

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Unit 4 Class Work

### Systems of Equations Class Work

Objective: You will be able to identify how many solutions a system of equation will have, and solve systems of equations by graphing.

#### Systems of Equations

any set of 2 or more equations

#### Solutions to Systems

where the graphs intersect

parallel lines? no solutions

$x, y$  are the same value in both equations

Determine how many solutions each system will have. Support your answer.

1.  $x + y = 1$   
 $x - y = 1$  → zero solutions

2.  $-4y = 4 + x$   
 $1/2x + y = -1$  → same line

3.  $x + y = 1$   
 $y = -x - 1$  → parallel

4.  $2y = 4x - 8$   
 $10 - 3y = -6x$  → infinitely many solutions

5.  $1/2x - 3 = y$   
 $-2y = 4x + 3$

6.  $5y - 10 = -7x$   
 $10y + 14x = 20$

Solve each system of equations. Support your solution with a graph, and check your solution algebraically.

1.  $2x + y = 8$   
 $-2x - 2y = 10$

2.  $2x + 4y = -14$   
 $4x - 6y = 0$

3.  $-2x - 4y = -10$   
 $-x - 2y = -4$

Graphs for systems 1, 2, and 3 are shown. System 2 has a solution at  $(-4, 4)$ .

Algebraic check for system 2:  
 $2y = -3x - 4$   
 $4y = x - 12$   
 $y = -3/4x - 2$   
 $y = -1/4x + 3$   
 $-3/4x - 2 = -1/4x + 3$   
 $-3/4x + 1/4x = 3 + 2$   
 $-2/4x = 5$   
 $-1/2x = 5$   
 $x = -10$   
 $y = -3/4(-10) - 2 = 7.5 - 2 = 5.5$   
 Wait, the student's work shows a different path:  
 $2(-4) = -3(4) - 4?$   
 $8 = -12 - 4?$   
 $8 = -16?$

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5.  $4y + 16 = -1/2x$   
 $8y + 32 = -x$

6.  $3y - 9 = 6x$   
 $[x + 2] - 1 = y$

7.  $y = 9$   
 $x = -8$

8.  $y = [x - 3]$   
 $-1/2y = [x - 3]$

Graphs for systems 5, 6, 7, and 8 are shown. System 6 has a vertex at  $(-2, -1)$ . System 8 has a vertex at  $(3, 0)$ .

Jan 4-8:47 AM

**CLOSER** (on a post-it) ☺

Write down any **Concept** you learned, along with **One Specific Example**. How is this concept **Relevant** to the real world, problem solving, and/or mathematics in general?

Blank space for student response to the 'CLOSER' prompt.

Jan 4-8:08 AM