NAME

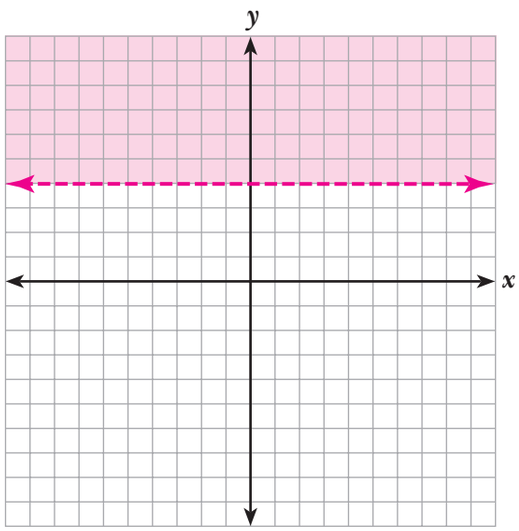
Module 7 Solving Linear Equations and Inequalities of Two Variables

Lesson 3 Graphing Linear Inequalities of Two Variables

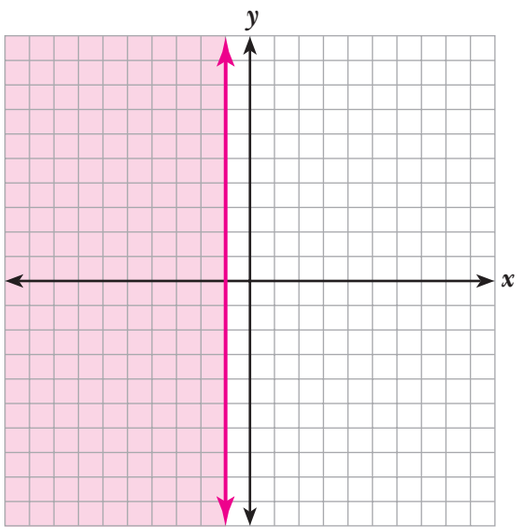
independent practice

Graph each inequality on a coordinate plane.

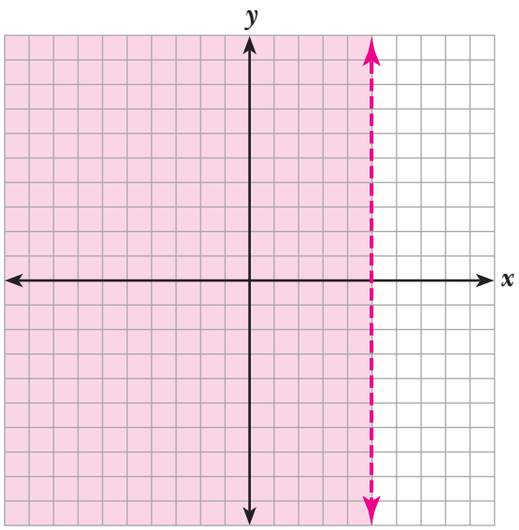
1. $y > 4$



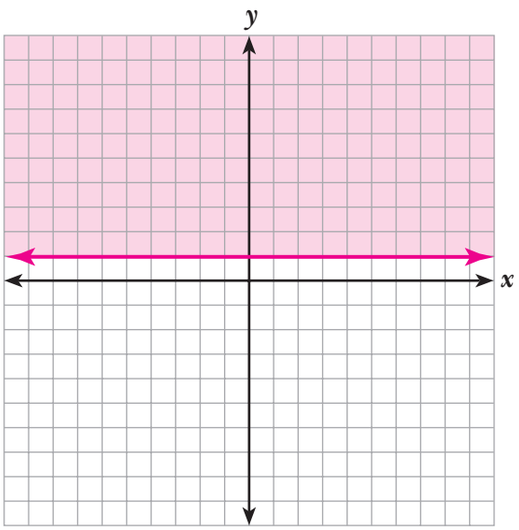
2. $x \leq -1$



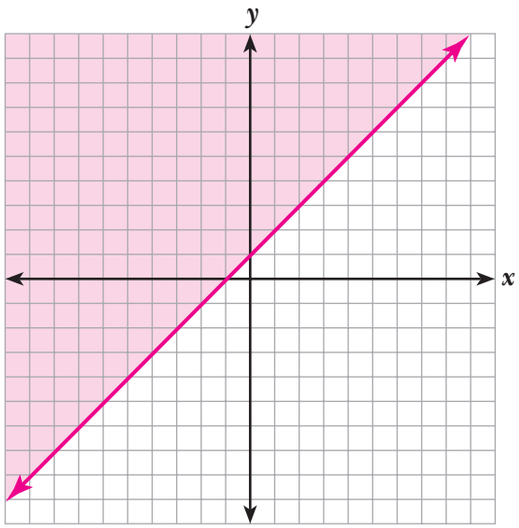
3. $x < 5$



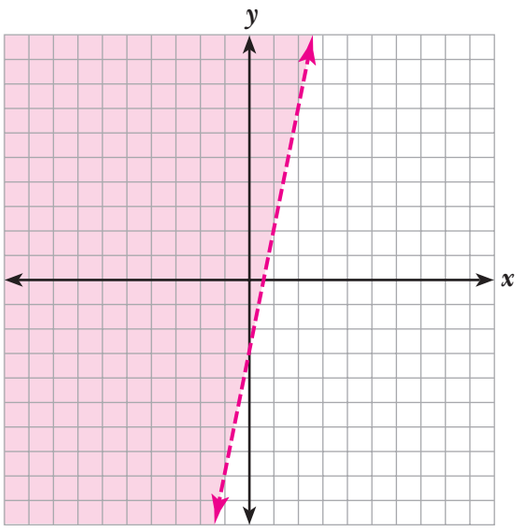
4. $y \geq 1$



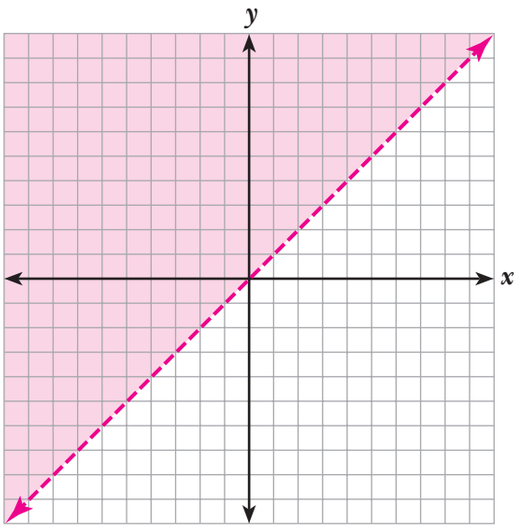
5. $y \geq x + 1$



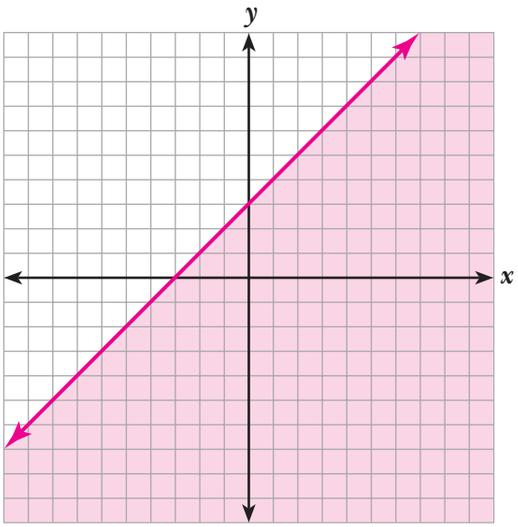
6. $y > 5x - 3$



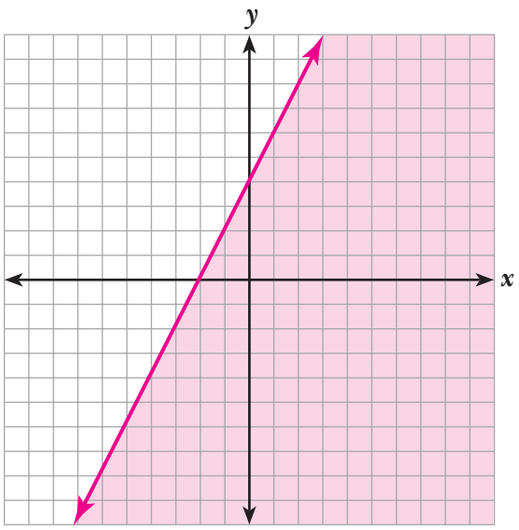
7. $y > x$



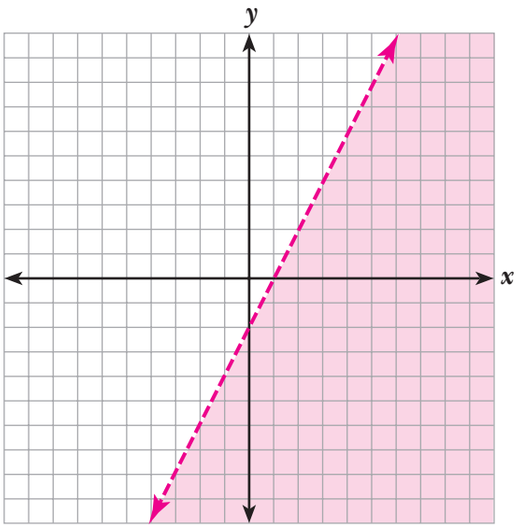
8. $y \leq x + 3$



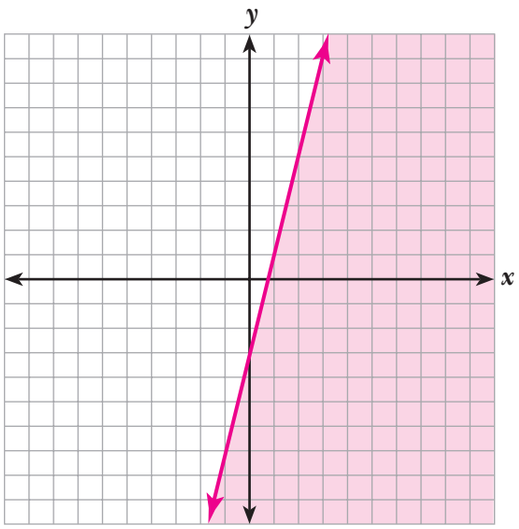
9. $3y \leq 12 + 6x$



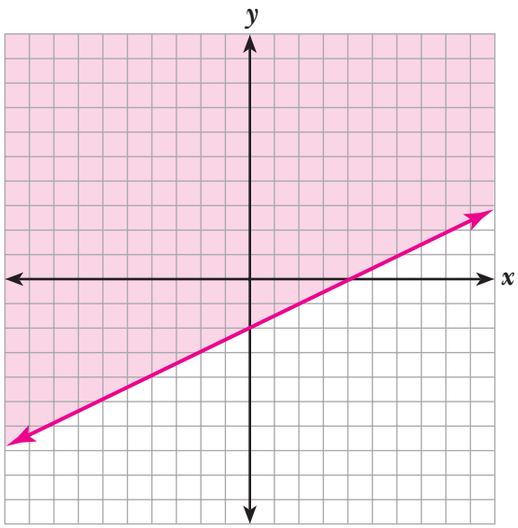
10. $2x > y + 2$



11. $4x \geq y + 3$



12. $x - 4 \leq 2y$



Journal

1. Describe the meanings of the signs $>$, $<$, $\geq$, and $\leq$.
2. How is a closed circle on a number line graph related to a solid line on a coordinate plane graph?
3. Explain in your own words how to determine where to shade when graphing an inequality in a coordinate plane.
4. Compare and contrast the processes used to graph a linear equation and a linear inequality in a coordinate plane.
5. Explain step by step how to graph the inequality $y < 5x$.

Cumulative Review

Solve for *y*.

1. $y + 5 \leq 3$

   $y \leq -2$

2. $6y > 2$

   $y > \frac{1}{3}$

3. $4 < -2y$

   $y < -2$

4. $y - 6 \geq 13$

   $y \geq 19$

5. $x + y > 3$

   $y > -x + 3$

6. $2y < 4x - 8$

   $y < 2x - 4$

7. $y + 13 \leq 4x - 10$

   $y \leq 4x - 23$

8. $-3y > x - 6$

   $y < -\frac{1}{3}x + 2$

9. $4y - 3x < 2y + 3x + 1$

   $y < 3x + \frac{1}{2}$

10. $3y + 8x - 2 \geq 4x - 6 + y$

    $y \geq -2x - 2$

Possible Journal Responses

1. **"$>$" means is greater than. "$<$" means is less than. "$\geq$" means is greater than or equal to. "$\leq$" means is less than or equal to.**
2. **Both a closed circle on a number line graph and a solid line on a coordinate plane graph mean that the point or points represented are part of the solution set.**
3. **After graphing the boundary line, pick a test point. Replace the variables in the original inequality with the coordinates of the test point. If the resulting inequality is true, shade the portion of the coordinate plane on the same side of the line as the test point. If the resulting inequality is false, shade the portion of the coordinate plane on the opposite side of the line from the test point.**
4. **To graph a linear equation in a coordinate plane, plot points that make the equation true and draw a solid line through those points. To graph a linear inequality in a coordinate plane, first replace the inequality symbol with an equal symbol and graph the resulting equation to get the boundary line for the inequality graph. (Use a solid line if the inequality symbol is $\geq$ or $\leq$, and use a dashed line if the inequality symbol is $>$ or $<$.) Next, shade on the side of the boundary line that contains all the points that make the inequality true.**
5. **First, rewrite the inequality as $y < 5x + 0$. The boundary line has the equation $y = 5x + 0$. This line has a slope of 5 and a *y*-intercept of 0. Place a point at the origin. From the origin, count up 5 units and over 1 unit to find a second point. Then, begin again at the origin and count down 5 units and over to the left 1 unit. Draw a dashed line through these 3 points to form a boundary line. Test the point (1, 0). The inequality becomes $0 < 5$. This is a true statement. Shade on the same side of the line as the point (1, 0).**