Solving Quadratic Word Problems

1. The product of two consecutive even integers is 48. Find all sets of these integers that satisfy this description.

2. A square is altered so that one dimension is increased by 4, while the other dimension is decreased by 2. The area of the resulting rectangle is 55. Find the area of the original square.

3. In a right triangle, the length of the longer leg is 7 more inches than the shorter leg. The length of the hypotenuse is 8 more inches than the length of the shorter leg.

(a) If the shortest leg is represented by x, write expressions for the longer leg and the hypotenuse in terms of x.

(b) Write the equation using the Pythagorean Theorem that related the three sides together and solve it for the value of x.

(c) Find all three sides, and check your answer by verifying that a2 + b2 = c2.