NAME _____   **DATE** _____

Module 10 Solving Systems of Linear Equations
and Inequalities

Lesson 1 Solving Systems of Linear Equations
by Graphing

**independent
practice**

Determine whether the given point is a solution to the system.

1. (1, 1) $\begin{cases} x = 1 \\ y = 1 \end{cases}$

2. (–2, 1) $\begin{cases} x + y = -1 \\ y = 5x + 11 \end{cases}$

3. (–1, 6) $\begin{cases} x - 2y = -13 \\ y = 2x + 17 \end{cases}$

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4. (4, –2) $\begin{cases} 5x - 4y = 28 \\ y = x - 4 \end{cases}$

5. (5, –1) $\begin{cases} 3x - 2y = 17 \\ 2x + 7y = 3 \end{cases}$

6. (0, 0) $\begin{cases} y = x \\ y = -x \end{cases}$

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7. (–3, 0) $\begin{cases} 7x - 5y = 31 \\ 2x - 3y = 19 \end{cases}$

8. (9, –1) $\begin{cases} y = -3x + 2 \\ y = 3x - 7 \end{cases}$

9. (4, 5) $\begin{cases} 6x - 3y = 9 \\ 11x + 2y = 54 \end{cases}$
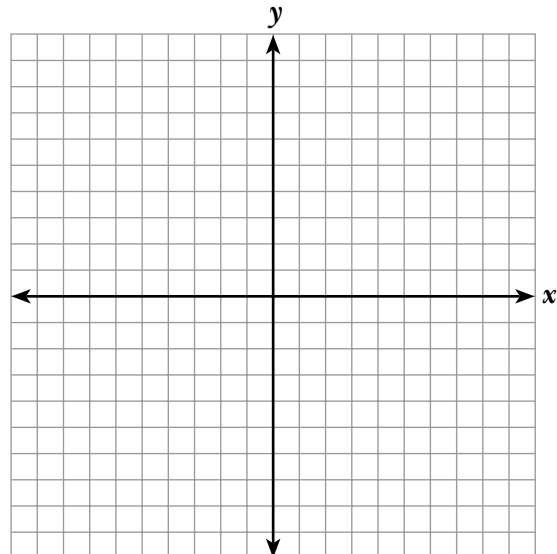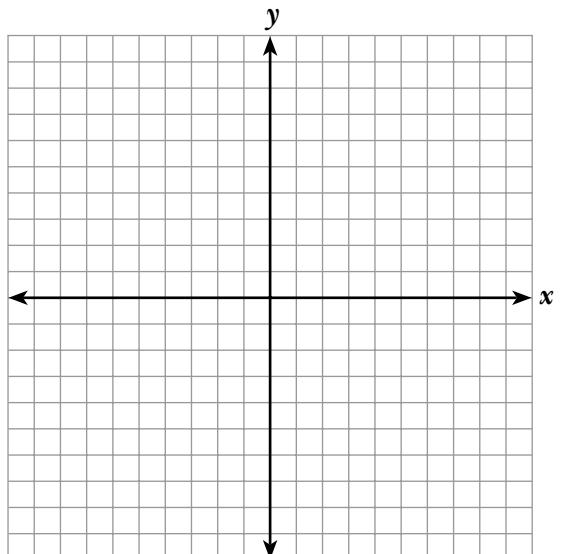
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Solve each system by graphing.

10. $\begin{cases} y = 3 \\ x = -8 \end{cases}$

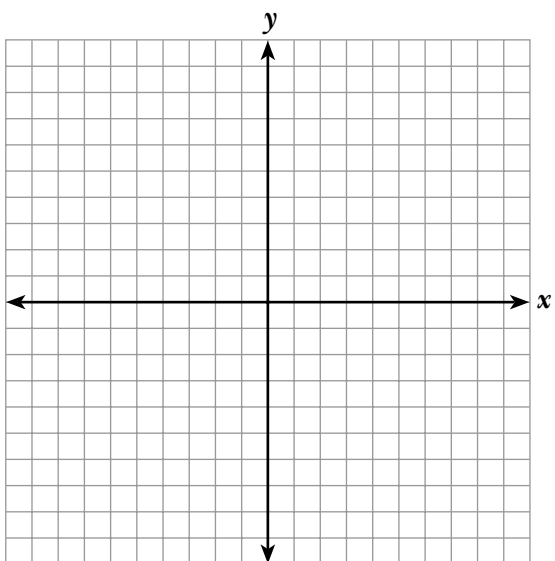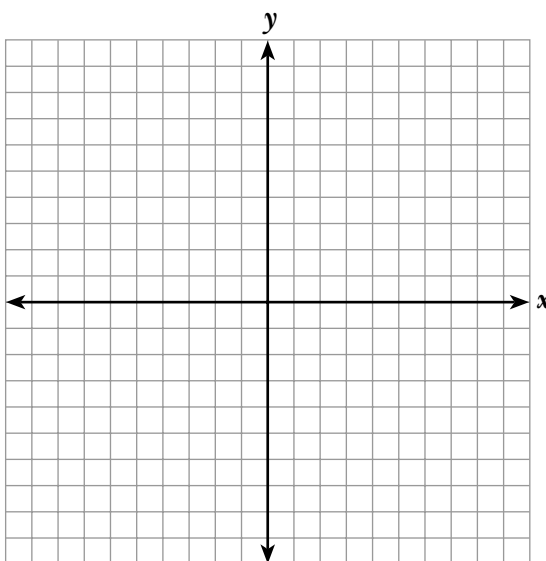**11.** $\begin{cases} y = x - 2 \\ y = \frac{1}{2}x + 1 \end{cases}$
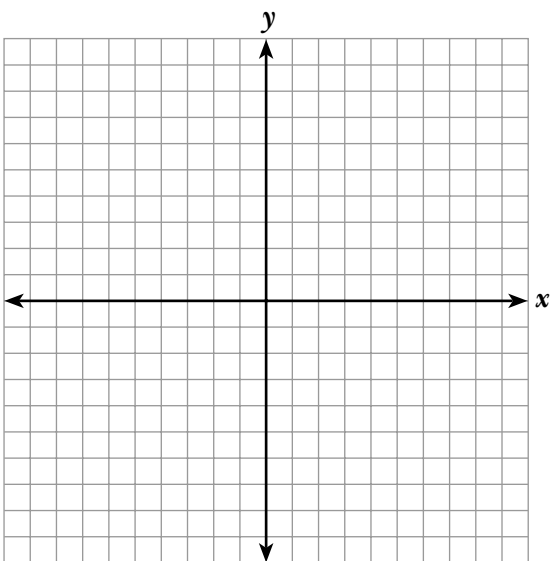
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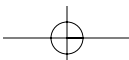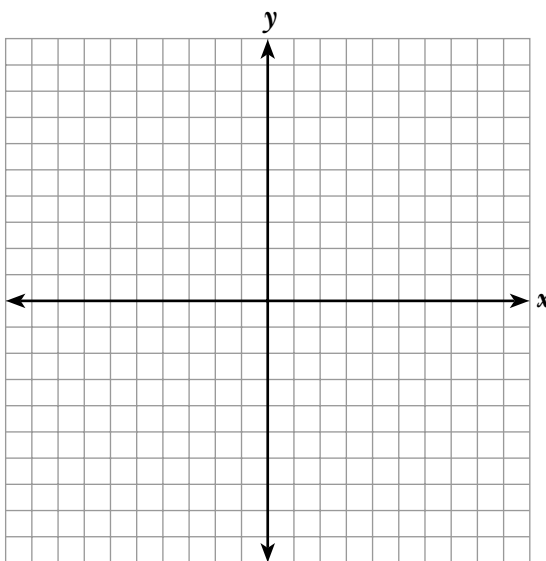**12.** $\begin{cases} x + y = 0 \\ x - y = -14 \end{cases}$

13. $\begin{cases} y = -\frac{1}{3}x - 4 \\ y = -x + 2 \end{cases}$

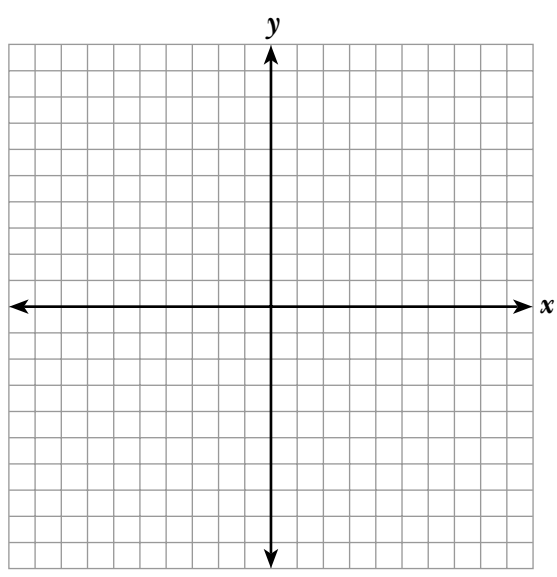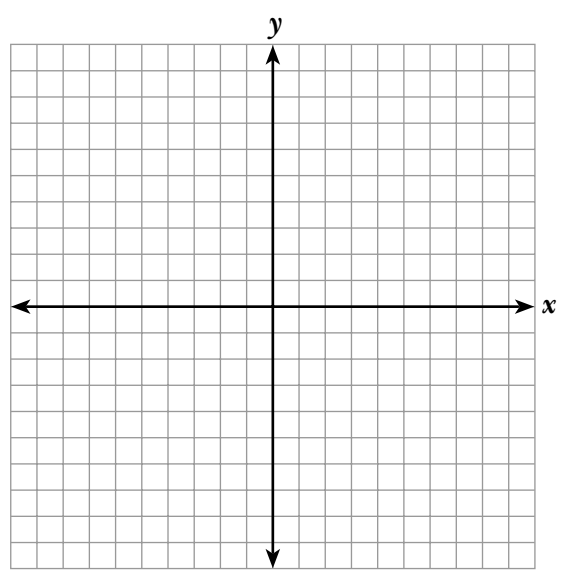**14.** $\begin{cases} 3x + 2y = 4 \\ 6x + 4y = 20 \end{cases}$

15. $\begin{cases} 2y = -3x + 1 \\ y = -\frac{3}{2}x + \frac{1}{2} \end{cases}$

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16. $\begin{cases} y = 2x - 1 \\ 8x - 4y = 4 \end{cases}$

17. $\begin{cases} x - 3y = 12 \\ y = \frac{x}{3} + 3 \end{cases}$

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Journal

1. What are the advantages and disadvantages of using the graphing method to solve systems of equations?
2. Explain when a system of equations has no solution.
3. Is it possible for a system of equations to have *exactly* two solutions? Why or why not?
4. Explain how to graph a line from an equation written in standard form.
5. Patti says the point (2, 3) is the solution to this system of equations $\begin{cases} y = 4x - 5 \\ 12x - 3y = 15 \end{cases}$.

   Daniel said the solution is (–1, –9). Who is correct and why?

Cumulative Review

Solve each equation for the indicated variable.

1. $3x + 2y = 6$; y

2. $2x - 5y = 30$; y

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3. $P = 2l + 2w$; l

4. $t + 3r = 6$; r

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5. $C = \pi d$; d

6. $4c + 2b = 10$; c

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7. $\frac{3}{2} + 4y = 9$; y

8. $A = lw$; w

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**9.** $A = \frac{1}{2}(b_1 + b_2)h$; b_2

10. $A = \frac{1}{2}bh$; b

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Calculator Problems

Solve $\begin{cases} y = x + 4 \\ y = -x + 3 \end{cases}$

To solve a system of equations with a graphing calculator:
1. Enter the functions into $\mathbf{Y_1}=$ and $\mathbf{Y_2}=$.
2. From the CALC menu, select **5:INTERSECT.** The graphs of $\mathbf{Y_1}$ and $\mathbf{Y_2}$ are displayed with **First curve?** In the bottom-left corner.
3. Press ENTER. **Second curve?** is displayed in the bottom-left corner.
4. Press ENTER. **Guess?** is displayed in the bottom-left corner.
5. Press the right or left arrow keys to move the cursor to the point that is your guess as the point of intersection.
6. Press ENTER. The cursor is on the solution. **Intersection** and the x- and y-coordinates of the intersection is displayed in the bottom-left corner.

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Plot1 Plot2 Plot3
\Y1◘X+4
\Y2◘-X+3
\Y3=
\Y4=
\Y5=
\Y6=
\Y7=
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Intersection
X=-.5        Y=3.5
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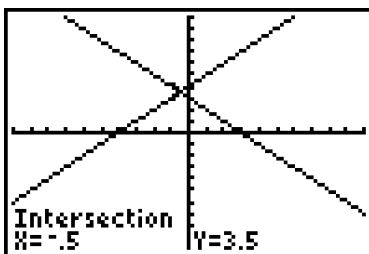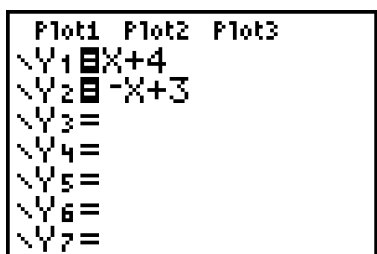
Solve.

1. $\begin{cases} y = x + 1 \\ y = -2x \end{cases}$

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

3. $\begin{cases} y = 2x + 1 \\ y = -3x - 5 \end{cases}$

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4. $\begin{cases} y = 9 - 2x \\ y = \frac{1}{3}x - 5 \end{cases}$

5. $\begin{cases} y = x + 4 \\ y = 9x \end{cases}$

6. $\begin{cases} x = y + 7 \\ y = 5 - x \end{cases}$

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