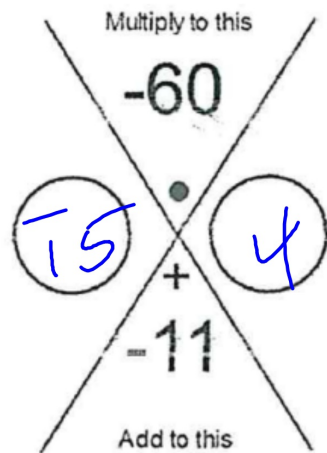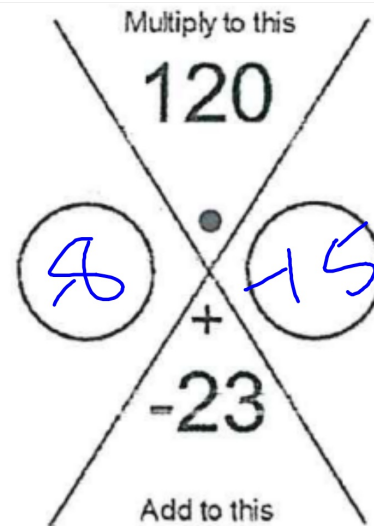Find the two numbers that fit into the two circles such that they multiply to the number at the top of the X and add to the number at the bottom of the X.

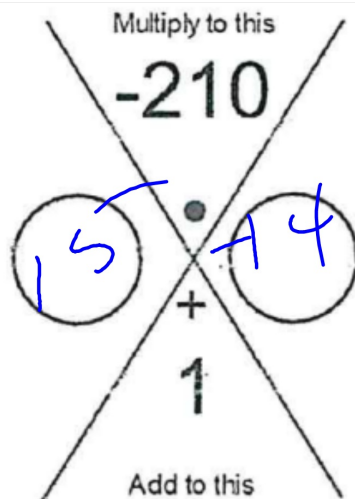**1.)**

Multiply to this

-60

(15) (4)

+

-11

Add to this

1 60
2 30
3 20
4 15

2.)

Multiply to this

120

(8) (15)

+

-23

Add to this

1 120
2 60
3 40
4 30
5 24
6 20
8 15

3.)

Multiply to this

-210

(15) (14)

+

1

Add to this

2 105
15 14

4.) Suppose you are testing two fertilizers on bamboo plants A and B, which are growing under identical conditions. Plant A is 6 cm tall and growing at a rate of 4 cm/day. Plant B is 10 cm tall and growing at a rate of 2 cm/day. After how many days will the bamboo plants be the same height? What will their height be?

$X = day$

$y = height$ $A = B$ $A : y = 4X + 6$

$B : y = 2X + 10$

14cm $4X + 6 = 2X + 10$

$2X = 4$

$X = 2 \text{ days}$

Chapter 7: System of Linear Equations

Objectives: 1.) I will be able to solve system of linear equations by using a graph. 2.) I will be able to analyze special types of system of linear equations.

○ Two or more linear equations with the same variables.

Ways to solve a system of linear equations:

1. Graphing:
   a. By hand
   b. Using a graphing calculator

2. Algebra:
   a. Substitution
   b. Elimination

Solution to a system of linear equations:

- The point where the lines intersect

- The #'s for the two variables that make both equations true AT THE SAME TIME

Example 1: How many solutions does each system of linear equations have?

1.
$y = 2x - 7$ I SOl.
$4x - 8y = 24$
$-8y = -4x + 24$
$y = \frac{1}{2}x - 3$

2.
$y = -3x + 1$ NO SOL.
$6x + 2y = 8$
$2y = -6x + 8$
$y = -3x + 4$

3. one sol.
$y = \frac{4}{5}x + 2$
$15x + 12y = 36$
$-15x \qquad -15x$
$12y = -15x + 36$
$y = -\frac{5}{4}x + 3$

4. Inf sols.
$y = -6x + 5$
$12x + 2y = 10$
$y = -6x + 5$

Example 2: Using this line: $8x + 6y = 24$

$6y = -8x + 24$

$y = -\frac{4}{3}x + 4$

Write the equation of a second line that would lead to the given number of solutions.

1. One solution   2. No solution

$y = \frac{3}{4}x + 5$

$y = 1x + 7$
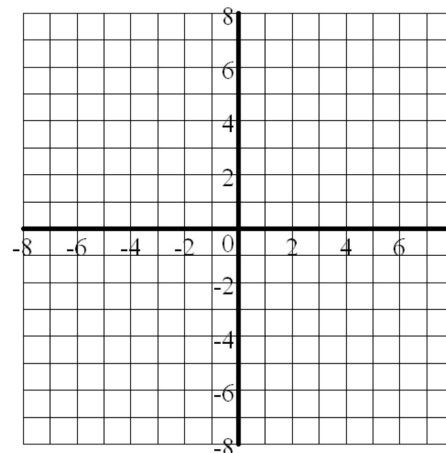
$y = -\frac{4}{3}x + 8$

3. Many solutions

$y = -\frac{4}{3}x + 4$

Solve this system of equations by graphing:

$y = 2x - 1$ $y = \frac{1}{3}x + 1$ $(1.2, 1.4)$

It's not really exact. So you must use a graphing calculator.

Find the solution to this system of linear equations by graphing.

$(1.32, -3.23)$

$y = 2.1x - 6$

$y = -3.2x + 1$

A landscaper was paid $100 for materials then $8.50 per hour to finish the flower garden.

$L1 = L2$ $y = 140 + 7.25x$

$y = 100 + 8.50x$

Another landscaper worked the same number of hours and charged $140 for materials then $7.25 per hour to do another project.

$100 + 8.50x = 140 + 7.25x$

Find the number of hours worked if their total bill was the same

$x = hrs$

$y = \$ \ bill$

$1.25x = 40$

$x = 32 \ hrs$

<u>**Section 7.2**</u> - Solving Systems using Substitution

- You must know what one of the variable "equals"

- Take information from one equation and place it into the other equation.

1.) Solve this system of equations using SUBSTITUTION

$y = 4x - 3$

$y = -2x + 15$

$4x - 3 = -2x + 15$

$6x = 18$

$x = 3$

$\boxed{(3, 9)}$

2.) Solve.

$y = 4x + 1$

$5x + 3y = 37$

$5x + 3(4x + 1) = 37$

$5x + 12x + 3 = 37$

$17x = 34$

$x = 2$

$(2, 9)$

3.) Solve.

$P = \dfrac{5}{3}Q - 7$

$P = \dfrac{7}{6}Q - 4$

$6\left(\dfrac{5}{3}Q - 7\right) = \dfrac{7}{6}Q - 4)$

$10Q - 42 = 7Q - 24$

$3Q = 18$

$Q = 6$

$(3, 6)$

4.) Solve.

$h = 3g + 5$

$7g - 2h = -8$

$(2, 11)$

$7g - 2(3g + 5) = -8$

$7g - 6g - 10 = -8$

$1g = 2$

5.) Solve.

$m + n = 80$

$\underline{-n \quad -n}$

$8m + 5n = 481$

$(27, 53)$

$m = 80 - n = 27$

$8(80 - n) + 5n = 481$

$640 - 8n + 5n = 481$

$-3n = -159$

$n = 53$

6.) The gym teacher ordered some basketballs and some footballs. The number of basketballs is three less than twice the number of footballs. Basketballs cost $35 each and footballs cost $28 each. The gym teacher spent a total of $875.

Write and solve a system of equations to find the number of each kind of ball that was purchased.

$(17, 10)$

$b = 2f - 3$

$b = 17$

$b = bb$

$f = 20$

$875 = 35(2f - 3) + 28f$

$875 = 70f - 105 + 28f$

$98f = 980$

$f = 10$

HW #2 due tomorrow:

Sec 7-2

Pages 350-351

Problems 9, 10, 13, 18, 22, 24, 39, 41-43

IXL #1 - U.1 & U.2 due Sunday at 6pm!