

Name _____ Date _____

Quadratic Functions – Part 1
Solving Quadratics Using the Quadratic Formula
Independent Practice

1. A rocket carrying fireworks is launched from a hill 80 feet above a lake. The rocket will fall into lake after exploding at its maximum height. The rocket's height above the surface of the lake is represented by $h = -16t^2 + 64t + 80$. How many seconds after the rocket launched will it hit the lake?

Define your terms:

$a =$

$b =$

$c =$

Now, set up the quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{-() \pm \sqrt{()^2 - 4()()}}{2()}$$

Part A: Find the solutions to the quadratic formula.

Part B: Which solution is the correct solution for this scenario? Justify your answer.

2. A rock is thrown from the top of a tall building. The distance, in feet, between the rock and the ground t seconds after it is thrown is represented by $d = -16t^2 - 4t + 382$. How long after the rock is thrown is it 370 feet from the ground?
3. If the measure of one side of a square is increased by 2 centimeters and the measure of the adjacent side is decreased by 2 centimeters, the area of the resulting rectangle is 32 square centimeters. Find the measure of one side of the square.

4. Joe's rectangular garden is 6 meters long and 4 meters wide. He wishes to double the area of his garden by increasing its length and width by the same amount. Find the number of meters by which each dimension must be increased.

5. After t seconds, a ball tossed in the air from the ground level reaches a height of h feet given by the equation $h = 144t - 16t^2$. After how many seconds will the ball hit the ground before rebounding?