

# Algebra I

## Notes Section 2.5

### Solve Equations with Variables on Both Sides

#### Big Ideas

1. How to rewrite an equation so that  $y$  is a function of  $x$ .
2. How to rewrite an equation so that  $y$  is isolated on one side of the equation.
3. For all literal equations, how to solve for the given variable by using properties of equality and inverse operations.

#### EXAMPLE 1 Solve.

a)  $7 - 8x = 4x - 17$

b)  $2m - 6 + 4m = 12$

c)  $9 - 3k = 17 - 2k$

#### EXAMPLE 2 Solve.

a)  $5z - 2 = 2(3z - 4)$

b)  $3 - 4a = 5(a - 3)$

c)  $9x - 5 = \frac{1}{4}(16x + 60)$

d)  $8y - 6 = \frac{2}{3}(6y + 15)$

**EXAMPLE 3** A car dealership sold 78 new cars and 67 used cars this year. The number of new cars sold by the dealership has been increasing by 6 cars each year. The number of used cars sold by the dealership has been decreasing by 4 cars each year. **If these trends continue, in how many years will the number of new cars sold be twice the number of used cars sold?**

**New Cars Sold this year** + **Increase in New Cars** = **2** **Used Cars Sold this year** + **Decrease in Used Cars**

**EXAMPLE 4** Solve the equation, if possible.

a)  $3x = 3(x + 4)$

b)  $2x + 10 = 2(x + 5)$

c)  $7w + 1 = 8w + 1$