Unit 10.4 Practical Applications of Quadratic Equations

1. Write a quadratic equation for each of the following problems. Then solve the equation

   a. One number is eight more than another. Their product is -16. What are the numbers?

   b. If the square of a positive integer is added to three times the integer, the result is 28. Find the integer.

   c. One number is five less than another. The sum of their squares is 97. Find the numbers.

   d. The width of a rectangle is 4 feet less than the length. The area is 117 square feet. Find the length and width of the rectangle.

   e. The base of a triangle is 15 inches greater than the height. If the area is 63 square inches, find the length of the base.

f. A telephone pole is to have a guy wire attached to its top and anchored to the ground at a point that is at a distance 34 feet less than the height of the pole from the base. If the wire is to be 2 feet longer than the height of the pole, what is the height of the pole?

g. The parking garage at Baltimore-Washington International Airport contains 8400 parking spaces. The number of cars that can be parked on each floor exceeds the number of floors by 1675. How many floors are there in the parking garage?

h. A Christmas tree is supported by a wire that is 1 foot longer than the height of the tree. The wire is anchored at a point whose distance from the base of the tree is 49 feet shorter than the height of the tree. What is the height of the tree?

i. You are planning on putting in a rectangular pool on your patio. The width of the pool is 4 ft less than the length. The total area is 117 square feet. Find the length and width of the pool.

j. The product of the ages of Sally and Joe is 175 more than the product of their ages 5 years prior. If Sally is 20 years older than Joe, what are their current ages?