

Examples 1–2 Use elimination to solve each system of equations.

$$\begin{aligned} 7. \quad x + y &= 2 \\ -3x + 4y &= 15 \end{aligned}$$

$$\begin{aligned} 9. \quad x + 5y &= 17 \\ -4x + 3y &= 24 \end{aligned}$$

$$\begin{aligned} 11. \quad 2x + 5y &= 11 \\ 4x + 3y &= 1 \end{aligned}$$

$$\begin{aligned} 13. \quad 3x + 4y &= 29 \\ 6x + 5y &= 43 \end{aligned}$$

$$\begin{aligned} 15. \quad 8x + 3y &= -7 \\ 7x + 2y &= -3 \end{aligned}$$

$$\begin{aligned} 17. \quad 12x - 3y &= -3 \\ 6x + y &= 1 \end{aligned}$$

$$\begin{aligned} 8. \quad x - y &= -8 \\ 7x + 5y &= 16 \end{aligned}$$

$$\begin{aligned} 10. \quad 6x + y &= -39 \\ 3x + 2y &= -15 \end{aligned}$$

$$\begin{aligned} 12. \quad 3x - 3y &= -6 \\ -5x + 6y &= 12 \end{aligned}$$

$$\begin{aligned} 14. \quad 8x + 3y &= 4 \\ -7x + 5y &= -34 \end{aligned}$$

$$\begin{aligned} 16. \quad 4x + 7y &= -80 \\ 3x + 5y &= -58 \end{aligned}$$

$$\begin{aligned} 18. \quad -4x + 2y &= 0 \\ 10x + 3y &= 8 \end{aligned}$$

Example 3

19. NUMBER THEORY Seven times a number plus three times another number equals negative one. The sum of the two numbers is negative three. What are the numbers?

20. FOOTBALL A field goal is 3 points and the extra point after a touchdown is 1 point. In a recent post-season, Adam Vinatieri of the Indianapolis Colts made a total of 21 field goals and extra point kicks for 49 points. Find the number of field goals and extra points that he made.

Use elimination to solve each system of equations.

$$\begin{aligned} 21. \quad 2.2x + 3y &= 15.25 \\ 4.6x + 2.1y &= 18.325 \end{aligned}$$

$$\begin{aligned} 23. \quad \frac{1}{4}x + 4y &= 2\frac{3}{4} \\ 3x + \frac{1}{2}y &= 9\frac{1}{4} \end{aligned}$$

$$\begin{aligned} 22. \quad -0.4x + 0.25y &= -2.175 \\ 2x + y &= 7.5 \end{aligned}$$

$$\begin{aligned} 24. \quad \frac{2}{5}x + 6y &= 24\frac{1}{5} \\ 3x + \frac{1}{2}y &= 3\frac{1}{2} \end{aligned}$$

25. CCSS MODELING A staffing agency for in-home nurses and support staff places necessary personnel at locations on a daily basis. Each placed nurse works 240 minutes per day at a daily rate of \$90. Each support staff employee works 360 minutes per day at a daily rate of \$120.

- On a given day, 3000 total minutes are worked by the nurses and support staff that were placed. Write an equation that represents this relationship.
- On the same day, earnings for placed nurses and support staff totaled \$1050. Write an equation that represents this relationship.
- Solve the system of equations, and interpret the solution in the context of the situation.

26. GEOMETRY The graphs of $x + 2y = 6$ and $2x + y = 9$ contain two of the sides of a triangle. A vertex of the triangle is at the intersection of the graphs.

- What are the coordinates of the vertex?
- Draw the graph of the two lines. Identify the vertex of the triangle.
- The line that forms the third side of the triangle is the line $x - y = -3$. Draw this line on the previous graph.
- Name the other two vertices of the triangle.

