LESSON 6-6  Practice B  Solving Systems of Linear Inequalities

Tell whether the ordered pair is a solution of the given system.

1. (2, -2); \( \begin{align*} y &< x - 3 \\ y &> -x + 1 \end{align*} \)
2. (2, 5); \( \begin{align*} y &> 2x \\ y &\leq x + 2 \end{align*} \)
3. (1, 3); \( \begin{align*} y &\leq x + 2 \\ y &> 4x - 1 \end{align*} \)

Graph the system of linear inequalities.  

4. \( \begin{align*} y &\leq x + 4 \\ y &\geq -2x \end{align*} \)
5. \( \begin{align*} y &\leq \frac{1}{2}x + 1 \\ x + y &< 3 \end{align*} \)
6. \( \begin{align*} y &> x - 4 \\ y &< x + 2 \end{align*} \)

Charlene makes $10 per hour babysitting and $5 per hour gardening. She wants to make at least $80 a week, but can work no more than 12 hours a week.

a. Write a system of linear equations.

b. Graph the solutions of the system.

c. Describe all the possible combinations of hours that Charlene could work at each job.

d. List two possible combinations.
Practice A

**Solving Systems of Linear Inequalities**

Tell whether the ordered pair is a solution of the given system.

1. (4, 5) \( \begin{align*} y &< -2x \\ y &< -x - 1 \end{align*} \) \( \text{yes} \)

2. (1, 3) \( \begin{align*} y &> 3x \\ y &> x + 2 \end{align*} \) \( \text{no} \)

3. (2, 3) \( \begin{align*} y &> 5x - 3 \\ y &> -x - 3 \end{align*} \) \( \text{yes} \)

Graph the system of linear inequalities. a. Give two ordered pairs that are solutions. b. Give two ordered pairs that are not solutions.

4. \( \begin{align*} y &< x + 1 \\ y &> -2x \end{align*} \) \( \text{a. (0, 3) and (0, 4) b. (0, 0) and (1, 2)} \)

5. \( \begin{align*} y &< 2x + 4 \\ y &> x - 1 \end{align*} \) \( \text{a. (3, 3) and (4, 4) b. (0, 0) and (3, 0)} \)

6. \( \begin{align*} y &> -x + 3 \\ y &> x + 3 \end{align*} \) \( \text{a. (-1, 0) and (-3, 2) b. (0, -3) and (4, 0)} \)

7. Lou is buying macaroni salad and potato salad for a picnic. Macaroni salad costs $4 per pound and potato salad costs $2 per pound. Lou would like to buy at least 6 pounds of salads and wants to spend no more than $20.
   a. Write a system of linear equations.
   Let \( x \) = pounds of macaroni salad
   Let \( y \) = pounds of potato salad
   \( \begin{align*} x + y &\geq 6 \\ 4x + 2y &\leq 20 \end{align*} \)
   b. Graph the solutions of the system.
   c. Describe all the possible combinations of pounds of salads that Lou could buy.
   Any combination represented by the ordered pairs
   in the solution region.
   d. List two possible combinations
   2 lbs mac. salad, 5 lbs potato salad; 3 lbs mac. salad, 4 lbs potato salad
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Practice C

**Solving Systems of Linear Inequalities**

Tell whether the ordered pair is a solution of the given system.

1. (2, 3) \( \begin{align*} y &< x + 5 \\ y &> -2x - 1 \end{align*} \) \( \text{no} \)

2. (-3, 3) \( \begin{align*} y &< x + 1 \\ y &> x - 4 \end{align*} \) \( \text{yes} \)

3. (-1, -2) \( \begin{align*} y &> x + 2 \\ y &> 3x \end{align*} \) \( \text{no} \)

Graph the system of linear inequalities. a. Give two ordered pairs that are solutions. b. Give two ordered pairs that are not solutions.

4. \( \begin{align*} y &< 3x - 2 \\ y &> x - 4 \end{align*} \) \( \text{a. (0, 2) and (3, 0) b. (0, -3) and (0, 3)} \)

5. \( \begin{align*} y &< \frac{3x}{2} - 2 \\ y &> x - 3 \end{align*} \) \( \text{a. (-2, 0) and (0, 3) b. (0, 1) and (0, 0)} \)

6. \( \begin{align*} y &< 2x - y \\ y &> \frac{1}{2}x + 3 \end{align*} \) \( \text{a. (0, -3) and (4, 0) b. (4, -4) and (0, 4)} \)

7. Dennis works at a frozen yogurt store in the summer. He needs to order boxes of small cups and boxes of large cups. The storage room can hold up to 10 more boxes of cups. Each box of small cups costs $100 and each box of large cups costs $150. A maximum of $1200 is budgeted for cups.
   a. Write a system of linear equations.
   \( \begin{align*} x &= \text{boxes of small cups,} \\ y &= \text{boxes of large cups,} \\ x + y &\leq 10 \\ 100x + 150y &\leq 1200 \end{align*} \)
   b. Graph the solutions of the system.
   c. Describe all the possible combinations of boxes that Dennis can order.
   Any combination of pairs represented by the whole number ordered pairs in the solution region.
   d. List two possible combinations
   6 small, 4 large; 3 small, 5 large

Reteach

**Solving Systems of Linear Inequalities**

You can graph a system of linear inequalities by combining the graphs of the inequalities.

Graph of \( y \leq 2x + 3 \) Graph of \( y > x - 6 \)

Graph of the system \( y = 2x + 3 \) \( y > x - 6 \)

For each system below, give two ordered pairs that are solutions and two that are not solutions.

1. Possible Answers: 2; Sol: (1, -3), (-2, -4), not sol: (3, -3), (2, 2)

2. Possible Answers: 4; Sol: (x, y) \( \begin{align*} y &= x - 3 \\ y &= 2x + 1 \end{align*} \)

Graph each system of linear inequalities

1. \( \begin{align*} y &= x - 3 \\ y &= 2x + 1 \end{align*} \)

2. \( \begin{align*} y &= x - 3 \\ y &= 2x + 1 \end{align*} \)