

**Unit 7 Review - Math 1**

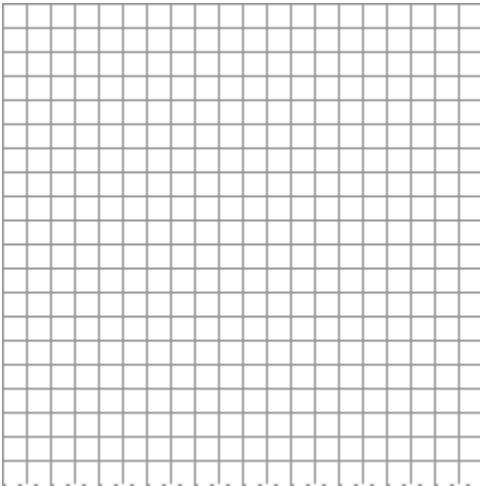
1. Tell whether the graph of each inequality would be represented with a dashed line or solid line.

a.  $y < 14 - 7x$

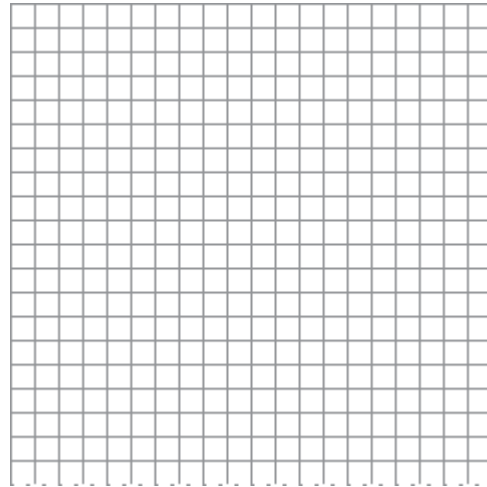
b.  $y + 9 \geq 3$

2. For each system of linear inequalities, graph the solution and identify two points that are solutions to the system.

a) 
$$\begin{cases} y \geq -2x + 1 \\ y < \frac{3}{4}x - 3 \end{cases}$$



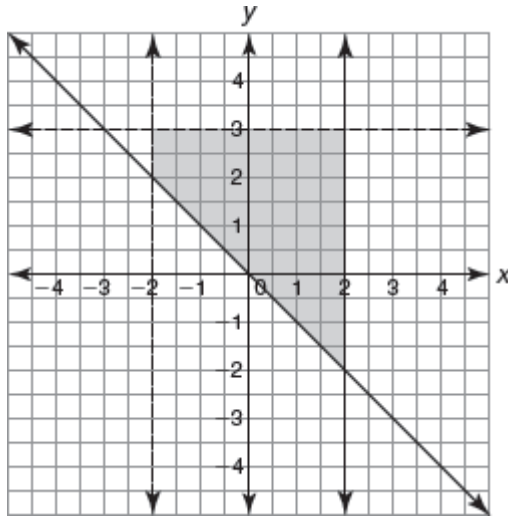
b) 
$$\begin{cases} y \geq -x + 3 \\ y \leq \frac{1}{4}x - 2 \\ x < 8 \end{cases}$$



3. A farmer grows corn and tomatoes. There is an expected demand of at least 2000 ears of corn and 3500 tomatoes each week. A total of more than 6000 food items must be grown each week. The farmer also wants to grow at least twice as many tomatoes as ears of corn. Write a system of linear inequalities to represent the constraints of this situation. Let  $x$  represent the number of ears of corn and  $y$  represent the number of tomatoes.

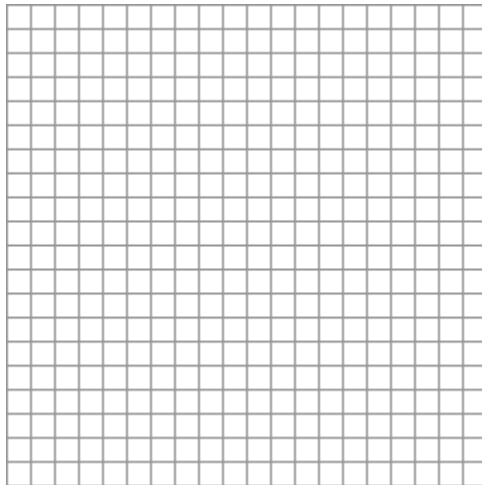
4. A company produces CDs and DVDs. There is an expected demand of at least 5000 CDs and 8000 DVDs each day. A total of at most 20,000 items are produced each day. Write a system of linear inequalities to represent the constraints of this situation. Let  $x$  represent the number of CDs and  $y$  represent the number of DVDs.

5. Write a system of linear inequalities that is represented by the graph.



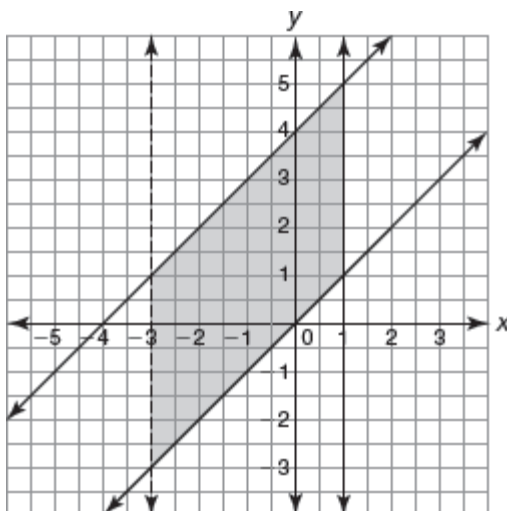
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6. A company prints flyers and brochures. It takes 2 minutes to print a flyer and 4 minutes to print a brochure. Each flyer uses 12 ounces of ink and each brochure uses 9 ounces of ink. The company has 2 hours available and 360 ounces of ink. The company makes a profit of \$1 on each flyer and \$2 on each brochure. The company cannot print a negative number of flyers or brochures.
- Let  $x$  represent the number of flyers and  $y$  represent the number of brochures. Write a system of inequalities to represent the constraints of this problem situation.
  - Graph the system of inequalities. Then write and solve an equation to determine how many flyers and brochures the company should print in order to maximize their profit.



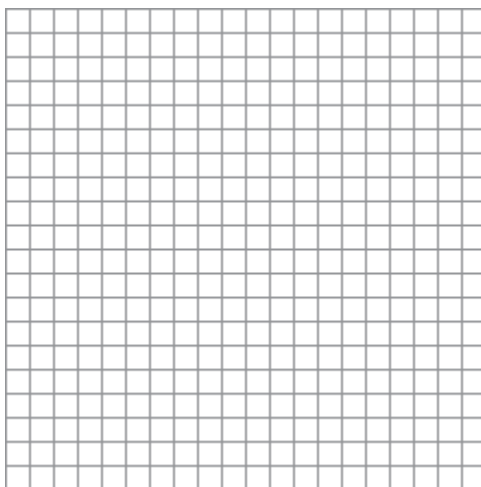
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7. Write a system of linear inequalities that is represented by the graph.



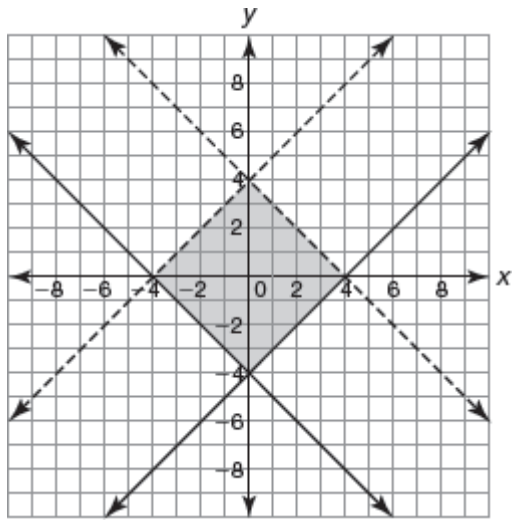
8. Graph the solution to this system of linear inequalities.

$$\begin{cases} y < -2x \\ y \leq 4x \\ y \geq -x - 5 \end{cases}$$



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9. Geno wants to purchase a gym membership. He has no more than  $y$  dollars to spend. Total Fitness charges an initial fee of \$100 plus \$30 per month. Gymania charges an initial fee of \$25 plus \$50 per month. Write a system of inequalities that can be used to determine which company offers the better deal. Let  $x$  represent the number of months.
10. Write a system of linear inequalities that is represented by the graph.

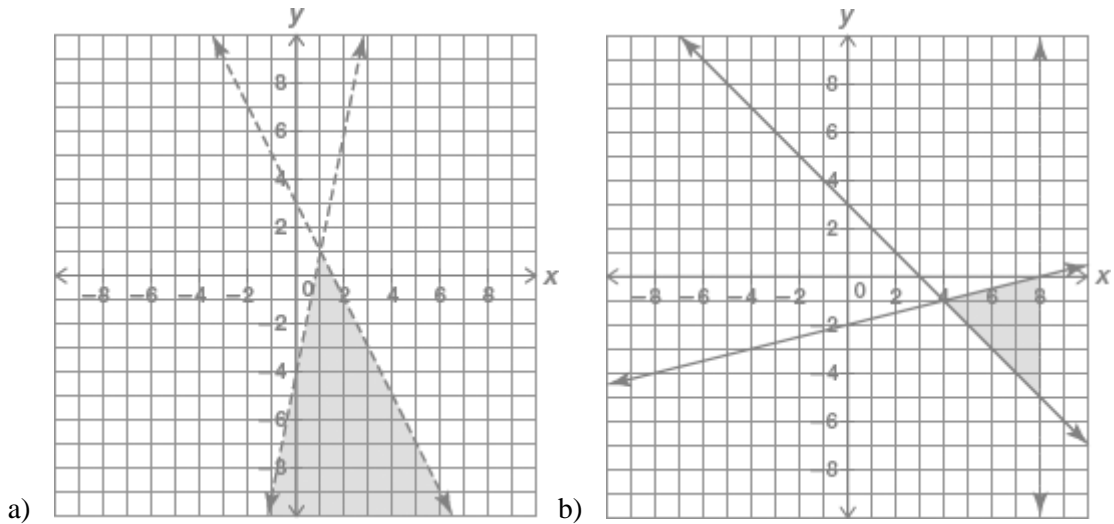


**Unit 7 Review - Math 1  
Answer Section**

1. ANS:  
 a. dashed line  
 b. solid line

PTS: 1                      REF: 7.1                      NAT: A.REI.12 | A.CED.3  
 TOP: Pre Test              KEY: half-plane

2. ANS:



PTS: 1                      REF: 7.2                      NAT: A.REI.12 | A.CED.3  
 TOP: End Ch Test      KEY: constraints | solution of a linear inequality

3. ANS:  

$$\begin{cases} x + y \geq 6000 \\ x \geq 2000 \\ y \geq 3500 \\ y \geq 2x \end{cases}$$

PTS: 1                      REF: 7.4                      NAT: A.REI.12 | A.CED.3  
 TOP: Post Test              KEY: linear programming

4. ANS:  

$$\begin{cases} x + y \leq 20,000 \\ x \geq 5000 \\ y \geq 8000 \end{cases}$$

PTS: 1                      REF: 7.4                      NAT: A.REI.12 | A.CED.3  
 TOP: Pre Test              KEY: linear programming

5. ANS:

$$\begin{cases} x > -2 \\ x \leq 2 \\ y < 3 \\ y \geq -x \end{cases}$$

PTS: 1  
TOP: Pre Test

REF: 7.3

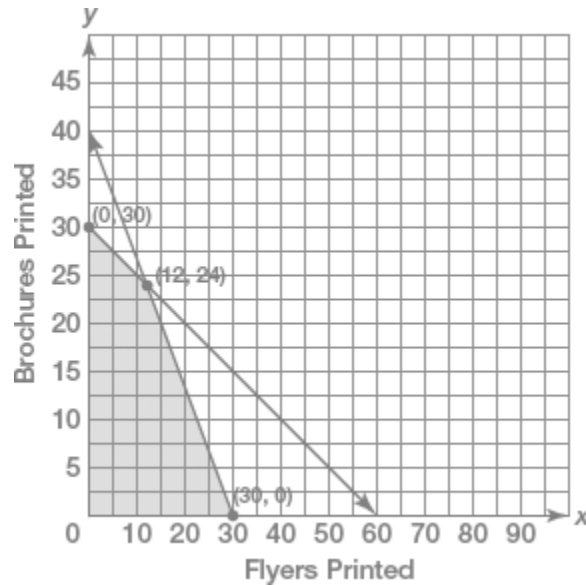
NAT: A.REI.12 | A.CED.3

6. ANS:

a.

$$\begin{cases} x \geq 0 \\ y \geq 0 \\ 2x + 4y \leq 120 \\ 12x + 9y \leq 360 \end{cases}$$

b.



$$P(x, y) = x + 2y$$

$$P(0, 30) = 0 + 2(30) = 60$$

$$P(12, 24) = 12 + 2(24) = 60$$

$$P(30, 0) = 30 + 2(0) = 30$$

The company can maximize their profit by printing either 12 flyers and 24 brochures or 0 flyers and 30 brochures.

PTS: 1  
TOP: Post Test

REF: 7.4  
KEY: linear programming

NAT: A.REI.12 | A.CED.3

7. ANS:

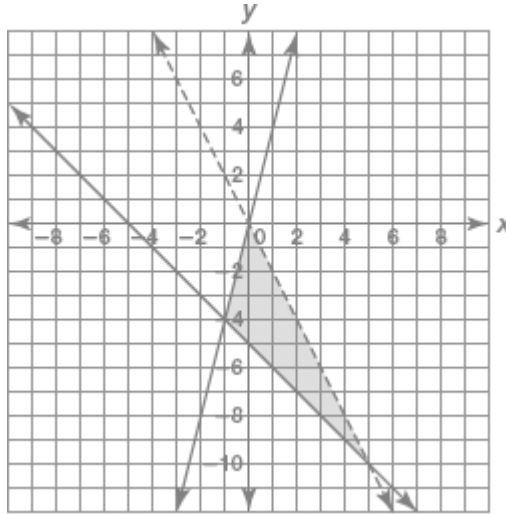
$$\begin{cases} y \geq x \\ y \leq x + 4 \\ x > -3 \\ x \leq 1 \end{cases}$$

PTS: 1  
TOP: Post Test

REF: 7.3

NAT: A.REI.12 | A.CED.3

8. ANS:



PTS: 1  
TOP: Post Test

REF: 7.3

NAT: A.REI.12 | A.CED.3

9. ANS:

$$\begin{cases} y \geq 100 + 30x \\ y \geq 25 + 50x \end{cases}$$

PTS: 1  
TOP: End Ch Test

REF: 7.2

NAT: A.REI.12 | A.CED.3

KEY: constraints | solution of a linear inequality

10. ANS:

$$\begin{cases} y < -x + 4 \\ y < x + 4 \\ y \geq -x - 4 \\ y \geq x - 4 \end{cases}$$

PTS: 1  
TOP: End Ch Test

REF: 7.3

NAT: A.REI.12 | A.CED.3