(1) = -12$

$-10 - 2 = -12$

$-12 = -12$ ✓

$-2 + 3(1) = 1$

$-2 + 3 = 1$

$1 = 1$ ✓

YES

3. $(4, -3)$;

$-3x + 2y = -18$

$6x - y = 27$
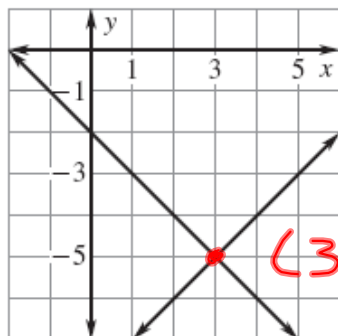
$6x - y = 27$

$6(4) - (-3) = 27$

$24 + 3 = 27$

$27 = 27$ ✓

YES

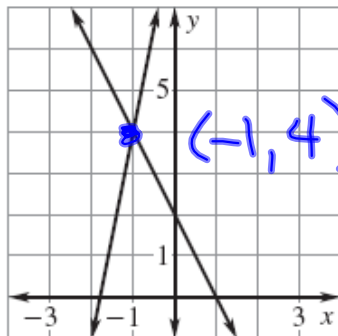**Use the graph to solve the linear system. Check your solution.**

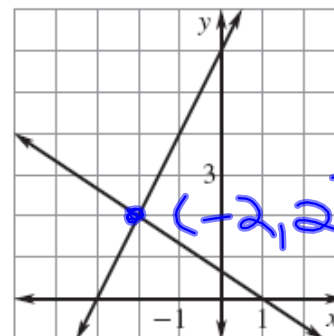7. $x - y = 8$

   $x + y = -2$

(3, −5)

8. $5x - y = -9$

   $y + 2x = 2$

(−1, 4)

$5(-1) - (4) = -9$

$-5 - 4 = -9$

$-9 = -9 ✓$

$4 + 2(-1) = 2$

$4 + -2 = 2$

$2 = 2 ✓$

9. $2x + 3y = 2$

   $-2x + y = 6$

(−2, 2)

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Hanging Flower Baskets You will be making hanging flower baskets. The plants you have picked out are blooming annuals and non-blooming annuals. The blooming annuals cost $3.20 each and the non-blooming annuals cost $1.50 each. You bought a total of 24 plants for $49.60. Write a linear system of equations that you can use to find how many of each type of plant you bought. Then graph the linear system and use the graph to find how many of each type of plant you bought.
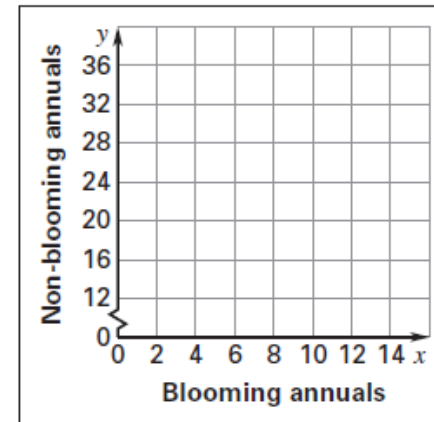
Homework:
p. 430, 4-16 (even), 31, 33