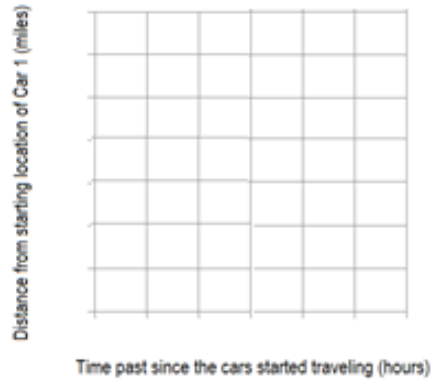


Algebra 1-2: 5-1a Stories from Graphs Homework

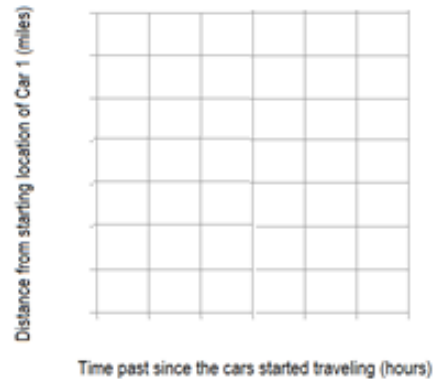
Name: _____

Period: _____ Date: _____

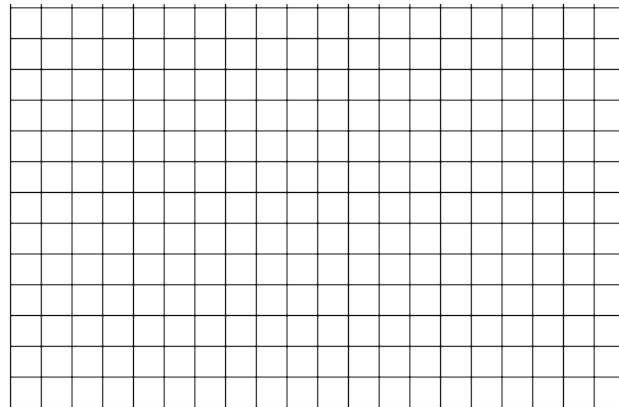
1. Suppose two cars are travelling north along a road. Car 1 travels at a constant speed of 50 mph for two hours, then speeds up and drives at a constant speed of 100 mph for the next hour. The car breaks down and the driver has to stop and work on it for two hours. When he gets it running again, he continues driving recklessly at a constant speed of 100 mph. Car 2 starts at the same time that Car 1 starts, but Car 2 starts 100 miles farther north than Car 1 and travels at a constant speed of 25 mph throughout the trip.
 - a. Sketch the distance versus time graphs for Car 1 and Car 2 on a coordinate plane. Start with time 0 and measure time in hours.
 - b. Approximately when do the cars pass each other?



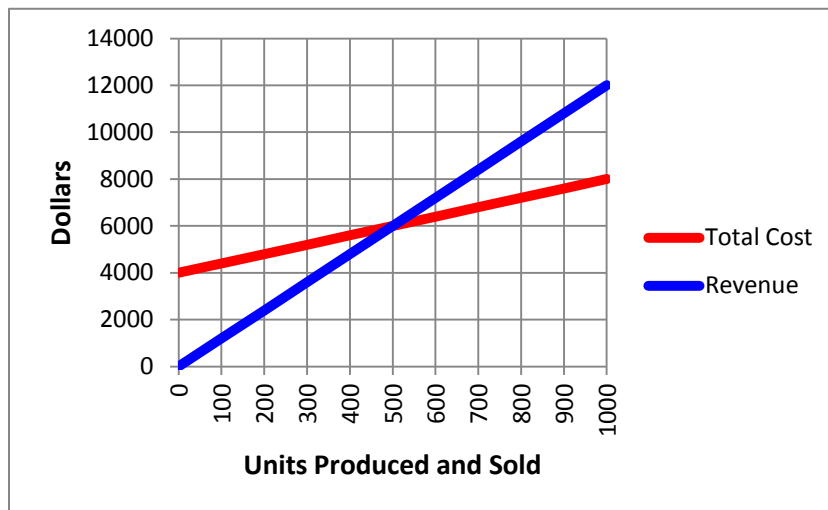
2. Suppose that in Problem 1 above, Car 1 travels at the constant speed of 25 mph the entire time. Sketch the distance versus time graphs for the two cars on the graph below. Do the cars ever pass each other?



3. Maya and Earl live at opposite ends of the hallway in their apartment building. Their doors are 50 feet apart. They each start at their door and walk at a steady pace towards each other and stop when they meet. Maya walks at a constant rate of 3 feet every second and Earl walks at a constant rate of 4 feet every second. Graph each person's distance from Maya's door over time. Then, determine approximately when they meet in the hallway and how far are they from Maya's door at this time.



4. The following graph shows the revenue (or income) a company makes from designer coffee mugs and the total cost (including overhead, maintenance of machines, etc.) that the company spends to make the coffee mug.



- How are revenue and total cost related to the number of units of coffee mugs produced?
- What is the meaning of the point (0, 4000) on the total cost line?
- What are the coordinates of the intersection point? What is the meaning of this point in this situation?

Algebra 1-2: 5-1b Solving Systems of Equations

Name: _____ Per: _____

Homework

1) Solve the following systems by graphing on your calculator. Round your answers to the nearest tenth. Check your answers by plugging the values for x and y back into BOTH original equations to see if they make the equations true.

(a) $y = \frac{1}{3}x + 5$
 $y = 2x - 3$

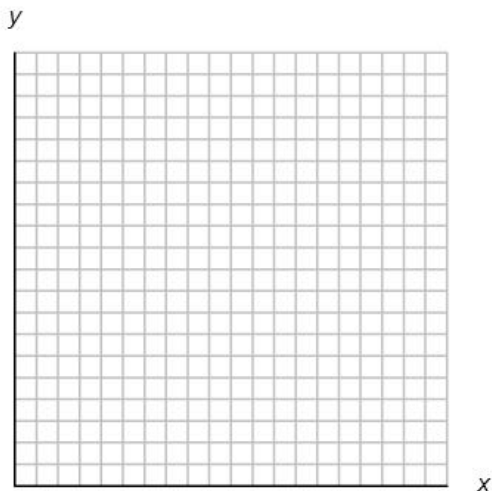
(b) $4x + 5y = 30$
 $-2x + 3y = -24$

2) Jimmy's Taxis charges a \$5 flat rate and then \$1 per mile while Angie's Taxis does not charge a flat rate but charges \$1.50 per mile.

a. Write an equation for Jimmy's Taxis:

b. Write an equation for Angie's Taxis:

c. Graph your equations on the grid below and estimate the solution to the system.



d. Use your calculator to find an exact solution to the system.

(,)

e. Interpret the solution in the context of the problem.

f. When is Angie's Taxi a better deal?

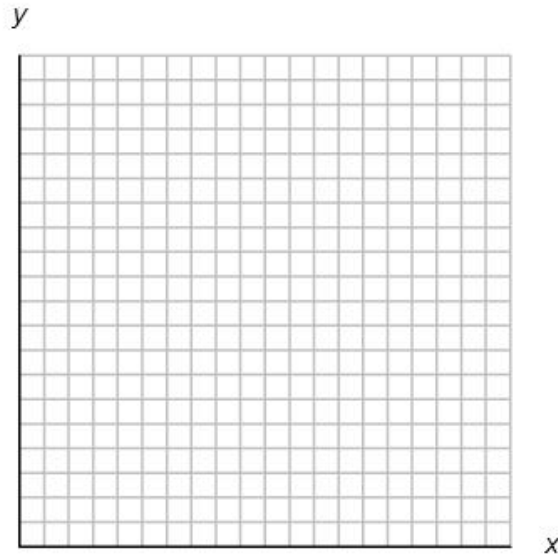
g. When is Jimmy's Taxi a better deal?

3) Muscles charges a \$40 signup fee and then \$20 per month while Gym Slim does not charge a signup fee but charges \$30 per month.

a. Write an equation for Gym Muscles:

b. Write an equation for Gym Slim:

c. Graph your equations on the grid below and estimate the solution to the system.



d. Use your calculator to find an exact solution to the system. (,)

e. Interpret the solution in the context of the problem.

f. If you're moving in three months, which gym should you join? Justify your answer mathematically.

**Algebra 1-2: 5-2a Solving Systems Using
Substitution Homework**

Name: _____ Per: _____

Solve the following systems of equations using substitution.

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

2) $x = 2y - 6$
 $x + 4y = 24$

3) $y = 15 + x$
 $3x + y = 32$

5) Sara incorrectly solved the system of equations as shown below.

a. Circle her mistake.

b. Explain the error she made.

Step 1:	$4x + 2y = 6$ $4x + 2(9 - 3x) = 6$ $4x + 18 - 6x = 6$
Step 2:	$-2x + 18 = 6$ $-2x = -12$ $x = 6$
Step 3:	$y = 9 - 3x$ $6 = 9 - 3x$ $-3 = -3x$ $1 = x$ The solution is (6, 1).

$y = 9 - 3x$
 $4x + 2y = 6$

c. Solve the problem correctly for her.

6) Edna leaves the trailhead at dawn to hike 12 miles uphill toward the lake at an average rate of 1.5 miles/hour. At the same time, Maria leaves the campground for the trailhead walking downhill at an average rate of 2.5 miles per hour. Let d equal the distance from the trailhead and t equal the number of hours.

a. Write an equation that models Edna's distance from the trailhead.

$$d = \underline{\hspace{1cm}} t$$

b. Write an equation that models Maria's distance from the trailhead.

$$d = 12 - \underline{\hspace{1cm}} t$$

c. Solve the equations to determine when and where they meet.

7) A fitness club offers two water aerobics classes. The morning class has 44 participants and is growing at a rate of 2 people per month. The evening class has 26 people and is increasing 8 people per month. When will the populations for the two classes be the same?

Algebra 1-2: 5-2b Substitution Practice Homework

Name: _____ Per: _____

- 1) A store sells pens for \$2 each and notebooks for \$5 each. If we let n = number of notebooks sold, and p = number of pens sold, the following equations are true:

$$\begin{aligned}4n &= p \\5n + 2p &= 39\end{aligned}$$

Here is what Dan and Emma think the equations mean:

I think the first equation means that the store sells four times as many notebooks as pens.



Dan



Emma

I think the second equation means that the store sold 5 notebooks and 2 pens.

- a) Is Dan correct? Why or why not?
- b) Is Emma correct? Why or why not?
- c) Figure out for yourself the number of pens and the number of notebooks sold in the store.

Solve the following systems using substitution.

2.
$$\begin{cases} 5x + y = 8 \\ 2x + y = 5 \end{cases}$$

3.
$$\begin{cases} x - 3y = 10 \\ x + 5y = -22 \end{cases}$$

4.
$$\begin{cases} 5x - 3y = 22 \\ -4x + y = -19 \end{cases}$$

- 5) This system of equations models the profits of two internet companies. The variable p represents profit in dollars and n represents hits to the company's website. Find a solution to the system and interpret your answer.

$$p = -12000 + 2.5n$$
$$p = -5000 + 1.6n$$

- 6) You want to rent a car. Acme rentals charges \$10 per day plus \$.50 per mile. Bravo company charges \$20 per day plus \$.25 per mile. At what number of miles will the two companies charges be the same?
- 7) Pam has two part time jobs. At one job, she works as a cashier and makes \$8 per hour. At the second job, she works as a tutor and makes \$12 per hour. One week she worked 30 hours and made \$268. How many hours did she spend at each job?

Algebra 1-2: 5-3a Basic Elimination Homework

Name: _____ Per: _____

- 1) **Explain** how you would solve the linear system shown using the elimination method (do not actually solve the system).

$$2x - y = 2 \quad \text{Equation 1}$$

$$2x + 3y = 22 \quad \text{Equation 2}$$

Solve the linear system using elimination.

$$\begin{aligned} 2) \quad & 3x - y = 30 \\ & -3x + 7y = 6 \end{aligned}$$

$$\begin{aligned} 3) \quad & -9x + 4y = -4 \\ & 9x - 6y = 3 \end{aligned}$$

$$\begin{aligned} 4) \quad & -3x - 5y = -7 \\ & -4x + 5y = 14 \end{aligned}$$

$$\begin{aligned} 5) \quad & 2x - y = 32 \\ & 5x - y = -13 \end{aligned}$$

$$\begin{aligned} 6) \quad & 6x - 8y = 36 \\ & 6x - y = 15 \end{aligned}$$

$$\begin{aligned} 7) \quad & 2x - y = -11 \\ & 2x + y = -13 \end{aligned}$$

8) Sara incorrectly solved for x in this system of equations.

$$\begin{array}{r} 5x - 7y = 24 \\ -x - 7y = 12 \\ \hline 4x \quad = 36 \\ x \quad = 9 \end{array}$$

a. Circle her mistake.

b. Explain the error she made.

c. Solve the problem correctly for her.

9) Create your own sum difference word problem like the last one in today's notes. Write a system of equations to represent the problem and solve it to see if you get your answers back.

**Algebra 1-2: 5-3b Solving Systems Using
Multiplication and Elimination Homework**

Name: _____ Per: _____

- 1) **Explain** how you would solve the linear system shown using the elimination method (do not actually solve the system).

$$2x - 3y = -4 \text{ Equation 1}$$

$$7x + 9y = -5 \text{ Equation 2}$$

Solve the linear system using elimination.

$$2) \quad \begin{array}{l} 3x - 2y = 3 \\ -x + y = 1 \end{array}$$

$$3) \quad \begin{array}{l} 4x + 3y = 8 \\ x - 2y = 13 \end{array}$$

$$4) \quad \begin{array}{l} 10x - 9y = 46 \\ -2x + 3y = 10 \end{array}$$

$$5) \quad \begin{array}{l} 8x - 5y = 11 \\ 4x - 3y = 5 \end{array}$$

$$6) \quad \begin{array}{l} 4x - 3y = 8 \\ 5x - 2y = -11 \end{array}$$

$$7) \quad \begin{array}{l} 2x - 4y = 8 \\ -5x + 3y = -13 \end{array}$$

8) Searra incorrectly solved for x in this system of equations.

$$2x + 3y = -9 \quad \text{Multiply by 2}$$

$$5x - 6y = -9$$

a. Circle her mistake.

b. Explain the error she made.

$$\begin{array}{r} 4x - 6y = -9 \\ 5x - 6y = -9 \\ \hline 9x \quad = -18 \\ x \quad = -2 \end{array}$$

c. Solve the problem correctly for her.

9) Which of the following are possible ways to eliminate a variable by multiplying first?

(NOTE: Select ALL that apply. More than 1 answer is possible!)

$$-x + 2y = 3$$

$$4x - 5y = -3$$

a. Multiply the first equation by 4.

b. Multiply the first equation by 5 and the second equation by 2.

c. Multiply the first equation by 4 and the second equation by 2.

d. Multiply the first equation by 5 and the second equation by 4.

e. Multiply the first equation by 2 and the second equation by 5.

f. Multiply the second equation by 4.

**Algebra 1-2-: 5-4 Choosing a Method to Solve
Systems Homework**

Name: _____ Per: _____

Choose a method and use it to solve each of the following systems. Explain why you chose the method.

1. $3x - 4y = 1$
 $3x - 2y = -1$

2. $y = 3x - 1$
 $y = 4$

3. $2x - y = 4$
 $x + 3y = 16$

4. $y = -2x$
 $y = -\frac{1}{2}x + 3$

5) Solve the following system of equations by multiplying.

$$x + 3y = -14$$

$$2x + y = -3$$

Would it be easier to solve the system by using substitution? Explain your reasoning.

5.1-5.4 REVIEW

6) Decide whether each point is a solution of the system. *Justify your answer mathematically*

a. $(4, 5)$ Yes No (*circle one*)

Justification:

$$\begin{cases} 3x - 2y = 2 \\ -4x + 3y = -4 \end{cases}$$

b. $(-2, -4)$ Yes No (*circle one*)

Justification:

c. $(-5, -8)$ Yes No (*circle one*)

Justification:

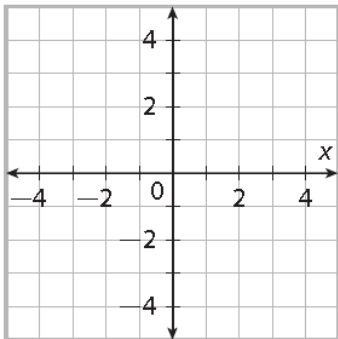
7) Solve the system by each method listed

$$\begin{cases} 2x + y = 6 \\ -x + y = 3 \end{cases}$$

a. Graphing (use x and y intercepts)

b. Substitution

c. Elimination



Solution: (_____ , _____)

Solution: (_____ , _____)

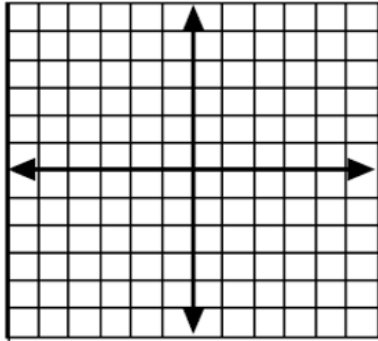
Solution: (_____ , _____)

**Algebra 1-2: 5-5a Graphing Linear Inequalities
Homework**

Name: _____ Per: _____

Graph each equation. Test a solution and a non-soution point.

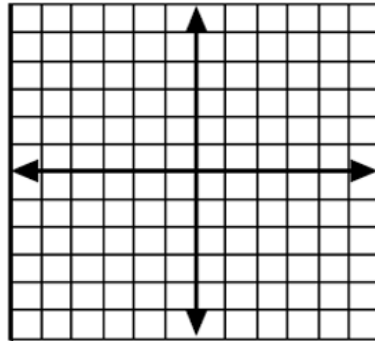
1) $y \leq \frac{1}{4}x - 1$



Solution Test:
(____, ____)

Non-Solution Test:
(____, ____)

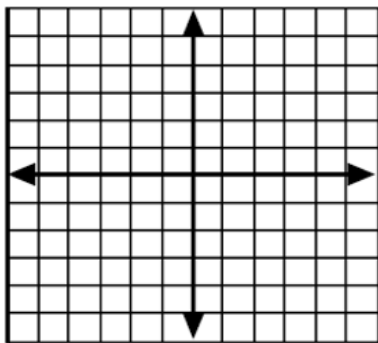
2) $y \geq 4x - 1$



Solution Test:
(____, ____)

Non-Solution Test:
(____, ____)

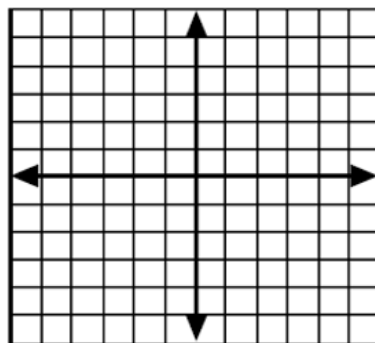
3) $y < -4x - 1$



Solution Test:
(____, ____)

Non-Solution Test:
(____, ____)

2) $-4y - 6x > 8$

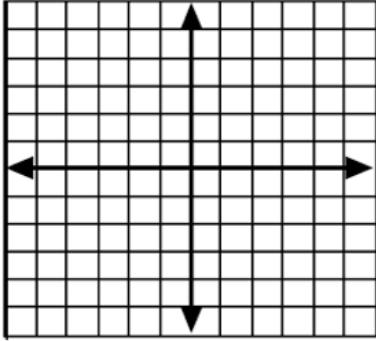


Solution Test:
(____, ____)

Non-Solution Test:
(____, ____)

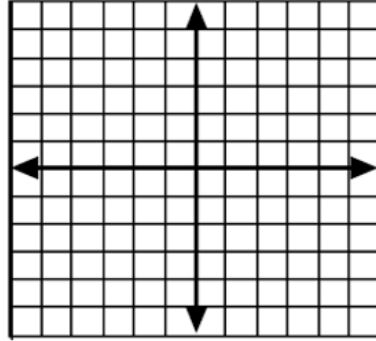
5) $5x - 3y \leq 6$

6) $4x - 6y \geq 6$



Solution Test:
(____, ____)

Non-Solution Test:
(____, ____)



Solution Test:
(____, ____)

Non-Solution Test:
(____, ____)

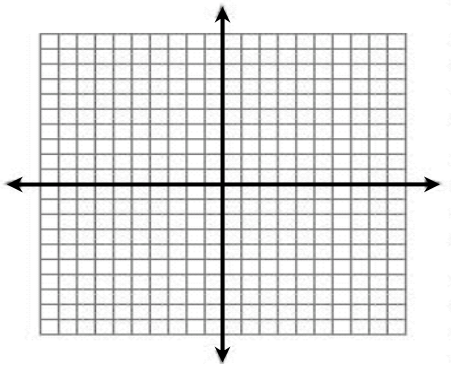
7) How is graphing a linear inequality on a coordinate plane similar to graphing an inequality on a number line?

Algebra 1-2: 5-5b Graphing Systems of Linear Inequalities Homework

Name: _____ Per: _____

Solve each of the systems by graphing. Give two ordered pairs that are solutions and two that are not solutions.

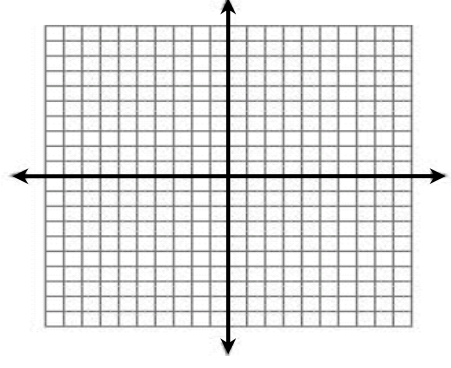
1) $y \leq -\frac{1}{3}x + 7$
 $y \geq -x + 1$



Solutions: (____, ____), (____, ____)

Non- Solutions: (____, ____), (____, ____)

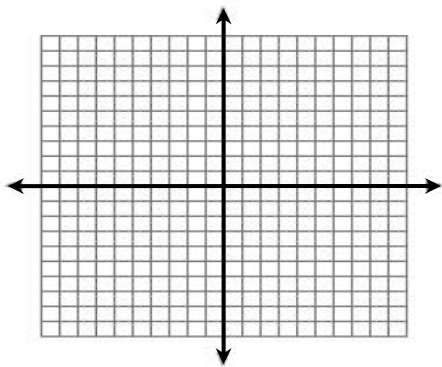
2) $y > \frac{1}{4}x$
 $y \leq -x + 4$



Solutions: (____, ____), (____, ____)

Non- Solutions: (____, ____), (____, ____)

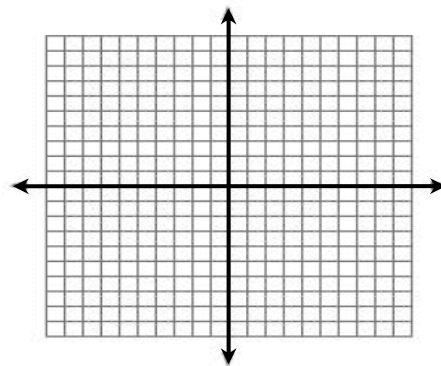
3) $y < 2x + 4$
 $-3x - 2y \leq 4$



Solutions: (____, ____), (____, ____)

Non- Solutions: (____, ____), (____, ____)

4) $y > -\frac{1}{2}x + 4$
 $2x - y \leq 4$

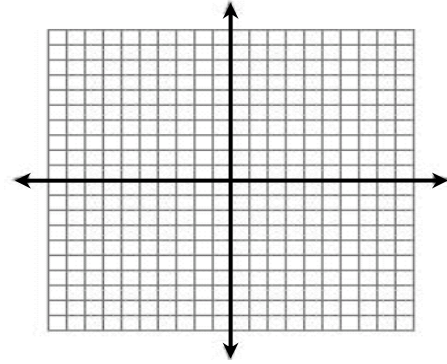
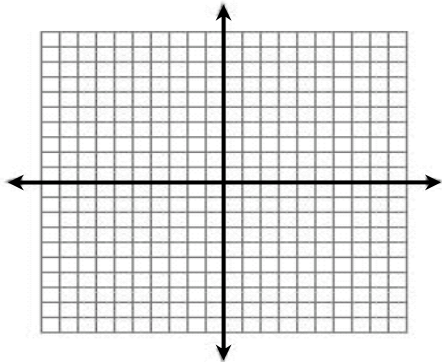


Solutions: (____, ____), (____, ____)

Non- Solutions: (____, ____), (____, ____)

5) $8x + 4y \geq 10$
 $3x - 6y > 12$

6) $y > \frac{1}{2}x - 3$
 $-6x + 3y \leq 12$



Solutions: (____, ____), (____, ____)

Non- Solutions: (____, ____), (____, ____)

Solutions: (____, ____), (____, ____)

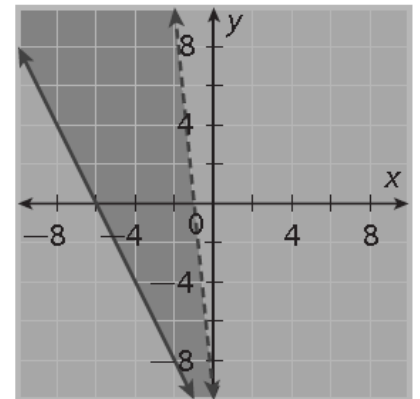
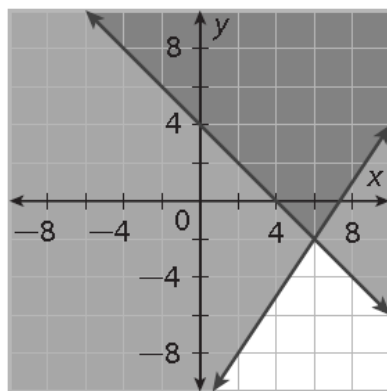
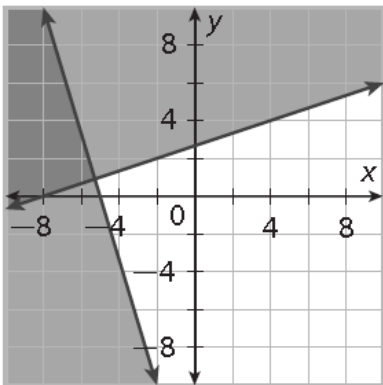
Non- Solutions: (____, ____), (____, ____)

Determine if the given point is a solution of the system of inequalities. If not, find a point that is.

7) $(-9, 4)$

8) $(6, -2)$

9) $(0, -4)$



Algebra 1-2: 5-6 Modeling Systems of Linear Equations and Inequalities Homework

Name: _____ Per: _____

1) Grandma's Bakery sells single-crust apple pies for \$6.99 and double-crust cherry pies for \$10.99. The total number of pies sold on a busy Friday was 36, totaling \$331.64.

a. Define your variables

c. Solve your system:

b. Write a system of equations to model the scenario.

d. Interpret the meaning of your system:

How many of each type of pie was sold? _____ single-crust and _____ double-crust

2) You purchase 8 gal of paint and 3 brushes for \$152.50. The next day, you purchase 6 gal of paint and 2 brushes for \$113.00.

a. Define your variables

c. Solve your system of equations:

b. Write a system of equations to model the scenario.

d. Interpret the meaning of your system:

How much does each item cost? _____ per gallon of paint and _____ per brush

3) A cable television provider has a \$55 setup fee and charges \$82 per month, while a satellite television provider has a \$160 setup fee and charges \$67 per month.

a. Define variables and write a system of equations to model the scenario.

b. In how many months will both providers cost the same? What will that cost be?

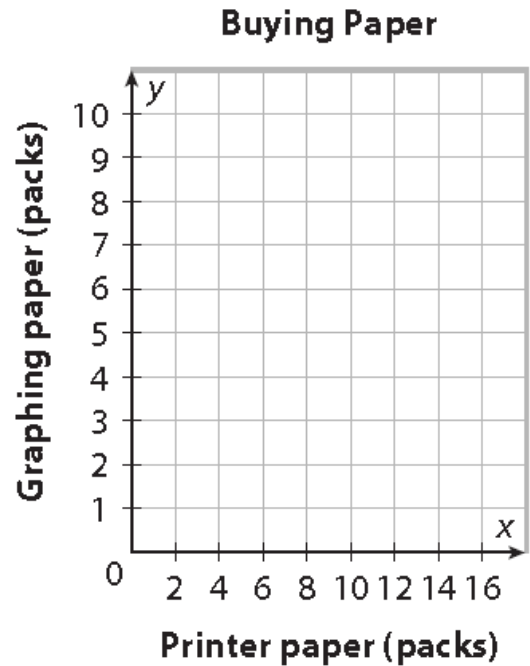
c. If you plan to move in 12 months, which provider would be less expensive? Explain.

4) A student has to buy graph paper and printer paper. The printer paper costs \$2 a pack, while the graphing paper costs \$3 a pack. She wants to buy at least 6 packs of paper but wants to spend at most \$27.

a. Write a system of inequalities for the given situation

b. Graph the system.

c. Determine if the point (8, 4) is a solution to the system. Justify your answer.



5) Christine is selling tickets at a museum. She knows that she has sold at least 40 tickets. The adult tickets cost 14 dollars and the children's tickets cost 12 dollars. If she knows she has sold no more than \$720 worth of tickets, what are the possible combinations?

a. Write a system of inequalities for the given situation

b. Graph the system.

c. Determine two different combinations of adult and student tickets that are possible given the constraints of the problem.

