

Name \_\_\_\_\_ Period \_\_\_\_\_

### 3.1 Enrichment: Solving Quadratic Equations

**Complete on a separate sheet of paper. Use square roots or factoring to solve. You must show the equation and all work.**

1. The hypotenuse of a right triangle is 4 times one of the legs. The other leg is  $3\sqrt{15}$  units. Find the length of the hypotenuse.
2. One leg of a right triangle exceeds the other leg by 4 inches. The hypotenuse is 20 inches. Find the length of the longer leg.
3. When a number is added to its square, the result is 6. What is the number?
4. The length of a rectangle is 8 units greater than its width. Find the dimensions when its area is 105 square units.
5. The difference of two numbers is 2 and their product is 224. What are the numbers?
6. The product of two consecutive integers is 72. Find the integers.
7. The product of two consecutive even integers is 528. Find the value of each integer.
8. The sum of two numbers is 25 and the sum of their squares is 337. Find the numbers.
9. In 10 years from now, my age will be the square of my age 10 years ago. How old am I?
10. The dimensions of a rectangle were originally 10 units by 12 units. The area of the rectangle increased by 135 square units, and the dimensions were increased by the same amount. Find the dimensions of the new rectangle.
11. A rectangular pool has a sidewalk around it. The pool measures 6 feet by 10 feet and the total area of the pool and sidewalk is 96 square feet. What is the width of the sidewalk?
12. A rectangular swimming pool is twice as long as it is wide. A small concrete sidewalk surrounds the pool. The sidewalk is a constant 2 feet wide. The total area of the pool and sidewalk is 160 square feet. Find the dimensions of the pool.
13. The area of a rectangle is 250 square inches. The length is 5 more than twice the width. Find the length of the rectangle.
14. The area of a triangle is 80 square centimeters. The base is 4 less than twice the height. What is the height of the triangle?

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