Lesson 5.4  Solving Systems of Linear Equations by Graphing

For this practice, unless otherwise stated, use 1 grid square to represent 1 unit on both axes for the interval −8 to 8. Solve each system of linear equations using the graphical method.

1. a) Complete the tables of values for the system of linear equations.
   \[ x - y = 1 \quad \text{and} \quad x + 2y = 4 \]

   \[
   \begin{array}{ccc}
   x & 0 & 1 & 2 \\
   y & -1 &  &  \\
   \end{array}
   \quad \begin{array}{ccc}
   x & 0 & 1 & 2 \\
   y & 2 &  &  \\
   \end{array}
   \]

   b) Graph \( x - y = 1 \) and \( x + 2y = 4 \) on the same coordinate plane. Find the point of intersection.

   c) Use the graph in b) to solve the system of linear equations.
For this practice, unless otherwise stated, use 1 grid square to represent 1 unit on both axes for the interval \(-8\) to \(8\). Solve each system of linear equations using the graphical method.

2. a) Graph \(3x - 5y = 4\) and \(x + 2y = 5\) on the same coordinate plane. Find the point of intersection of the graphs.

b) Use the graph in a) to solve the system of linear equations.

3. a) Graph \(x - 3y = 5\) and \(3x + 2y = 4\) on the same coordinate plane. Find the point of intersection of the graphs.

b) Use the graph in a) to solve the system of linear equations.
Solve each system of equations using the graphical method.

4. \[ x = 5y \quad y = x - 4 \]

5. \[ y = 6 \quad y = 4x + 4 \]

6. \[ x = 4 \quad y = 3x - 5 \]

7. \[ 2y = -x + 7 \quad y = 2x + 1 \]

8. \[ x + 2y = -1 \quad 4x + y = 3 \]

9. \[ 5y - x = 15 \quad x - 3y = -9 \]
Solve. Show your work.

10. Two different vendors rent their campgrounds to various schools for retreat programs. The rental charges consist of a fixed cost. The variable cost depends on the number of campers. The charges by each vendor is represented by \( C = 120 + 5n \) and \( C = 90 + 7n \) where \( C \) is the cost, in dollars, and \( n \) is the number of campers.

a)  Solve the system of linear equations using your graphing calculator.

b)  For how many campers will the cost of the rental charge be the same for each vendor?

11. Two vehicles are moving along a straight road in the same direction. Their motions are described by the linear equations \( d = 5t + 45 \) and \( d = 15t + 25 \), where \( t \) hours is the time and \( d \) miles is the distance.

a)  Solve the system of linear equations using your graphing calculator.

b)  When will the two vehicles meet?

12. Weights are attached to two different springs. The length of stretch and the amount of weight attached to the spring are described by the linear equations \( L = 3w + 7 \) and \( L = 5w + 3 \), where \( L \) inches is the length of the spring stretched and \( w \) pounds is the weight attached to the spring.

a)  Solve the system of linear equations using your graphing calculator.

b)  For which weight amounts will the springs stretch the same number of inches?