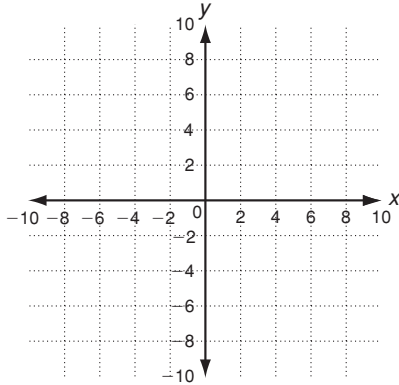


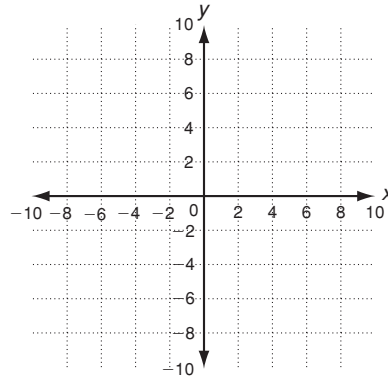
LESSON **Practice B**
3-3 Solving Systems of Linear Inequalities

Graph each system of inequalities.

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

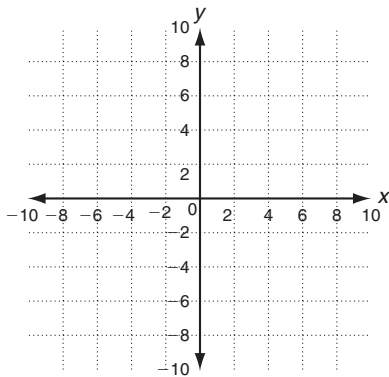


2.
$$\begin{cases} y < x + 5 \\ y \geq 4x - 2 \end{cases}$$

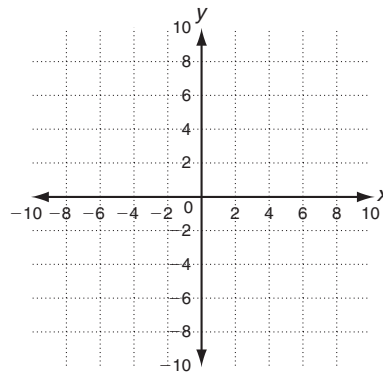


Graph the system of inequalities, and classify the figure created by the solution region.

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

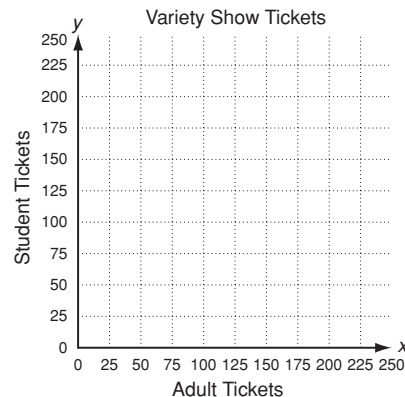


4.
$$\begin{cases} y \leq -x + 4 \\ y \leq 3 \\ y \geq 0 \\ y \geq -2x - 1 \end{cases}$$



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.

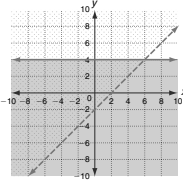


LESSON **Practice A**
3-3 Solving Systems of Linear Inequalities

Graph each system of inequalities.

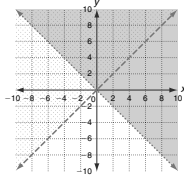
1. $\begin{cases} y \leq 4 \\ y > x - 2 \end{cases}$

- 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.

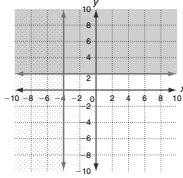


Possible answer: The solution region is the area where the two shading patterns overlap.

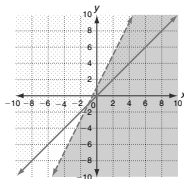
2. $\begin{cases} y > x \\ y > -x \end{cases}$



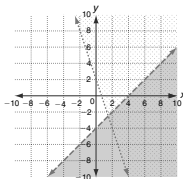
3. $\begin{cases} x \leq -4 \\ y \geq 2 \end{cases}$



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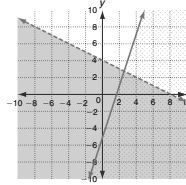
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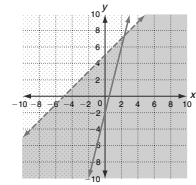
LESSON **Practice B**
3-3 Solving Systems of Linear Inequalities

Graph each system of inequalities.

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

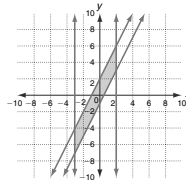


2. $\begin{cases} y < x + 5 \\ y \geq 4x - 2 \end{cases}$

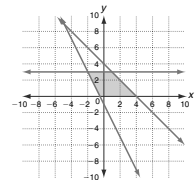


Graph the system of inequalities, and classify the figure created by the solution region.

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



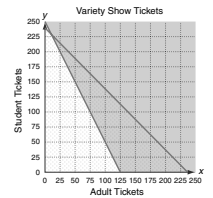
4. $\begin{cases} y \leq -x + 4 \\ y \leq 3 \\ y \geq 0 \\ y \geq -2x - 1 \end{cases}$ **Trapezoid**



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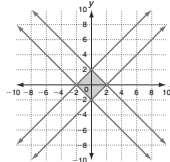
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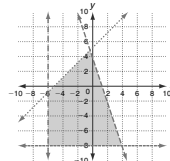
LESSON **Practice C**
3-3 Solving Systems of Linear Inequalities

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

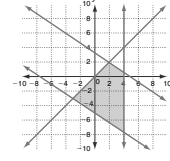
1. $\begin{cases} y \leq -x + 2 \\ y \geq x + 2 \\ y \geq -x - 2 \\ y \geq x - 2 \end{cases}$ **Square**



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



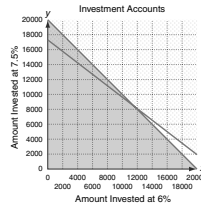
3. $\begin{cases} y \leq -\frac{2}{3}x + 3 \\ y \leq x \\ y \geq -\frac{2}{3}x - 5 \\ x \leq 4 \end{cases}$ **Trapezoid**



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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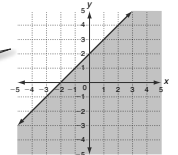
LESSON **Review for Mastery**
3-3 Solving Systems of Linear Inequalities

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.

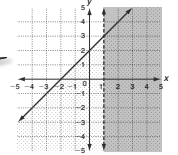
Graph $\begin{cases} y \leq x + 2 \\ x > 1 \end{cases}$ Graph $y \leq x + 2$.

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



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

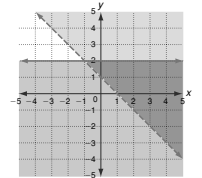
Graph $x = 1$.
Use a dashed line for the boundary.
Shade the region to the right of the line.



Check: Test a point in the solution region in both inequalities.
Try (2, 2).
 $y \leq x + 2$ $x > 1$
 $2 \leq 2 + 2$ $2 > 1$
 $2 \leq 4$

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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