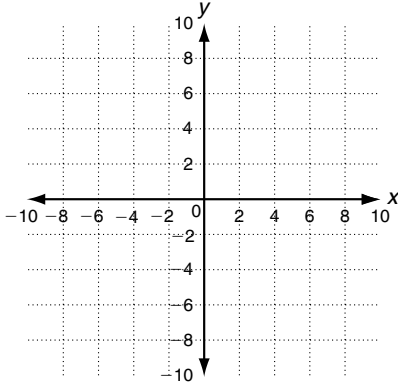


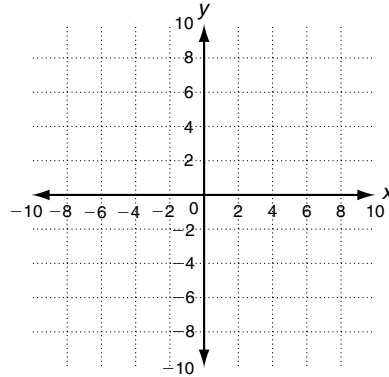
**LESSON** **Practice B**  
**3-3 Solving Systems of Linear Inequalities**

Graph each system of inequalities.

1. 
$$\begin{cases} y \leq 3x - 5 \\ y < -\frac{1}{2}x + 4 \end{cases}$$

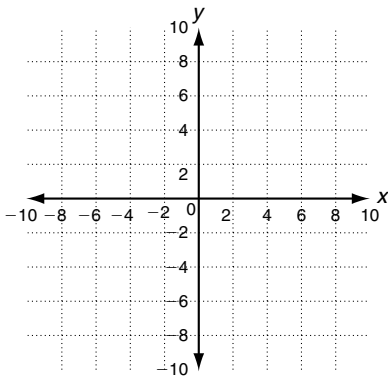


2. 
$$\begin{cases} y < x + 5 \\ y \geq 4x - 2 \end{cases}$$

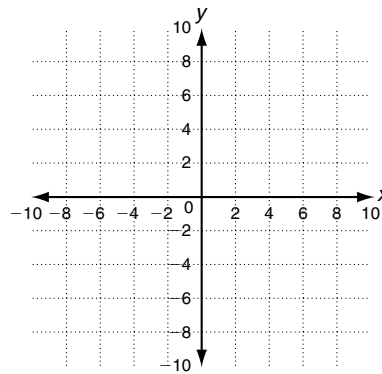


Graph the system of inequalities, and classify the figure created by the solution region.

3. 
$$\begin{cases} x \leq 2 \\ x \geq -3 \\ y \leq 2x + 2 \\ y \geq 2x - 1 \end{cases}$$
 \_\_\_\_\_

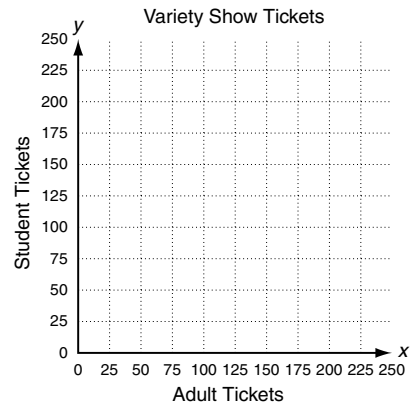


4. 
$$\begin{cases} y \leq -x + 4 \\ y \leq 3 \\ y \geq 0 \\ y \geq -2x - 1 \end{cases}$$
 \_\_\_\_\_



**Solve.**

5. The Thespian Club is selling tickets to its annual variety show. Prices are \$8 for an adult ticket and \$4 for a student ticket. The club needs to raise \$1000 to pay for costumes and stage sets. The auditorium has a seating capacity of 240. Write and graph a system of inequalities that can be used to determine how many tickets have to be sold for the club to meet its goal.

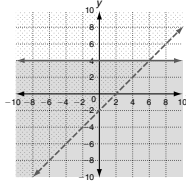


**LESSON Practice A**  
**3-3 Solving Systems of Linear Inequalities**

Graph each system of inequalities.

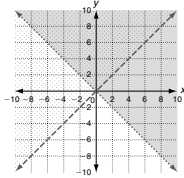
1.  $\begin{cases} y \leq 4 \\ y > x - 2 \end{cases}$

- In order to graph  $y \leq 4$ , draw the line for  $y = 4$ .
- Now shade the area below the line to show  $y \leq 4$ .
- In order to graph  $y > x - 2$ , draw the line that represents  $y = x - 2$ . Make the line dashed since the line is not included in the inequality.
- Shade the area above the line.
- Describe the solution region of this system of inequalities.

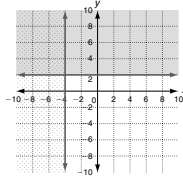


Possible answer: The solution region is the area where the two shading patterns overlap.

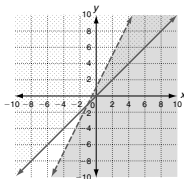
2.  $\begin{cases} y > x \\ y > -x \end{cases}$



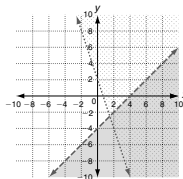
3.  $\begin{cases} x \leq -4 \\ y \geq 2 \end{cases}$



4.  $\begin{cases} y < 2x + 1 \\ y \geq x \end{cases}$



5.  $\begin{cases} y < x - 4 \\ y > -3x + 2 \end{cases}$



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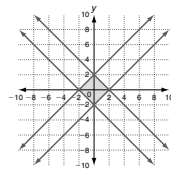
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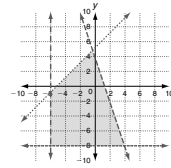
**LESSON Practice C**  
**3-3 Solving Systems of Linear Inequalities**

Graph the system of inequalities, and classify the figure created by the solution region.

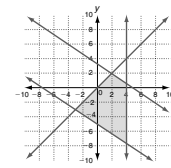
1.  $\begin{cases} y \leq -x + 2 \\ y \leq x + 2 \\ y \geq -x - 2 \\ y \geq x - 2 \end{cases}$      Square    



2.  $\begin{cases} y < -3x + 4 \\ y > -8 \\ y < x + 5 \\ x > -6 \end{cases}$      Quadrilateral    



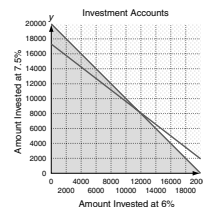
3.  $\begin{cases} y \leq \frac{2}{3}x + 3 \\ y \leq x \\ y \geq \frac{2}{3}x - 5 \\ x \leq 4 \end{cases}$      Trapezoid    



Solve.

4. Anton wants to divide a maximum of \$20,000 between two simple interest investment accounts. One pays 6% interest and the other pays 7.5% interest. Write and graph a system of inequalities that shows the amounts Anton can invest in each account and still earn at least \$1300 per year.

$\begin{cases} x + y \leq 20,000 \\ 0.06x + 0.075y \geq 1300 \end{cases}$



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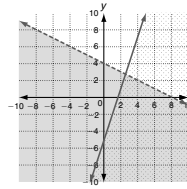
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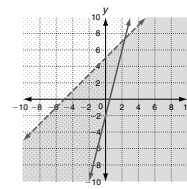
**LESSON Practice B**  
**3-3 Solving Systems of Linear Inequalities**

Graph each system of inequalities.

1.  $\begin{cases} y \leq 3x - 5 \\ y < -\frac{1}{2}x + 4 \end{cases}$

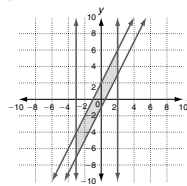


2.  $\begin{cases} y < x + 5 \\ y \geq 4x - 2 \end{cases}$

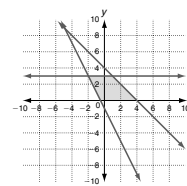


Graph the system of inequalities, and classify the figure created by the solution region.

3.  $\begin{cases} x \leq 2 \\ x \geq -3 \\ y \geq 2x - 1 \end{cases}$      Parallelogram    



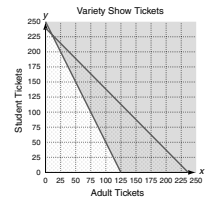
4.  $\begin{cases} y \leq -x + 4 \\ y \leq 3 \\ y \geq 0 \\ y \geq -2x - 1 \end{cases}$      Trapezoid    



Solve.

5. The Thespian Club is selling tickets to its annual variety show. Prices are \$8 for an adult ticket and \$4 for a student ticket. The club needs to raise \$1000 to pay for costumes and stage sets. The auditorium has a seating capacity of 240. Write and graph a system of inequalities that can be used to determine how many tickets have to be sold for the club to meet its goal.

$\begin{cases} 8x + 4y \geq 1000 \\ x + y \leq 240 \end{cases}$



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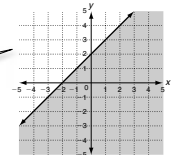
**LESSON Reteach**  
**3-3 Solving Systems of Linear Inequalities**

To use graphs to find the solution to a system of inequalities:

- Draw the graph of the boundary for the first inequality. Remember to use a solid line for  $\leq$  or  $\geq$  and a dashed line for  $<$  or  $>$ .
- Shade the region above or below the boundary line that is a solution of the inequality.
- Draw the graph of the boundary for the second inequality.
- Shade the region above or below the boundary line that is a solution of the inequality using a different pattern.
- The region where the shadings overlap is the solution region.

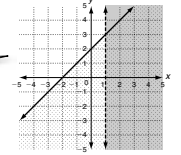
Graph  $\begin{cases} y \leq x + 2 \\ x > 1 \end{cases}$  Graph  $y \leq x + 2$ .

Graph  $y = x + 2$ .  
Use a solid line for the boundary.  
Shade the region below the line.



On the same plane, graph  $x > 1$ .

Graph  $x = 1$ .  
Use a dashed line for the boundary.  
Shade the region to the right of the line.

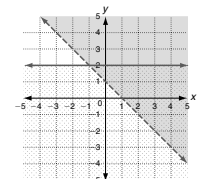


Check: Test a point in the solution region in both inequalities.

Try (2, 2).  
 $y \leq x + 2$      $x > 1$   
 $2 \leq 2 + 2$      $2 > 1$   
 $4 \leq 2\checkmark$

Graph the system of inequalities.

1.  $\begin{cases} y > -x + 1 \\ y \leq 2 \end{cases}$
- Shade     Above     the line for  $y > -x + 1$ .
  - Shade     below     the line for  $y \leq 2$ .
  - Check:     possible answer: (1, 3)
  - Check:     possible answer: (4, 0)



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