Name: Date: Period:

Use your knowledge of the Pythagorean Theorem and Quadratic Equations to solve the following. Show your work on a separate piece of paper.

1. In triangle ABC, m>C = 90, AC = x, BC = (x + 2) and AB = (x + 3).
    a) Write an equation in terms of x which can be used to find AC.
    b) Express the equation in part a in standard quadratic form

2. In right triangle ABC, AC = x, BC = x + 1, and hypotenuse AB = 2x – 1. Find the length of AC. [Only an algebraic solution will be accepted]

3. The length of the hypotenuse of a right triangle is 10. The length of the longer leg exceeds the length of the shorter leg by 2. Find the length of the shorter leg. [Only an algebraic solution will be accepted]

4. The hypotenuse of a right triangle is represented by 3x + 4. One leg is represented by x and the other leg is 24.
    a) Find x

    b) Find the hypotenuse

5. The length of the hypotenuse of a right triangle is 13. The length of the shorter leg is seven less than the length of the longer leg. Find the length of the longer leg. [Only an algebraic solution will be accepted]

6. The length of the hypotenuse of a right triangle is 15. If the longer leg is three more than the shorter leg, find the shorter leg. [Only an algebraic solution will be accepted]

7. The hypotenuse of a right triangle is 5 and the legs are represented by x and x + 1.
    a) Find x

    b) Find the perimeter of the triangle

    c) Find the area of the triangle

8. In rectangle ABCD, the two adjacent sides are represented by x and x + 5 as shown in the diagram. If diagonal AC = 25, find:
    a) The value of x

    b) The area of rectangle ABCD