

Warm Up - Finish 7.4 Notes Cont. wkst

- 1) Georgia has only dimes and quarters in her bag. She has a total of 18 coins that are worth \$3. How many dimes and how many quarters does she have?
- 2) A farmer raises chickens and cows. There are 34 animals in all. The farmer counts 110 legs on these animals. Write and solve a system of equations to find the number of each type of animal.

1. Georgia has only dimes and quarters in her bag. She has a total of 18 coins that are worth \$3. How many dimes and how many quarters does she have?

$$\begin{array}{r}
 0.10x + 0.25y = 3 \\
 -0.10(x + y = 18) \quad \rightarrow + \\
 \hline
 0.15y = 1.2 \\
 \frac{0.15y}{0.15} = \frac{1.2}{0.15} \\
 \hline
 y = 8
 \end{array}$$

$$\begin{array}{r}
 x + 8 = 18 \\
 -8 \quad -8 \\
 \hline
 x = 10
 \end{array}$$

10 Dimes
8 Quarters

2. A farmer raises chickens and cows. There are 34 animals in all. The farmer counts 110 legs on these animals. Write and solve a system of equations to find the number of each type of animal.

2 legs 4 legs

$$\begin{array}{r} 2x + 4y = 110 \\ -2(x + y = 34) \end{array} \rightarrow \begin{array}{r} 2x + 4y = 110 \\ -2x - 2y = -68 \\ \hline 2y = 42 \\ \frac{2y}{2} = \frac{42}{2} \\ y = 21 \end{array}$$

$$\begin{array}{r} x + 21 = 34 \\ -21 \quad -21 \\ \hline x = 13 \end{array}$$

13 chickens
21 cows

Homework Questions?

20)

$$\begin{array}{r} -6(x - 2y = 4) \\ 6x + 2y = 10 \end{array} \rightarrow \begin{array}{r} 6x + 12y = 24 \\ 6x + 2y = 10 \\ \hline 14y = -14 \\ \frac{14y}{14} = \frac{-14}{14} \\ y = -1 \end{array}$$

$$\begin{array}{r}
 22 \quad | \quad -3 \quad (x+y=0) \rightarrow \\
 3x+2y=1 \\
 + \quad -3x-3y=0 \\
 \hline
 -y = 1 \\
 \frac{-y}{-1} = \frac{1}{-1} \\
 y = -1
 \end{array}
 \quad x + -1 = 0$$

Self Scoring Scale

4- I can *summarize* the concepts and explain it to others.

3- I can *apply* the concepts to answer questions correctly.

2- I can *apply* the concepts but with some *mistakes*.

1- I *need help* to know how to apply the concepts.

0- I *can't* apply the concepts even with help.

7.5 Special Types of Linear Systems

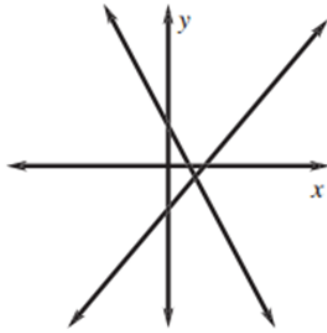
Goals: • Identify how many solutions a linear system has.

EQ: What are the three special types of a linear system?

Algebra 1.5	
② LAST UNIT/Experience Inequalities	① CURRENT UNIT Systems
	③ NEXT UNIT/Experience Exponents
⑧ Student Activities or Assignments 7.1 7.2 7.3 7.4 7.5 7.6	⑤ UNIT MAP
⑦ UNIT SELF-TEST QUESTIONS 1. How do you solve a system by graphing? 2. How is the substitution method used to solve a system? 3. How do you use linear combinations to solve a system? 4. How can you represent and solve a real world situation with a system of equations? 5. How do you determine the number of solutions a system has? 6. How do you graph a system of linear inequalities and determine the solution area?	<p style="text-align: center;">Solve Graph Represent Apply</p>
	⑨ UNIT RELATIONSHIPS

NUMBER OF SOLUTIONS OF A LINEAR SYSTEM

If the two solutions have DIFFERENT slopes, then the system has one solution.



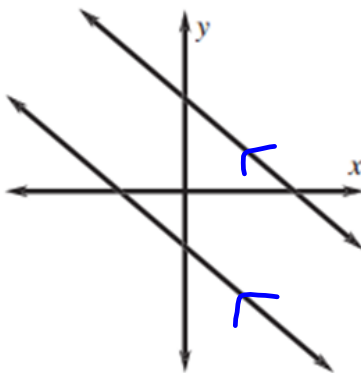
Lines intersect: (Cross each other)
ONE solution.

$$x = 2$$

$$y = 3$$

$$(2, 3)$$

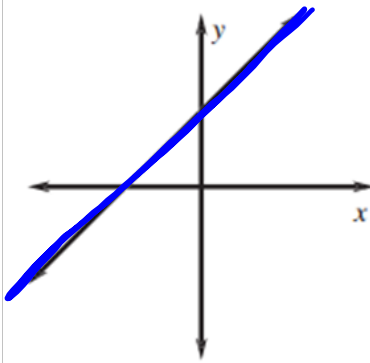
If the two solutions have the SAME slope but Different y-intercepts, then the system has no solution.



Lines are parallel: (Never intersect)
NO solution.

Letters cancel
+ get False statement
ex: $5 \neq -1$
NO soln

If the two equations have the SAME slope and the SAME y-intercepts, then the system has infinitely many solutions.



Lines coincide:

IMS solutions.

(Same line)

Letters Cancel

Get True Statement

ex: $7=7$ ✓
IMS

Example 1: A Linear System with No Solution

Show that the linear system has no solution // lines

$$-x + y = -3 \rightarrow y = x - 3$$

$$-x + y = 2$$

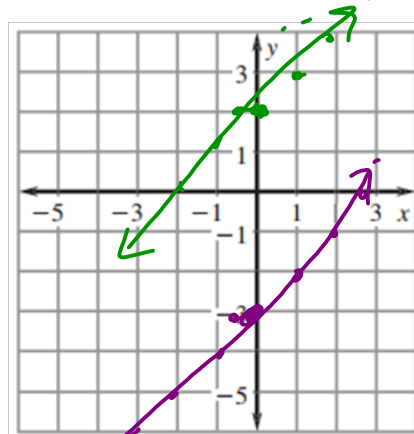
$$y = x + 2$$

Method 1: Graphing

$$y = x + 2$$

$$m = 1$$

$$b = 2$$



Method 2: Substitution

$$-x + y = -3$$

$$-x + y = 2$$

$$y = (x + 2)$$

$$-x + (x + 2) = -3$$

$$-x + x + 2 = -3$$

$$2 \neq -3 \text{ False}$$

No Soln

Example 2: A Linear System with Infinitely Many Solutions

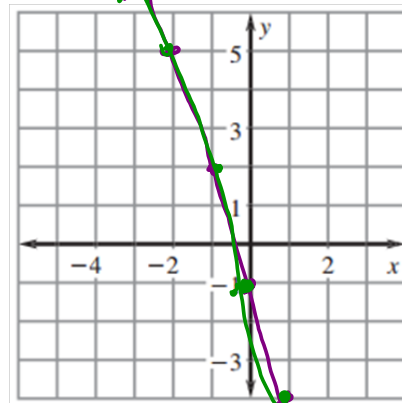
Show that the linear system has infinitely many solutions.

$$\begin{array}{r} 3x + y = -1 \\ -6x - 2y = 2 \end{array} \rightarrow y = -3x - 1$$

$$\begin{array}{r} +6x \quad +6x \\ -2y = 6x + 2 \\ \hline -2 \quad -2 \quad -2 \\ y = -3x - 1 \end{array}$$

$$\boxed{\begin{array}{l} m = -3 \\ b = -1 \end{array}}$$

$$\boxed{\begin{array}{l} m = 3 \\ b = -1 \end{array}}$$



$$\begin{array}{r} 2(3x + y = -1) \\ -6x - 2y = 2 \\ \hline 6x + 2y = -2 \\ \hline 0 = 0 \end{array}$$

$$0 = 0 \checkmark$$

IMS

Try It

Solve the linear system and tell how many solutions the system has.

$$\begin{array}{r} 1) \quad 5(x - 2y = 3) \\ -5x + 10y = -15 \end{array} \rightarrow \begin{array}{r} 5x - 10y = 15 \\ -5x + 10y = -15 \\ \hline 0 = 0 \end{array}$$

$$0 = 0 \checkmark$$

IMS

$$\begin{array}{r}
 2) \quad \underline{2} \begin{array}{l} (2x + 3y = 4) \\ -4x + 6y = 10 \end{array} \rightarrow + \begin{array}{l} \cancel{4x - 6y = -8} \\ \cancel{-4x + 6y = 10} \\ \hline 0 = 2 \quad \text{False} \end{array}
 \end{array}$$

No Soln

Summary

EQ: What are the three special types of a linear system?

No Soln	$3 = 5$
IMS	$7 = 7$
one soln	$(\begin{matrix} -1 & 3 \\ x & y \end{matrix})$

7.5 Homework

P. 420 #10-15 ← solve
Show work
(Don't have to match)