

### **6.3 Solving Systems of Linear Equations by Elimination**

#### **Elimination Method:**

**Ex. Solve**       $6x = 24 - 5y$   
                      $3y + 4x = 12$

- Rearrange the equations so that like variables appear in the same position in both equations. The most common form is  $ax + by = c$ .
- Determine which variable to eliminate. If necessary, multiply one or both equations by a constant to eliminate the variable by addition or subtraction.
- Solve for the remaining variable.
- Solve for the second variable by substituting the value for the first variable into one of the original equations.
- Verify your answer by substituting each value into both original equations.

**Ex. Solve**       $3a - 5b = -9$   
                      $4a + 5b = 23$

**Ex. Solve**       $y = 4x + 11$   
                      $x - y = 1$

**Ex.** Connor downloaded two orders of games and songs. The first order consisted of five games and four songs for \$26. The second order consisted of three games and two songs for \$15. All games cost the same amount and all songs cost the same amount. Write a system of linear equations. Then, determine the cost of one song and the cost of one game.

**Ex.** The perimeter of a rectangular garden is 17 m. Triple the length is 2.46 m longer than five times the width. Sketch and label a diagram. Create a system of linear equations to determine the dimensions of the rectangle. Solve the system using elimination.