

Quadratic Word Problems

1. Find the largest possible three consecutive integers such that the product of the first and the second is equal to the product of -6 and the third.
2. The length of a rectangle is 3 inches more than its width. If the length of the diagonal is 15 inches, find the dimensions of the rectangle.
3. The width of a rectangle is 16 feet less than 3 times the length. If the area is 35 square feet, find the dimensions of the rectangle.
4. The product of two consecutive positive odd integers is 1 less than four times their sum. Find the two integers.
5. When the dimensions of a cube are reduced by 4 in on each side, the surface area of the new cube is 864 square inches. What were the dimensions of the original cube?
6. A rectangular lawn measuring 8 m by 5 m is surrounded by a flower bed of uniform width. The combined area of the lawn and the flower bed is 154 m^2 . What is the width of the flower bed?
7. A model rocket is launched from the roof of a building. Its flight path is modeled by $h = -5t^2 + 30t + 10$ where h is the height of the rocket above the ground in meters and t is the time after the launch in seconds.
 - a) What is the initial height of the rocket?
 - b) At what time does the rocket reach its maximum height?
 - c) What is the maximum height of the rocket?
 - d) At what time(s) does the rocket reach a height of 10 m?
8. The height $h(t)$ in feet of an object t seconds after it is propelled straight up from the ground with an initial velocity of 64 ft/s^2 is modeled by the equation $h(t) = -16t^2 + 64t$.
 - a) What is the initial height of the object?
 - b) At what time will the object reach its maximum height?
 - c) When will the object hit the ground?
9. Suppose that one leg of a right triangle is 12 inches while the hypotenuse is $4\sqrt{10}$ inches. Find the length of the other leg.
10. The three sides of a right triangle form three consecutive even numbers. Find the lengths of the three sides, measured in inches.
11. The height h (in feet) of a volleyball t seconds after it is hit can be modeled by $h = -16t^2 + 48t + 4$. Find the volleyball's maximum height.
12. The function $y = -0.03(x - 14)^2 + 6$ models the jump of a red kangaroo where x is the horizontal distance (in feet) and y is the corresponding height (in feet).
 - a) What is the kangaroo's maximum height?
 - b) How long is the kangaroo's jump?
13. Challenge: The back yard of a home is a rectangle 15m by 20m. A garden of uniform width is to be built around the edge leaving a grass area inside. The area of the grass is to be the same as the area of the garden. What is the width of the garden?
14. Challenge: Jane bought a number of watermelons at Pusateri's for \$150. If each watermelon had been \$5 more, 5 fewer could have been purchased. Find the price of each watermelon. (*Hint*: let x be the number of watermelons and y be the cost of each).

ANSWERS

1. -3, -2, -1
2. 9 x 12 inches
3. 7 in by 5 in
4. 7, 9
5. 16 by 16 by 16 inches
6. 3 m
7. a) 10 meters b) 3 sec, c) 55 meters d) 0 sec and 6 sec
8. a) 0 ft b) 2 sec c) 4 sec
9. 4
10. 6, 8, 10 inches
11. 40 ft
12. a) 6 ft b) 28 ft
13. 2.5 meters
14. \$10