Graphing Systems of Inequalities

Bell Work:

1. What type is this linear function? $y - 5 = 3(x + 8)$

2. What is the slope of a line that goes through (11, -6) and (-5, 10)?

3. What is the slope of a line with an equation of $3x - 5y = -20$**?**

4. What equation for the constant parent function?

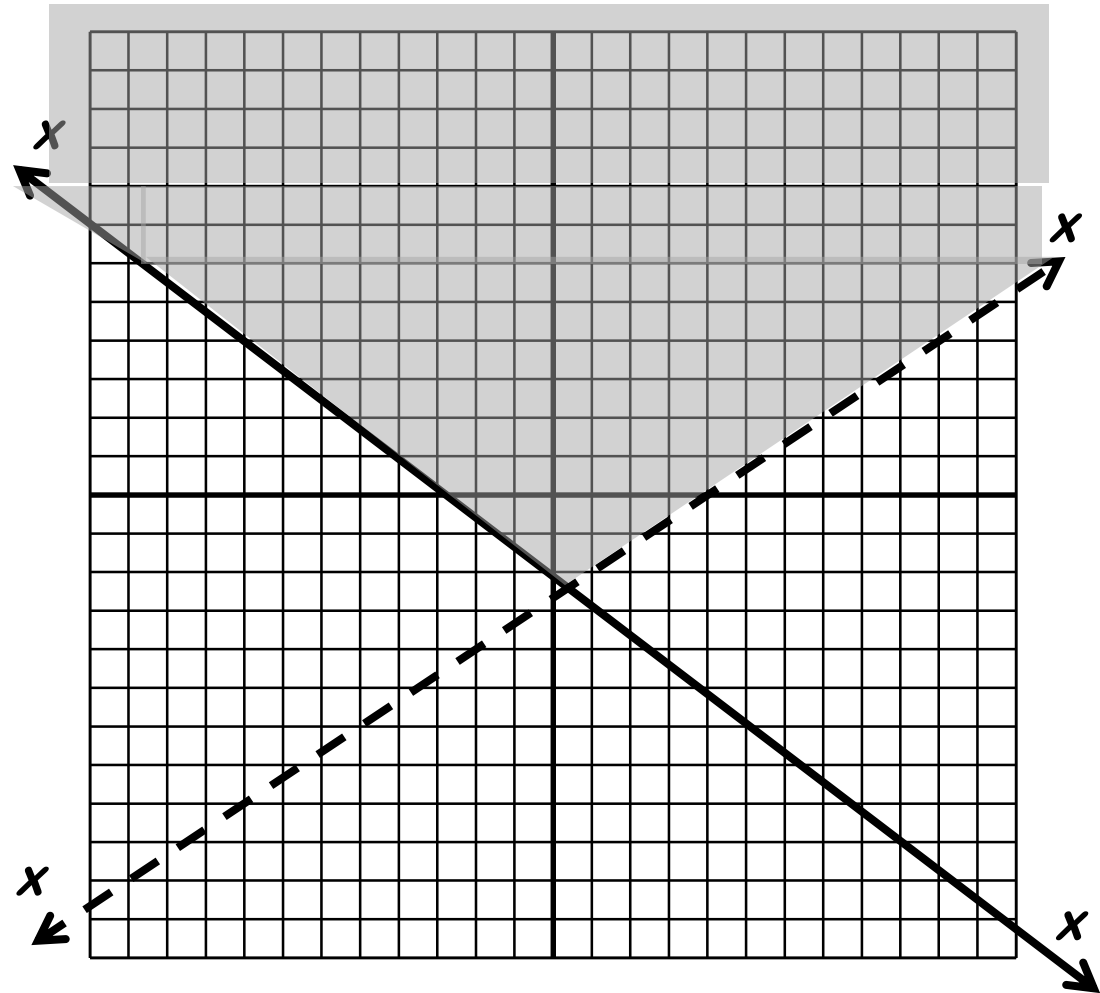**Graph** $y \geq -\frac{3}{4}x - 2$ **and** $2x - 3y < 8.$

1. *Graph the 1ˢᵗ line.*

2. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$0 \geq -\frac{3}{4}(0) - 2 \qquad 0 \geq -2 \quad \textit{True}$$

3. *Put a mark at both arrows the true side.*

4. *Graph the 2ⁿᵈ line.*

5. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$2(0) - 3(0) < 8 \qquad 0 < 8 \quad \textit{True}$$

6. *Put a mark at both arrows the true side.*

7. *Shade the area with 2 marks.*

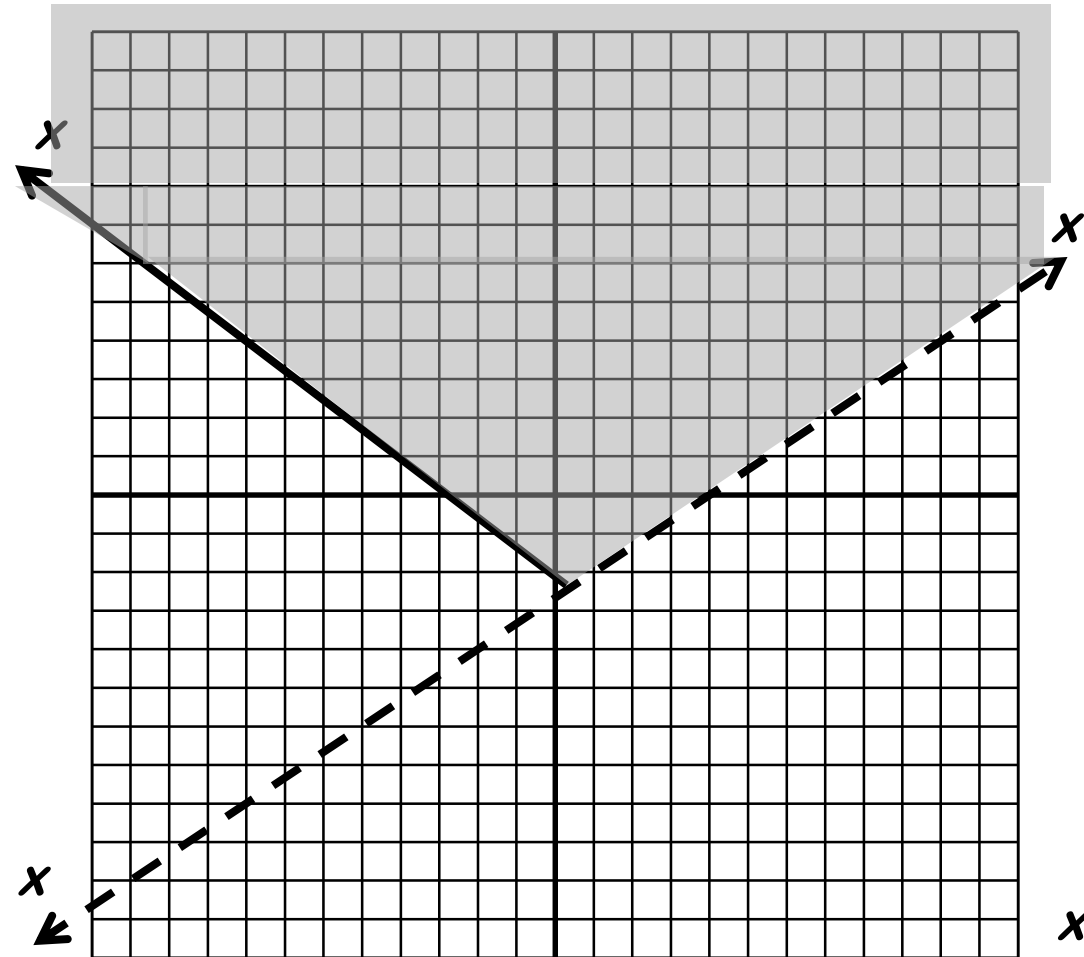**Graph** $y \geq -\dfrac{3}{4}x - 2$ **and** $2x - 3y < 8$.

1. *Graph the 1st line.*

2. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$0 \geq -\dfrac{3}{4}(0) - 2 \qquad 0 \geq -2 \quad \textit{True}$$

3. *Put a mark at both arrows the true side.*

4. *Graph the 2nd line.*

5. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$2(0) - 3(0) < 8 \qquad 0 < 8 \quad \textit{True}$$

6. *Put a mark at both arrows the true side.*

7. *Shade the area with 2 marks.*

8. *Erase any solid line that doesn't touch the shaded area.*

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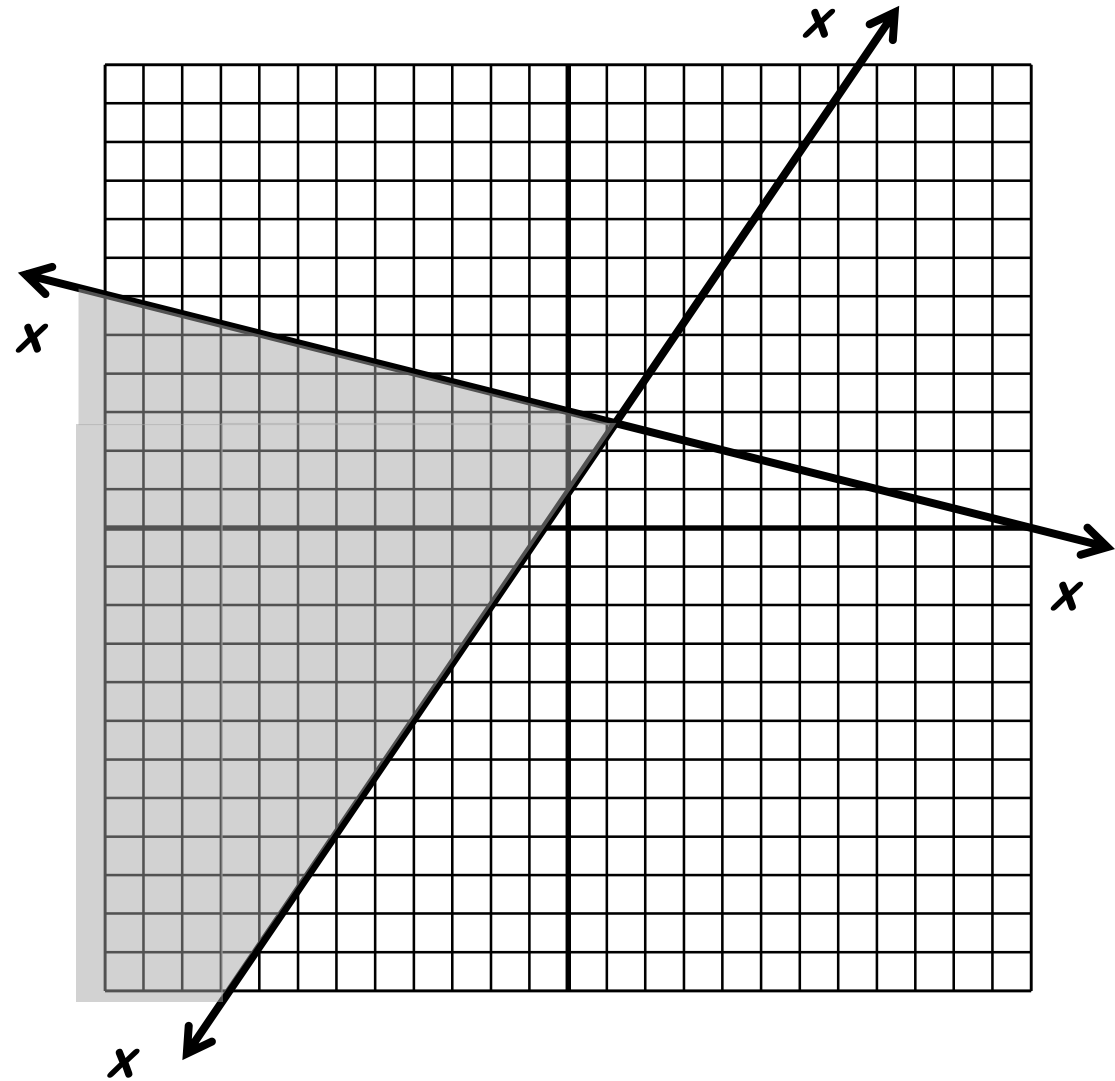**Graph** $x + 4y \le 12$ **and** $y \ge \frac{3}{2}x + 1$.

1. *Graph the 1ˢᵗ line.*

2. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

   $$0 + 4(0) \le 12 \qquad -20 \le 12 \quad \textbf{\textit{True}}$$

3. *Put a mark at both arrows the true side.*

4. *Graph the 2ⁿᵈ line.*

5. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

   $$0 \ge \frac{3}{2}(0) + 1 \qquad 0 \ge 1 \quad \textbf{\textit{False}}$$

6. *Put a mark at both arrows the true side.*

7. *Shade the area with 2 marks.*

Graphing Systems of Inequalities

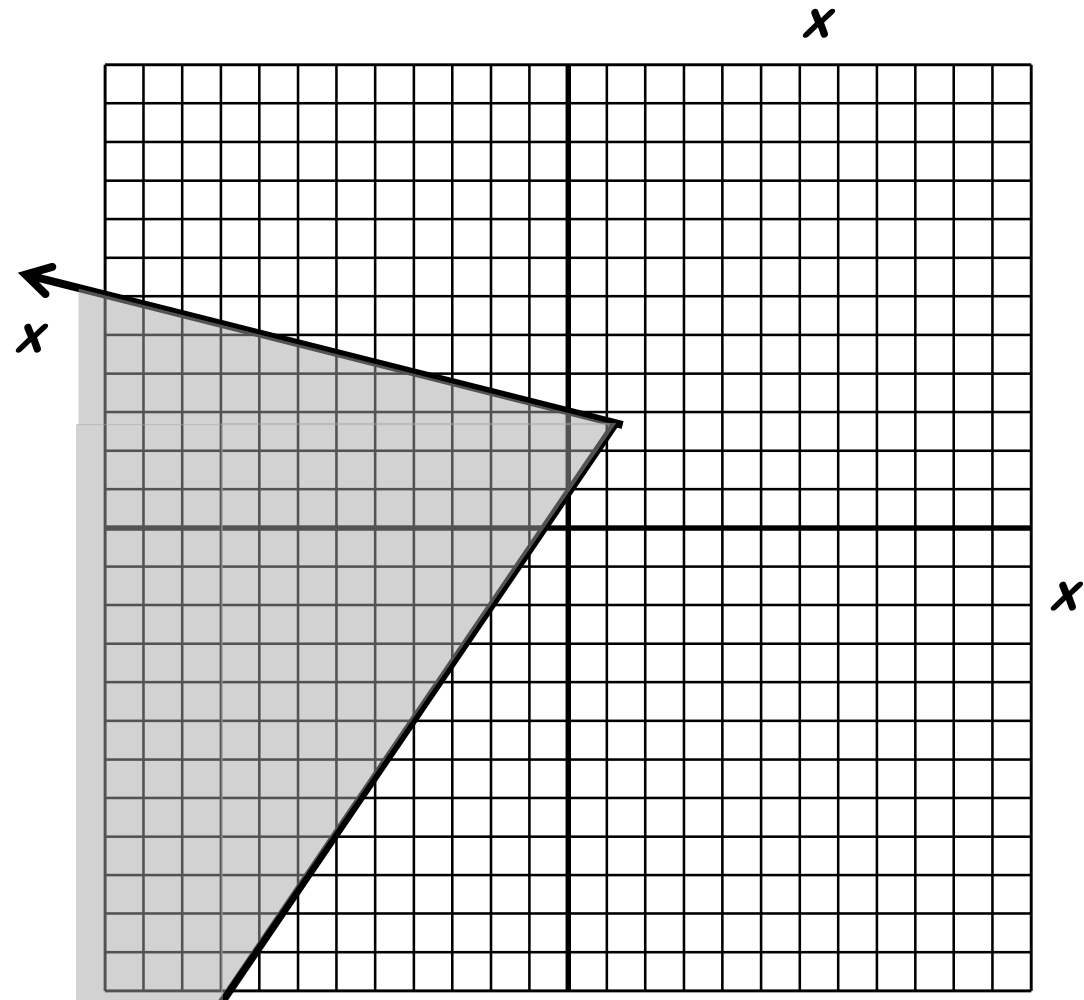**Graph** $x + 4y \leq 12$ **and** $y \geq \frac{3}{2}x + 1$.

1. *Graph the 1st line.*

2. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$0 + 4(0) \leq 12 \qquad -20 \leq 12 \quad \textbf{True}$$

3. *Put a mark at both arrows the true side.*

4. *Graph the 2nd line.*

5. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$0 \geq \frac{3}{2}(0) + 1 \qquad 0 \geq 1 \quad \textbf{False}$$

6. *Put a mark at both arrows the true side.*

7. *Shade the area with 2 marks.*

8. *Erase any solid line that doesn't touch the shaded area.*

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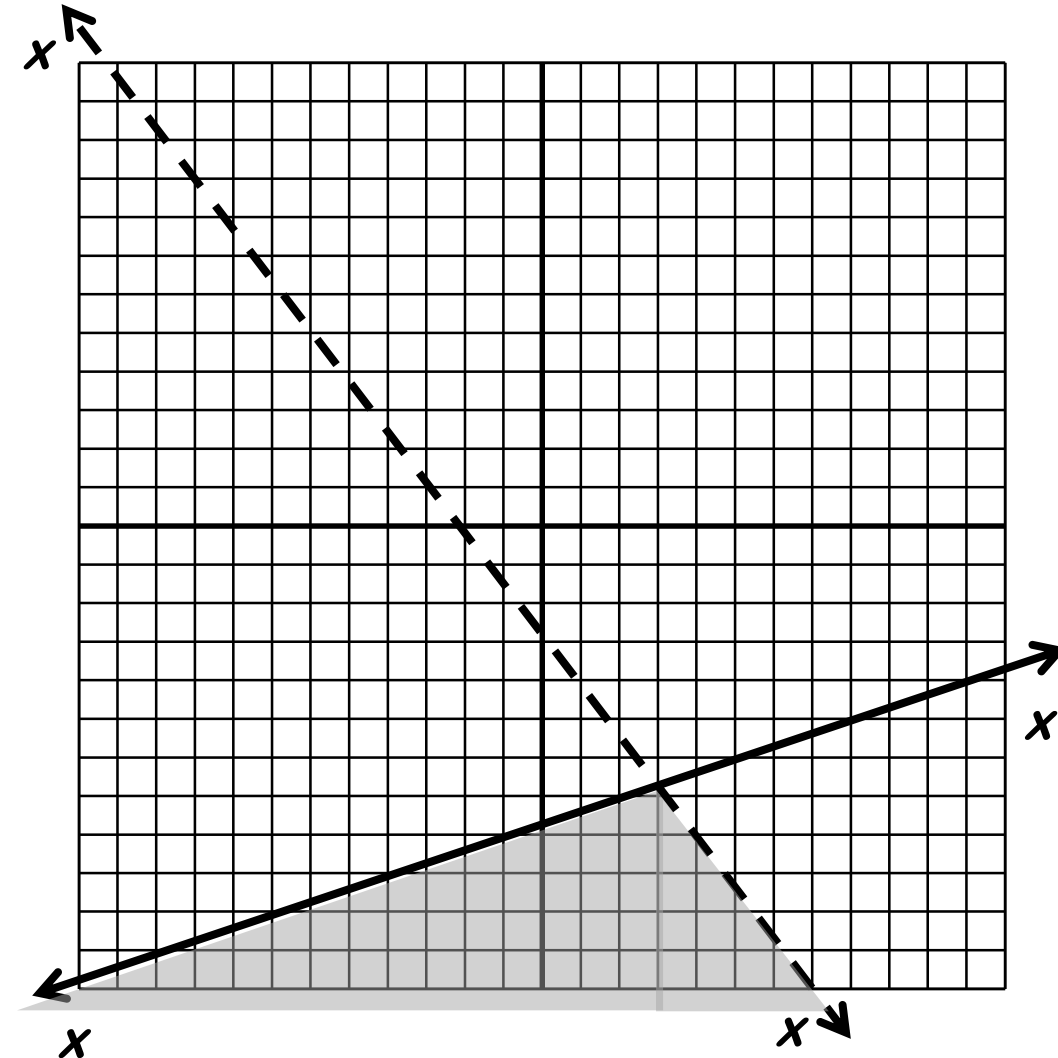**Graph** $y - 2 \geq \frac{1}{3}(x + 7)$ **and** $4x + 3y < -9$.

1. *Graph the 1st line.*

2. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$0 - 2 \geq \frac{1}{3}(0 + 7) \qquad -2 \geq \frac{7}{3} \text{ False}$$

3. *Put a mark at both arrows the true side.*

4. *Graph the 2nd line.*

5. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$4(0) + 3(0) < -9 \qquad 0 < -9 \text{ False}$$

6. *Put a mark at both arrows the true side.*

7. *Shade the area with 2 marks.*

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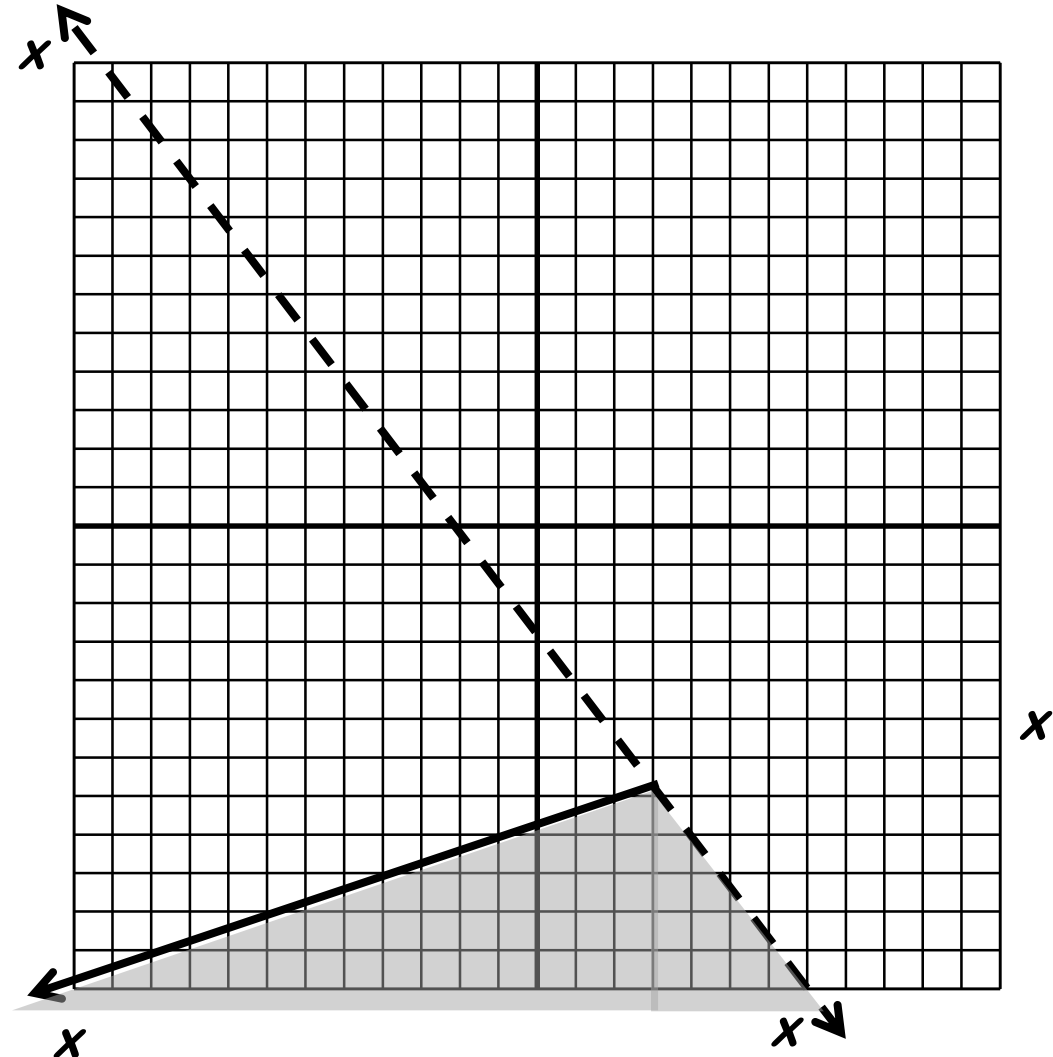**Graph** $y - 2 \geq \frac{1}{3}(x + 7)$ **and** $4x + 3y < -9$.

1. *Graph the 1st line.*

2. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$0 - 2 \geq \frac{1}{3}(0 + 7) \qquad -2 \geq \frac{7}{3} \quad \textit{False}$$

3. *Put a mark at both arrows the true side.*

4. *Graph the 2nd line.*

5. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$4(0) + 3(0) < -9 \qquad 0 < -9 \quad \textit{False}$$

6. *Put a mark at both arrows the true side.*

7. *Shade the area with 2 marks.*

8. *Erase any solid line that doesn't touch the shaded area.*

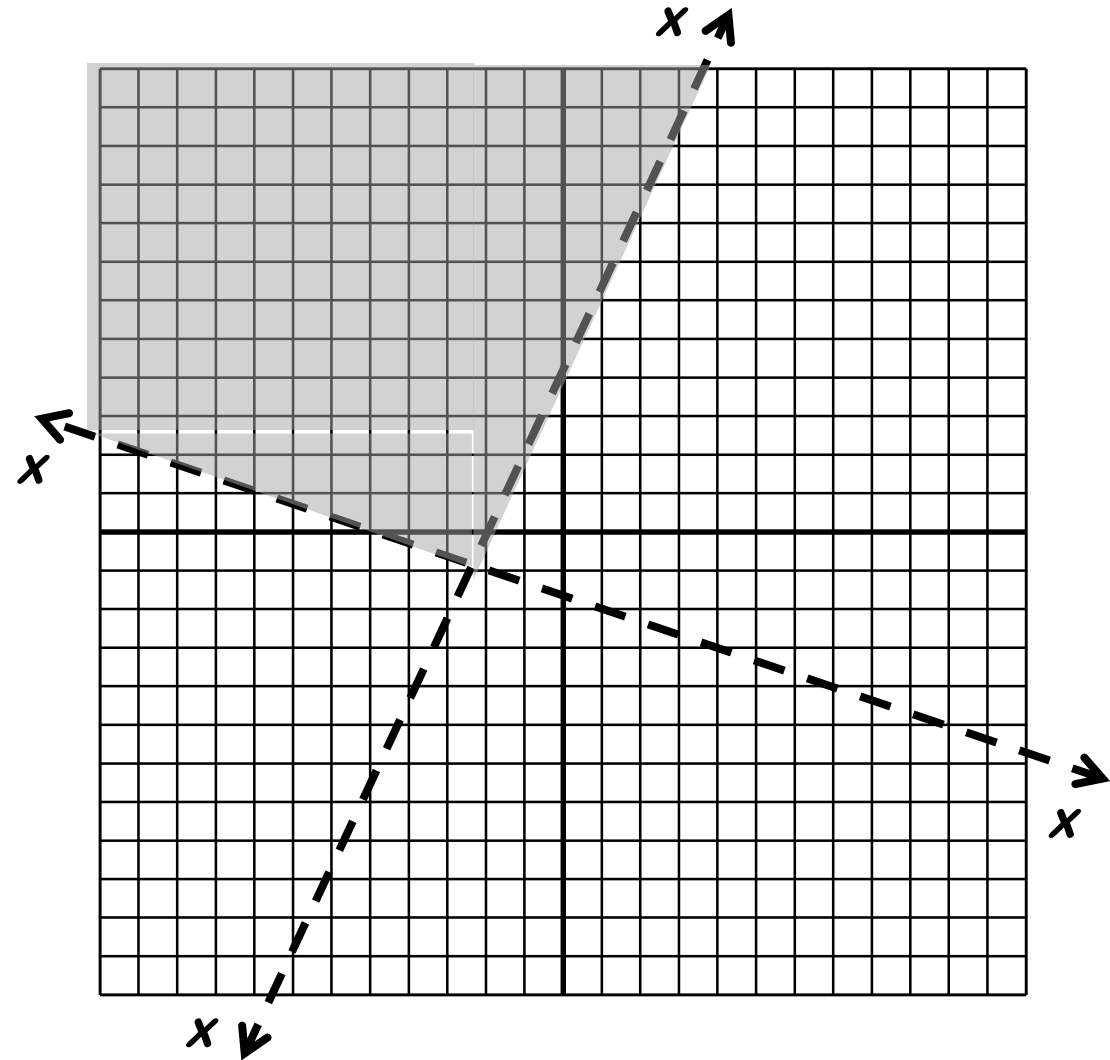**Graph** $2x - y < -4$ **and** $y + 3 > -\frac{1}{3}(x - 4)$.

1. *Graph the 1ˢᵗ line.*

2. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$2(0) - 0 < -4 \qquad 0 < -4 \qquad \textbf{\textit{False}}$$

3. *Put a mark at both arrows the true side.*

4. *Graph the 2ⁿᵈ line.*

5. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$0 + 3 > -\frac{1}{3}(0 - 4) \qquad 3 > \frac{4}{3} \qquad \textbf{\textit{True}}$$

6. *Put a mark at both arrows the true side.*

7. *Shade the area with 2 marks.*

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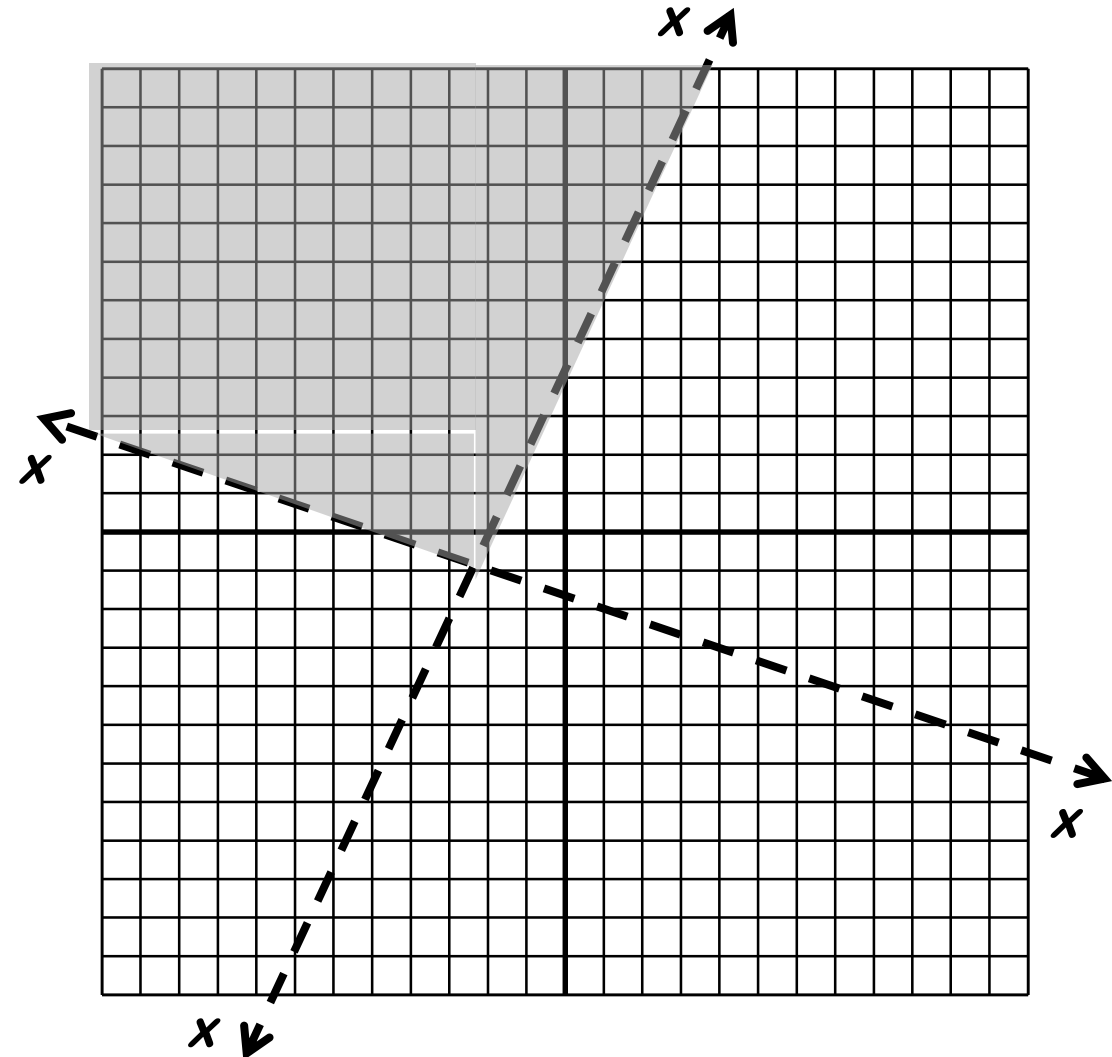**Graph** $2x - y < -4$ **and** $y + 3 > -\frac{1}{3}(x - 4)$.

1. *Graph the 1st line.*

2. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$2(0) - 0 < -4 \qquad 0 < -4 \qquad \textbf{\textit{False}}$$

3. *Put a mark at both arrows the true side.*

4. *Graph the 2nd line.*

5. *Pick a point. (0, 0) is best. Substitute into the inequality to see if it's true or false.*

$$0 + 3 > -\frac{1}{3}(0 - 4) \qquad 3 > \frac{4}{3} \qquad \textbf{\textit{True}}$$

6. *Put a mark at both arrows the true side.*

7. *Shade the area with 2 marks.*

8. *You don't need to erase anything because there are no solid lines.*

Graphing Systems of Inequalities

Assignment:

FLUENCY PRACTICE: Graphing Systems of Linear Inequalities Worksheet