Name: **Key**

Date: _____

Systems of Equations Review

1) Solve the following system graphically.

$x + 2y = 12$ $y = 2x + 6$

$-x \quad\quad -x$

$m = 2$ op 2

$\dfrac{2y}{2} = \dfrac{-x}{2} + \dfrac{12}{2}$ 1 right 1

$y = -\dfrac{1}{2}x + 6$ $b = (0, 6)$

$m = -\dfrac{1}{2}$ down 1
right 2

$b = (0, 6)$

POI: $(0, 6)$
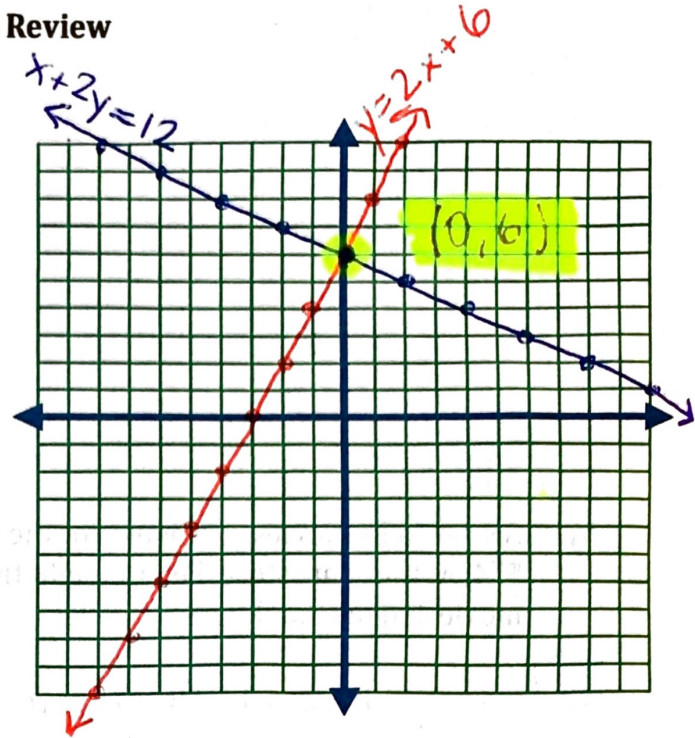
2) Solve the following system algebraically using the substitution method.

$-2x + 3y = 9$ $y = \boxed{2x + 7}$

$-2x + 3(2x + 7) = 9$ $y = 2x + 7$

$\boxed{-2x} \; \boxed{+6x} + 21 = 9$ $y = 2(-3) + 7$

$4x + 2y = 9$ $y = -6 + 7$

$ -21 \quad -21$ $\boxed{y = 1}$

$\dfrac{4x}{4} = \dfrac{-12}{4}$ $\boxed{x = -3}$

Solution: $\boxed{(-3, 1)}$

3) Solve the following system algebraically using the elimination method.

$4x - 2y = -14$ $4x - 2y = -14$ $4x - 2y = -14$

$2(-2x + 3y = 9)$ $-4x + 6y = 18$ $4x - 2(1) = -14$

 $\dfrac{4y}{4} = \dfrac{4}{4}$ $4x - 2 = -14$

$\boxed{y = 1}$ $ +2 \quad\quad +2$

 $\dfrac{4x}{4} = \dfrac{-12}{4}$

Solution: $(-3, 1)$ $\boxed{x = -3}$

4) Solve the following system algebraically.

$$4x + 8y = 20$$
$$2(-2x + y = -15)$$

State the method you are using to solve: __elimination__
b/c variables line up

$$4x + 8y = 20$$
$$-4x + 2y = -30$$
$$\overline{}$$
$$\frac{10y}{10} = \frac{-10}{10}$$
$$\boxed{y = -1}$$

$$-2x + y = -15$$
$$-2x + (-1) = -15$$
$$+1 +1$$
$$\frac{-2x}{-2} = \frac{-14}{-2}$$
$$\boxed{x = 7}$$

__Solution:__ $\boxed{(7, -1)}$

5) A store sells movies and books for the same amount. Chris bought two movies and three books for $54. At the same store, Peter bought three movies and one book for $53. Find the cost of one movie and one book.

Let m = cost of movie
Let b = cost of book

$$2m + 3b = 54$$
$$-3(3m + b = 53)$$

$$2m + 3b = 54$$
$$-9m - 3b = -159$$
$$\overline{}$$
$$\frac{-7m}{-7} = \frac{-105}{-7}$$
$$\boxed{m = 15}$$

$$3m + b = 53$$
$$3(15) + b = 53$$
$$45 + b = 53$$
$$-45 -45$$
$$\boxed{b = 8}$$

The cost of a movie is $15 and the cost of a book is $8.

6) Zoey has 26 coins that total $2.66 in a coin jar. The coins are only quarters and pennies. How many of each coin are in the jar?

Let q = quarters
Let p = pennies

$$q + p = 26 \rightarrow P = \boxed{26 - q}$$
$$-q -q$$

$$0.25q + 0.01p = 2.66$$
$$0.25q + 0.01(26 - q) = 2.66$$
$$0.25q + 0.26 - 0.01q = 2.66$$
$$0.24q + 0.26 = 2.66$$
$$-0.26 -0.26$$
$$\frac{0.24q}{0.24} = \frac{2.40}{0.24}$$
$$\boxed{q = 10}$$

$$q + p = 26$$
$$10 + p = 26$$
$$-10 -10$$
$$\boxed{p = 16}$$

There are 10 quarters and 16 pennies.