7.1-7.4: Graphing, Substitution and Elimination Quiz
Study Guide

7.1: Solve Systems of Equations by Graphing:

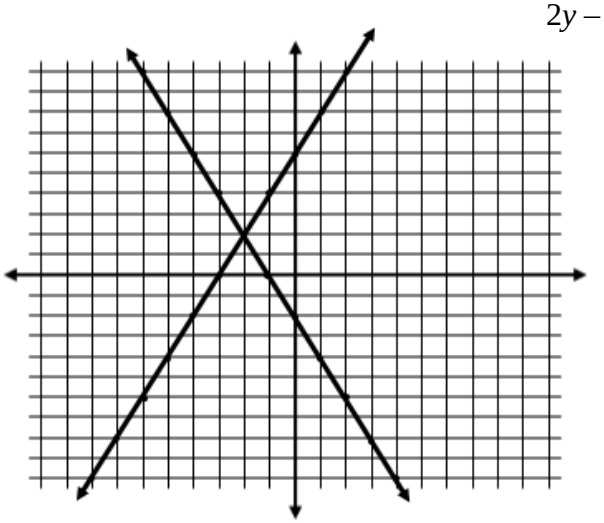
- Be able to identify an ordered pair as a solution to a system

  Ex: Is (5, 2) a solution to the system: $2x - 3y = 4$
  $2x + 8y = 11$

  No because if you plug in the ordered pair into **both** equations, it does not work.

- Be able to solve a system of equations by graphing

  Ex: Solve the system by graphing: $6x + 3y = -6$
  $2y - 4x = 12$



7.2: Solve Systems of Equations by Substitution:

- Be able to solve a system of equations by substitution

Ex: $y = x - 2$
$x = 17 - 4y$

$x = 17 - 4(x - 2)$
$x = 17 - 4x + 8$
$+4x \quad +4x$
$5x = 25$
$\frac{5x}{5} = \frac{25}{5}$
$x = 5$

$y = x - 2$
$y = 5 - 2$
$y = 3$
(5, 3)

Ex: $5x + 2y = 9$
$x + y = -3$
$-x \quad -x$
$y = -3 - x$

$5x + 2(-3 - x) = 9$
$5x + -6 - 2x = 9$
$3x - 6 = 9$
$+6 \quad +6$
$3x = 15$
$x = 5$

$y = -3 - x$
$y = -3 - 5$
$y = -8$
(5, –8)

Ex: $y = x - 4$
$y = 18 + 2x$

$x - 4 = 18 + 2x$
$-x \qquad\qquad -x$
$-4 = 18 + x$
$-18 \quad -18$
$-22 = x$

$y = x - 4$
$y = -22 - 4$
$y = -26$ (–22, –26)

- Be able to write an solve a linear system

Ex: During a football game the parents of football players sell pretzels and popcorn to raise money for new uniforms. They charge $2.50 for a bag of popcorn and $2 for a pretzel. The parents collect $336 in sales during the game and sell twice as many bags of popcorn as pretzels. How many bags of popcorn do they sell? How many pretzels?

Let x = the number bags of popcorn sold Let y = the number of pretzels sold
$2.5x + 2y = 336$ Popcorn is $2.50 each, pretzels are $2. They made $336 total.
$x = 2y$ There was more popcorn (x) sold, so y needs to be multiplied by 2 to make the two amounts equal.

$2.5(2y) + 2y = 336$
$5y + 2y = 336$
$\frac{7y}{7} = \frac{336}{7}$
$y = 48$

$x = 2y$
$x = 2(48)$
$x = 96$ 96 bags of popcorn, 48 pretzels

7.3 – 7.4: Solve Systems of Equations by Eliminating a Variable:

- Be able to add or subtract equations to eliminate a variable in order to solve a system

Ex: $4x - 3y = 5$
$+\quad -2x + 3y = -7$

$\frac{2x}{2} = \frac{-2}{2}$

$x = -1$

Ex: $6x - 4y = 14$
$-\quad 3x - 4y = 1$

$\frac{3x}{3} = \frac{13}{3}$

$x = \frac{13}{3}$ or $4\frac{1}{3}$

After plugging x into either equation, you would get the value for y.

$y = -3$

$(-1, -3)$

$y = 3$

$(\frac{13}{3}, 3)$

Ex: $3x + 4y = -6$
$2y = 3x + 6$

First you have to rewrite the equations so they are lined up. The first equation stays the same, you will subtract $3x$ in the second equation.

$3x + 4y = -6$
$+\ -3x + 2y = 6$ Now add the equations together

$\frac{6y}{6} = \frac{0}{6}$

$y = 0$ Plug y into either equation to get $x = -2$

$(-2, 0)$

- Be able to multiply equations first, then eliminate a variable, in order to solve a system

Ex: $x + y = 2$
$2x + 7y = 9$

Multiply the first equation by 2. Now x matches.

$2x + 2y = 4$
$-\ 2x + 7y = 9$

Subtract the equations from each other

$\frac{-5y}{-5} = \frac{-5}{-5}$

$y = 1$

Plug the value of the variable into any equation to find the other value.

$x = 1$

$(1, -1)$

Ex: $4x - 3y = 8$
$5x - 2y = -11$

Multiply the top equation by 2 and multiply the bottom equation by 3. *Y* matches now.

$8x - 6y = 16$
$-\ 15x - 6y = -33$

$\frac{-7x}{-7} = \frac{49}{-7}$

$x = -7$

$y = -12$

$(-7, -12)$