

Algebra 1

Chapter 2
Section 2-4

Equations with Variables on Both Sides

$$6x = 4x + 6$$

$$3x - 7 = 2x + 1$$

$$17x - 10 = 11x + 2$$

$$14x - 9 = 11x - 3$$

School Lunch Problem

TJ has a lunch balance of \$68 and JT has a balance of \$44. TJ eats school lunch three times a week and JT eats school lunch twice a week. If each lunch costs \$4, how many weeks will it take for their balances to be equal?

$$68 - 3(4x) = 44 - 2(4x)$$

$$68 - 12x = 44 - 8x$$

$$24 = 4x$$

$$6 = x$$

Identities

An identity is an algebraic equation that is true for all values of the variables. (Each side is *identical*)

$$7(x-3) = 7x - 21$$

$$4(x+1) - 2 = 4x + 2$$

$$13x + (x - 2) = 16x - 2(x + 1)$$

Equations with No Solution

$$7x - 3 = x + (6x + 3)$$

$$7x - 3 = 7x + 3$$

$$-3 = 3$$

$$10n - 1 = 5(2n + 2)$$

$$10n - 1 = 10n + 10$$

$$-1 = 10$$

$$xy = xy + 2$$

$$0 = 2$$

**ALL THREE
EQUATIONS
HAVE NO
SOLUTION**

Steps for Solving Equations

- Step 1** Use the Distributive Property to remove any grouping symbols. Use properties of equality to clear decimals and fractions.
- Step 2** Combine like terms on each side of the equation.
- Step 3** Use the properties of equality to get the variable terms on one side of the equation and the constants on the other.
- Step 4** Use the properties of equality to solve for the variable.
- Step 5** Check your solution in the original equation.