

Algebra 1-2: Systems of Equations Unit Review

Name: _____ Period: _____

- 1) What does it mean to be a solution to a system of equations?

Given the system of equations below, determine mathematically if the points are a solution to the system.

$$\begin{cases} 2x + y = 12 \\ y = -x + 4 \end{cases}$$

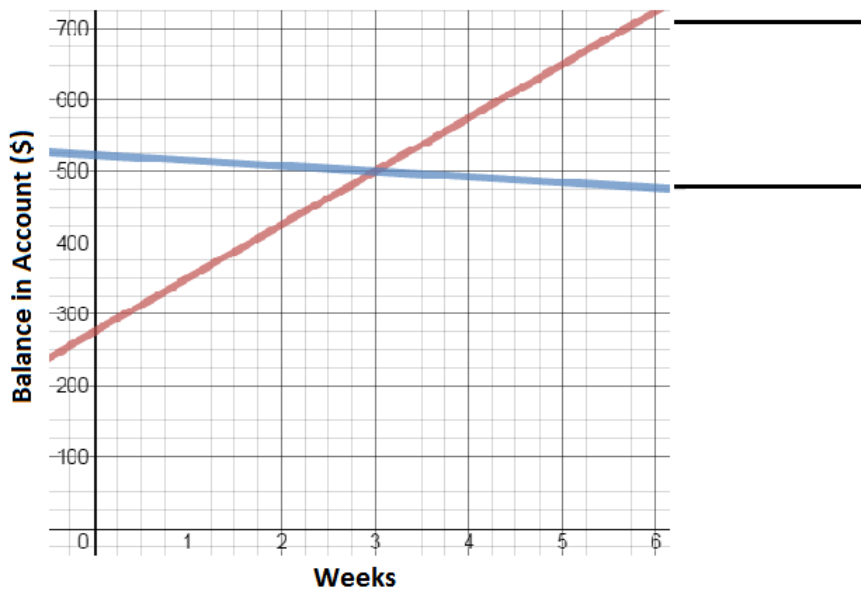
a. $(-4, 8)$

b. $(8, -4)$

- 2) Zachary and Jeremy both have savings accounts at the local bank. Jeremy has a job and has been saving his money. Zachary relies on his account for spending money.

- a. Jeremy started with \$275 and is saving \$75 per week. Write an equation that models the balance in his account (y) after x number of weeks:

- b. Zachary started with \$522.50 and withdraws \$7.50 per week from his account. Write an equation that models the balance in his account (y) after x number of weeks:



- c. Label the lines to the left for Jeremy and Zachary, respectively

- d. Find the intersection point

(_____ , _____)

- e. Describe what the intersection point means in the context of the problem.

- f. Who will have more money at 5 weeks? Explain how you know.

- g. The boys need to have \$500 each at week 5 to pay for a ski trip. Will Jeremy make it? Zach? Explain how you know.

3) The ordered pair (2, -1) is a solution of which system of equations? _____

A. $4x - 5y = 0$
 $6x - 5y = 10$

B. $x + y = 6$
 $2x - 5y = 10$

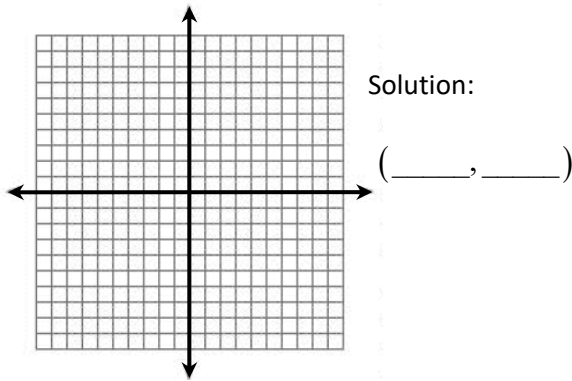
C. $x + y = -2$
 $2x - 3y = -9$

D. $3x + 2y = 4$
 $-x + 3y = -5$

4) Solve the system of equations by graphing. Express your answer as a coordinate point.

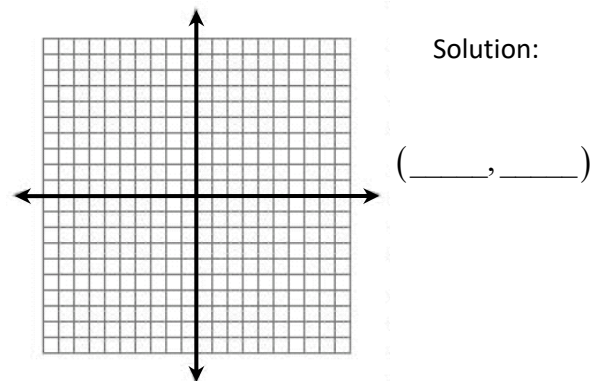
a)

$y = -x + 1$
 $y = 3x + 5$



b)

$y = x + 2$
 $y = 2x - 3$



5) Solve the system by the method of your choice. Express your answer as a coordinate point and write it in the blank below the problem. Then, explain why you chose the method.

a) $\begin{cases} -6x + 8y = 36 \\ y = 4x + 11 \end{cases}$

b) $\begin{cases} 3x + 2y = 8 \\ 5x + 2y = 12 \end{cases}$

Solution: (____, ____)

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Method Chosen: _____

Method Chosen: _____

Why did you choose this method?

Why did you choose this method?

For 6-9, use **SUBSTITUTION** to solve each system of equations. Write each solution as an ordered pair.

6) $y = 3x$
 $5x + y = 24$

(____, ____)

7) $x = 2y - 1$
 $2x - y = -8$

(____, ____)

8) $y = -4x + 1$
 $y = 4x + 5$

(____, ____)

9) $x = 6 - y$
 $-4x + y = 21$

(____, ____)

For 10-13, use **ELIMINATION** to solve each system of equations. Write each solution as an ordered pair.

10) $x + y = 4$
 $x - y = -2$

(____, ____)

11) $2x + 3y = -2$
 $2x + 5y = 2$

(____, ____)

12) $6x + y = 16$
 $3x + 2y = -4$

(____, ____)

13) $3x - 2y = -16$
 $2x + 5y = 21$

(____, ____)

14) You buy decorations for a party. The total for 3 rolls of crepe paper and 20 balloons is \$13. After you start decorating, you need more supplies. You buy 2 more rolls of crepe paper and 10 more balloons for \$7.

- a) Write an equation that relates the number of rolls of crepe paper, r , and balloons, b , you bought to the amount you paid on the first trip: a. _____
- b) Write an equation that relates the number of rolls of crepe paper, r , and balloons b , you bought to the amount you paid on the 2nd trip: b. _____
- c) Solve the system you wrote for parts a and b above to find the price of a roll of crepe paper and a balloon.

Price of Roll of Crepe Paper _____

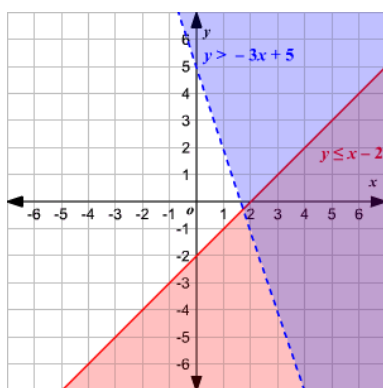
Price of Balloon _____

15) You are taking a test worth 110 points. There are a total of 14 five-point and ten-point questions. How many each type of questions can be on the test?

Number of five-point questions: _____

Number of ten-point questions _____

16) What does it mean to be a solution to a system of inequalities?



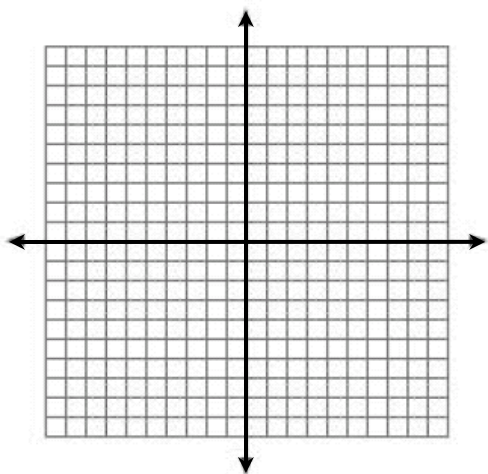
17) Given the system of inequalities at left, determine if the points are a solution to the system. Justify your answers.

- a. $(2, 0)$
- b. $(0, 5)$
- c. $(1, -3)$
- d. $(4, -2)$

Solve these systems of inequalities by graphing.

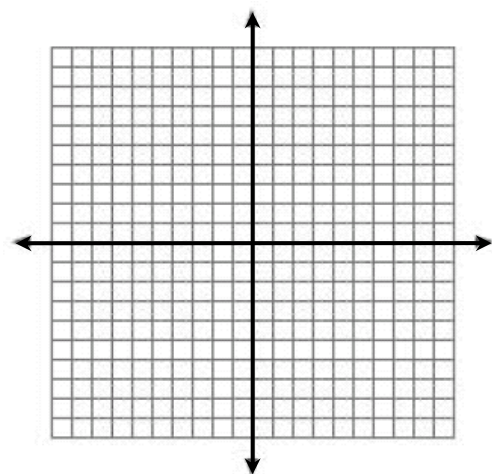
18)
$$y > -\frac{5}{2}x + 4$$

$$y < -\frac{1}{2}x - 2$$



19)
$$2x + y \geq -4$$

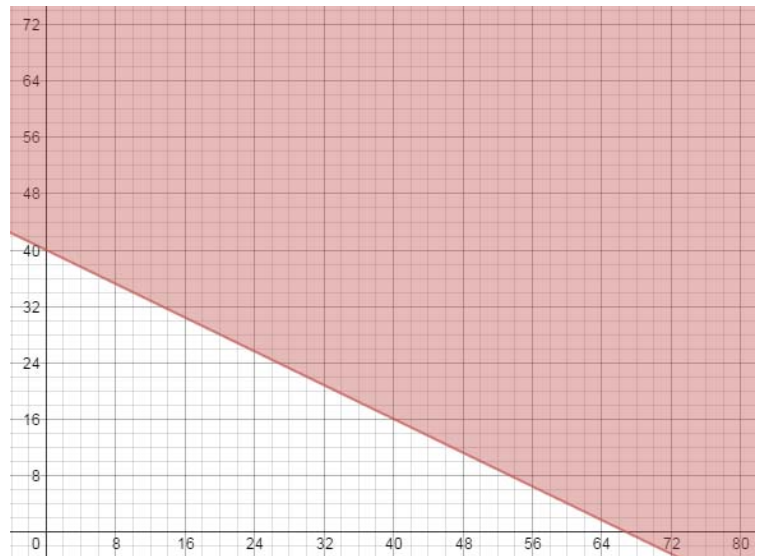
$$x - 2y < 4$$



20) A video store is selling posters and DVDs. The store profits \$3.00 from each poster (x) sold and \$5.00 from each DVD sold (y). The store needs to make an average profit of at least \$200 per hour to stay in business. The equation $3x + 5y = 200$ could be used to represent this scenario.

a. After the equation has been solved for y , fill in the box for the correct *inequality* symbol that models the situation graphed

$$y \boxed{} \frac{-3}{5}x + 40$$



b. Can the store sell 32 posters and 16 DVDs in an hour and meet their profitability goal? Justify your answer using the graph or inequality.