Section 5.4 Systems of Linear Equations and Problem Solving

# Objective 1: Using Systems of Two Equations for Problem Solving

Applied problems sometimes involve two or more unknown quantities. Sometimes we are able to use a single equation involving one variable to solve problems. However, it is often easier to use two variables and create a system of two equations.

**Five Step Strategy for Solving Applied Problems Using Systems of Equations**

**Step 1:** Read the problem. If possible, create a diagram.

**Step 2:** Choose variables that describe each unknown quantity that is to be found.

**Step 3**: Write a system of equations using the given information and the variables.

**Step 4**: Solve the system of equations using the method of elimination or

substitution.

**Step 5**: Use the solution to answer the problem. Check to make sure the answers make

sense.

a. Find the measures of two complementary angles if the measure of one angle is more than three times the measure of the other angle.

b. A jar contains coins each of which is either a quarter or a nickel. The total value of the coins in the jar is . How many quarters and how many nickels are in the jar?

c. The flight path between two cities is a distance of miles. On a particular round trip, a plane flew into the wind from one city to the other, and the trip took hours. The return trip with the wind behind them took hours. Find the speed of the wind and the speed of the plane in still air.

d. A chemist needs to prepare ounces of an hydrochloric acid solution. Find the amount of solution and the amount of solution the chemist should mix to get this solution.