7.1-7.2 Study Guide

Solve a System of Equations by Graphing or Substitution

7.1: Solve Systems of Equations by Graphing:

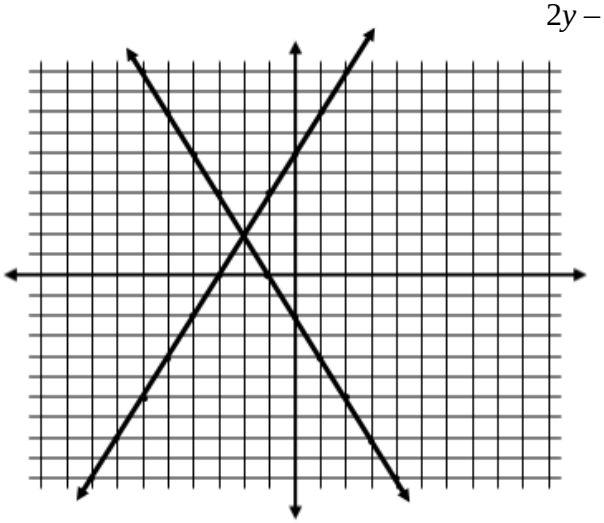
- Be able to identify an ordered pair as a solution to a system

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

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

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

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

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

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

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

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

$y = x - 4$
$y = -22 - 4$
$y = -26$ $\qquad\qquad$ $(-22, -26)$

- Be able to write a linear system and solve

Ex: John and David went to the store to buy notebooks and markers. John bought two notebooks and one box of markers and spent $11. David bought one notebooks and three boxes of markers and spent $18.

a) Identify two variables to represent what you do not know.

x: Cost of a notebook
y: Cost of a box of markers

b) Write a system of equations to represent the situation.

$2x + y = 11$
$x + 3y = 18$

c) Solve the system to find the cost of a notebook. Find the cost of a box of markers.

Isolate y from the first equation: $y = 11 - 2x$
Plug into the second equation; $x + 3(11 - 2x) = 18$
Solve for x. $x + 33 - 6x = 18$
$33 - 5x = 18$
$-33 \qquad -33$
$-5x = -15$
$-5 \qquad -5$
$x = 3$

$y = 11 - 2x$
$y = 11 - 2(3)$
$y = 11 - 6$
$y = 5$ $\qquad\qquad$ NBs: $3, Markers $5

d) Find the total cost if someone wanted to buy three notebooks and two boxes of markers.

$3(3) + 2(5) = 9 + 10 = \$19$