NAME

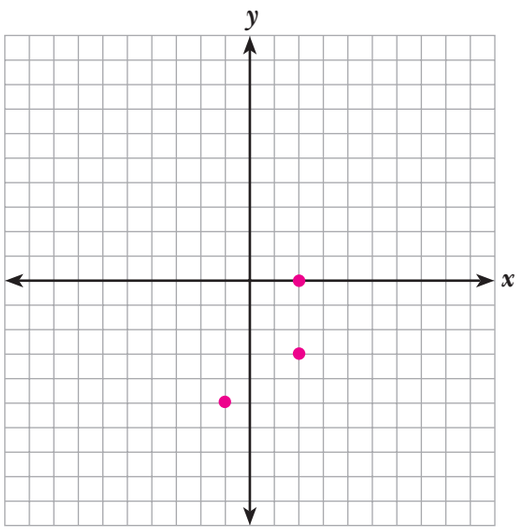
Module 7 Solving Linear Equations and Inequalities of Two Variables

Lesson 1 Defining Linear Equations of Two Variables and Their Solutions

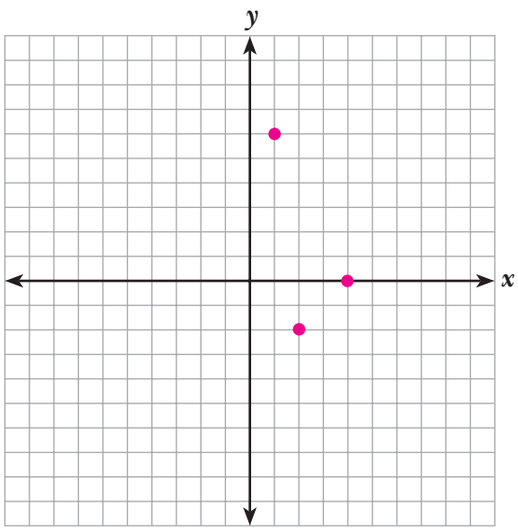
independent practice

Graph the following ordered pairs.

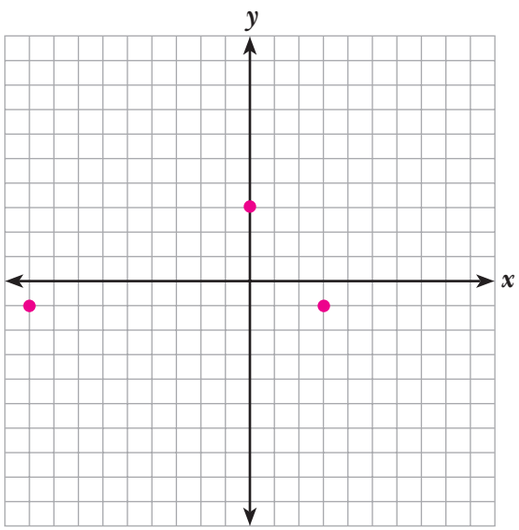
1. (2, 0), (–1, –5), (2, –3)



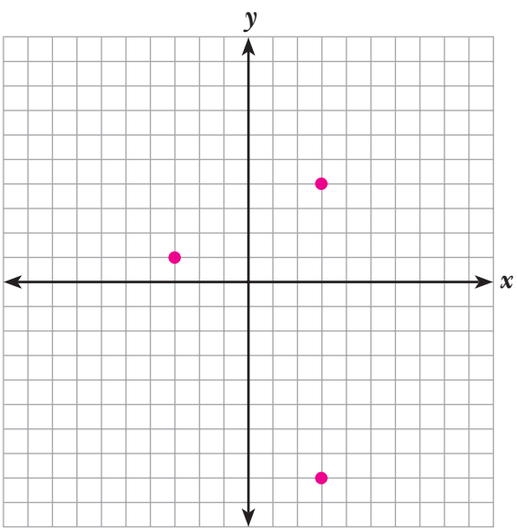
2. (1, 6), (2, –2), (4, 0)



3. (0, 3), (–9, –1), (3, –1)

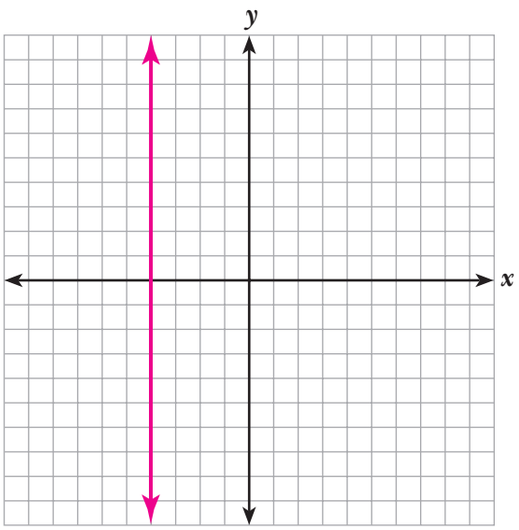


4. (–3, 1), (3, 4), (3, –8)

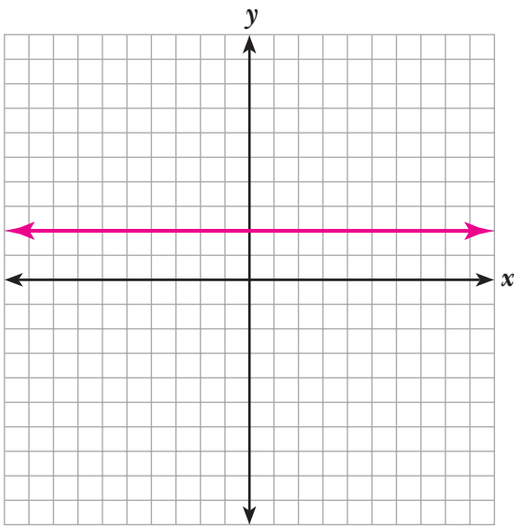


Graph the following equations.

5. $x = -4$



6. $y = 2$



Find the solution to each equation for the given value of the variable.

7. $4x + 2y = 22$ when $x = 2$

(2, 7)

8. $y - 3x = 14$ when $y = 2$

(–4, 2)

9. $2x + 8y = 2$ when $y = -3$

(13, –3)

10. $3x - y = -1$ when $x = -2$

(–2, –5)

Find three solutions to each of the following linear equations. **Possible answers are given.**

11. $6x - y = 6$

(0, –6), (1, 0), (2, 6)

12. $y - 3x = 1$

(0, 1), (2, 7), (1, 4)

13. $x + y = 10$

(0, 10), (10, 0), (3, 7)

14. $3x - 5y = 15$

(0, –3), (5, 0), (10, 3)

15. $y - 2x = -4$

(0, –4), (2, 0), (1, –2)

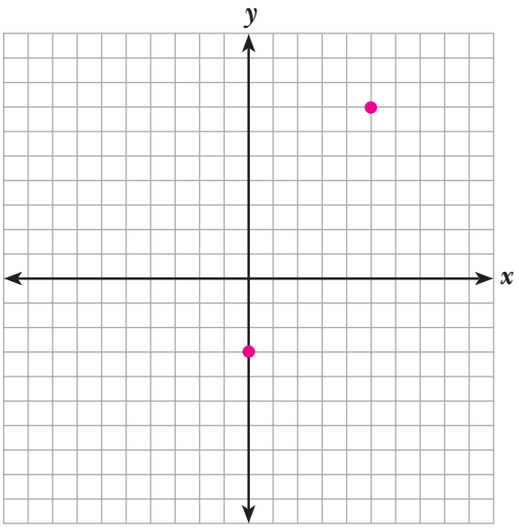
16. $5x + 5y = 15$

(0, 3), (3, 0), (4, –1)

Find the solutions to the equations for the given value of the variables. Then graph those solutions.

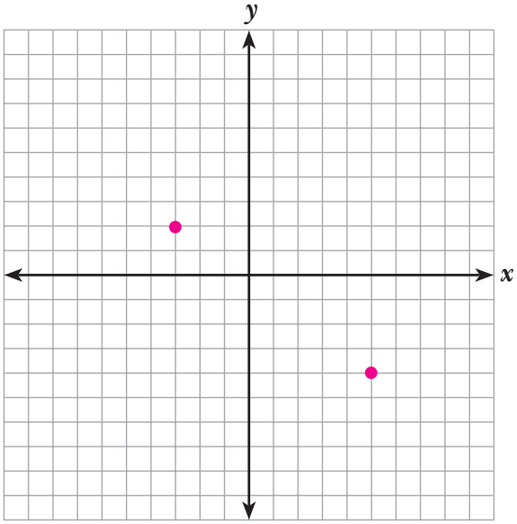
17. $2x - y = 3$
when $y = -3$ and when $x = 5$

(0, –3) and (5, 7)



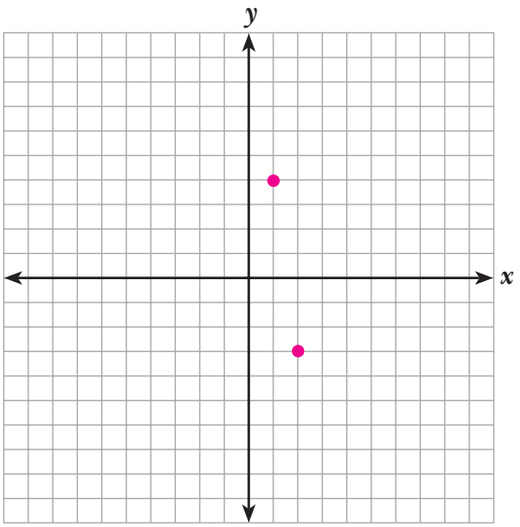
18. $4y + 3x = -1$
when $x = 5$ and when $y = 2$

(5, –4) and (–3, 2)



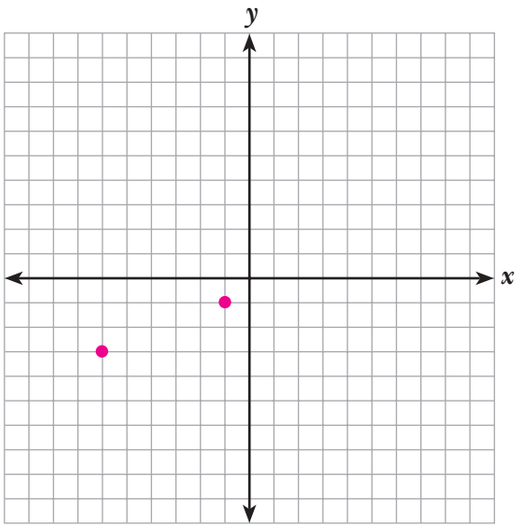
19. $7x + y = 11$
when $x = 1$ and when $y = -3$

(1, 4) and (2, –3)



20. $2x - 5y = 3$
when $y = -3$ and when $x = -1$

(–6, –3) and (–1, –1)



Journal

1. Explain how a letter-number can be used to find a location on a map.
2. Explain why a linear equation of two variables has an infinite number of solutions.
3. Explain how to graph the point $\left(-2\frac{1}{3}, 5\frac{5}{6}\right)$.
4. Explain how to graph the solution set of the equation $x + y = 8$.
5. Explain why the graph of the equation $y = -4$ is a horizontal line.

Cumulative Review

Solve for *x*.

1. $x^2 = 4$

   $x = \pm 2$

2. $x^2 + 3 = 4$

   $x = \pm 1$

3. $x^3 - 4 = 4$

   $x = 2$

4. $x + 4 = 13x$

   $x = \frac{1}{3}$

5. $x^2 + 30 = 2x^2 + 5$

   $x = \pm 5$

6. $2^2 - x^3 = -23$

   $x = 3$

7. $14 + 4x = 22$

   $x = 2$

8. $\sqrt[3]{x} = 5$

   $x = 125$

9. $x^4 - 7 = -6$

   $x = \pm 1$

10. $x + 4 = 4x - 11$

    $x = 5$

Possible Journal Responses

1. Many maps have letters of the alphabet listed on the side and numbers written across the top or bottom. Any location can be found, given the correct letter-number pair. For instance, to find the location described by (E, 4), find the row indicated by E and the column indicated by four. The rectangle contained in that row and that column contains the desired location.
2. There are an infinite number of different values that can be substituted for either variable in a linear equation. For each different value that is substituted, a different ordered pair solution is obtained.
3. Begin at the origin. Trace two and one-third units to the left. Then trace five and five-sixths units up. Plot the point.
4. One way to graph the solution set of the equation $x + y = 8$ is to let x equal zero and solve the equation for y to get the point (0, 8). Then, let y equal zero, and solve for x to get the point (8, 0). Another point can be found by letting x equal 4. Solve the equation for y to get the point (4, 4). Plot the 3 points. The line that passes through these points represents the solution set of the equation.
5. All points that satisfy the equation $y = -4$ are four units below the x-axis. When these points are connected, they form a horizontal line.