SECTION 4.7: QUADRATIC EQUATIONS AND PROBLEM SOLVING

Translate each statement to an equation. Then use the equation to solve the problem. *See Example 2, p. 303.*

1) The sum of a number and its square is twenty. Find the numbers.

1) _____

2) A number is twelve less than its square. Find all such numbers.

2) _____

3) When fifteen is added to the square of a number the result is eight times the same number. Find all such numbers.

3) _____

4) Thirty subtracted from the square of a number is thirteen times the same number. Find all such numbers.

4) _____

5) Twice the square of a number is the same as eight times the same number. Find the numbers.

5) _____

6) Six less than four times the square of a number is ten. Find the numbers.

6) _____

Represent each given condition using a single variable *x*. *See Example 3, p. 303.*

7) The length and width of a rectangle whose length is ten times its width.

7) _____

8) The base and height of a triangle whose height is three less than twice its base.

8) _____

Solve each problem. *See Example 3, p. 303.*

9) The area of a rectangular garden is 65 square meters. The length is 8 meters more than the width. Find the length and the width.

9) _____

10) The length of a rectangle is three feet more than twice the width. The area of the rectangle is 9 square feet. Find the length and the width.

10) _____

11) When the sides of a square are increased by 3 feet, the area becomes 25 square feet. Find the length of the side of the original square.

11) _____

12) The height of a triangular banner sign is 3 yards longer than the base. The area of the banner is 14 square yards. Find the base and the height.

12) _____

Answers:

1) -5, 4; 2) -3, 4; 3) 3, 5; 4) -2, 15; 5) 0, 4; 6) -2, 2; 7) width = x; length = $10x$; 8) base = x; height = $2x - 3$; 9) 5 meters and 13 meters; 10) 1.5 feet and 6 feet; 11) 2 feet; 12) 4 yards and7 yards.