FMPC 10: Chapter 9 Review
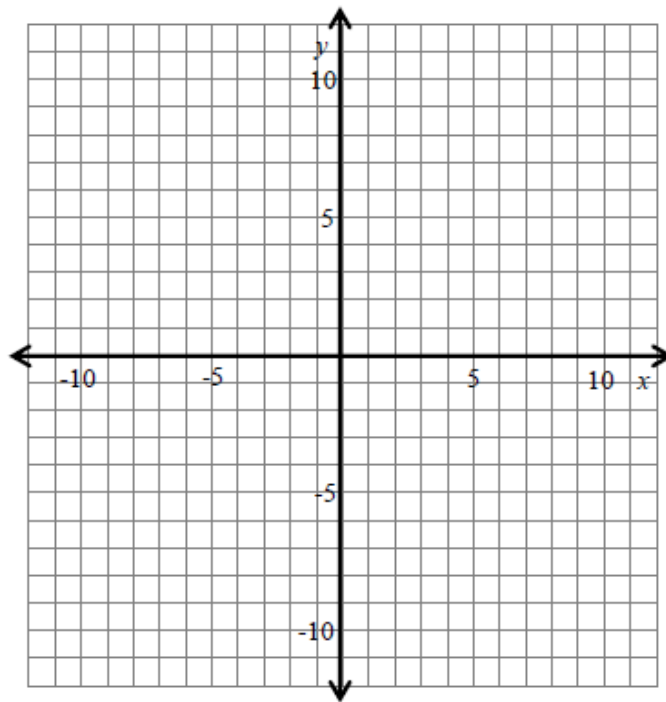
Name: _____

Systems of Linear Equations

Date: _____ Block: _____

1. Solve each system by graphing. Change each equation into $y = mx + b$ if necessary.

   a) $y = -x + 5$
      $y = 3x - 3$

   b) $x - y = 2$
      $3x + y = -14$

   c) $2x + 8y = 8$
      $y = 2x + 10$

2. For which of the given linear systems is $(-2,5)$ a solution? (hint: try to verify the solution for each system)

   a) $3x + y = 1$
      $2x + 3y = 11$

   b) $5x - 3y = -5$
      $3x + 2y = 4$

   c) $-5x - 3y = -5$
      $3x + 2y = 4$

   d) $15x + 4y = -10$
      $25x - 6y = -80$

3. Solve each system using the substitution method.

a) $x + y = 9$
   $2x + y = 11$

b) $x - y = 7$
   $2x + y = -10$

c) $3x - 4y = -15$
   $5x + y = -2$

d) $x + 5y = -11$
   $4x - 3y = 25$

4. Solve each linear system by elimination method.

a) $3x + 4y = 29$
   $2x - 5y = -19$

b) $3x + 5y = 12$
   $7x + 5y = 8$

c) $5x + 2y = 5$
$3x - 4y = -23$

d) $3x - y = 5$
$2x + 3y = 10$

5. a) Four pens cost 70 cents more than five pencils. Together, one pen and one pencil cost $1.30. Find the cost of each pen and each pencil.

b) The length of a rectangle is five less than three times its width. If the perimeter is 38 inches, find the rectangle's dimensions.

c) Zachary invested part of his $12,500 into World Oil, which paid 8% interest. He invested the other part into Sask Power, which paid 3%. If he made $850 total, how much was invested into each fund?

d) A cyclist leaves home at 9:00 a.m. to ride to his friend's house 8 km away. He cycles at 12 km/h until he has a flat tire. He then walks his bike the rest of the way at 2 km/h. He arrives at his friend's house at 10:30 a.m. How far did he have to push his bicycle?

e) Kirk ran 100 m along a moving conveyor in 25 seconds, when moving against the conveyor. When running with the conveyor, it takes him 5 seconds to run the same distance. Calculate Kirk's average speed and the conveyor's average speed.

f) The sum of two numbers is 7. Three times one of the numbers is 15 more than the other number. Find the numbers.

g) Two numbers differ by 5. Four times the smaller number is 5 less than three times the larger. Find the numbers.

h) Shana has $1.95 in nickels and dimes. There are three more nickels than dimes. How many of each does she have?

i) Taylor has $4.80 in nickels and quarters. She has six more nickels than quarters. How many of each does she have?

Answer Key:

1. a) (2, 3)   b) (–3, –5)   c) (–4, 2)
2. a) no   b) no   c) yes   d) yes
3. a) (2, 7)   b) (–1, –8)   c) (–1, 3)   d) (4, –3)
4. a) (3, 5)   b) (–1, 3)   c) (–1, 5)   d) $\left(\dfrac{25}{11}, \dfrac{20}{22}\right)$

5. a) pens cost $0.80, pencils cost $0.50
    b) length = 13 in, width = 6 in
    c) $9500 in World Oil, $3000 in Sask Power
    d) 2 km
    e) Kirk's speed = 12 m/s, conveyor's speed = 8 m/s
    f) $\dfrac{11}{2}$ and $\dfrac{3}{2}$
    g) 15 and 10
    h) 15 nickels, 12 dimes
    i) 21 nickels, 15 quarters