

**Student Activity Sheet**  
***Bomb's Away!***

Press  and open the file labeled "Bomb's Away!"

The actual path of the water balloon and the graphic model are different because \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**1a.** What is the height of the water balloon while Calvin is holding it? \_\_\_\_\_

Explain how you know \_\_\_\_\_  
\_\_\_\_\_

**1b.** Where is the water balloon when the point on the parabola hits its x-intercept? \_\_\_\_\_

What does the x-value of the intercept represent in the context of the water balloon? \_\_\_\_\_  
\_\_\_\_\_

***Go to page 2.5***

**2a.** What is the height of the balloon in 2.5 seconds? \_\_\_\_\_ In 4.2 seconds? \_\_\_\_\_

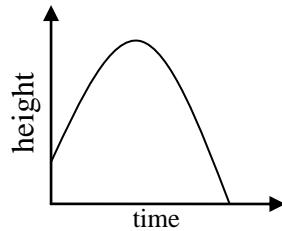
What happens when you change the x-value to 5.1 seconds? What does this mean? \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**2b.** You may want to click and drag the point to answer the next questions. What is the maximum height of the water balloon? \_\_\_\_\_ How did you find this? \_\_\_\_\_  
\_\_\_\_\_

**2c.** Approximately when does the water balloon reach a height 140 feet? \_\_\_\_\_ 30 feet? \_\_\_\_\_

**2d.** Find a height that is reached twice, and determine the time(s) it takes to get to that height. \_\_\_\_\_  
\_\_\_\_\_

Summary:



Graphically, what point should you be looking at when you're asked to find the time it takes an object to hit the ground? *Draw a square around the point in the above diagram.* How do you do this algebraically?

What point is of interest when you are trying to find the maximum height an object will reach? *Draw a triangle around the point in the above diagram.* How do you find this point algebraically?

3. The height of a projectile launched from a platform is modeled by the function  $h(t) = -16t^2 + 80t + 45$ , where  $h(t)$  is the height of the ball (in feet)  $t$  seconds after it is launched. Answer each question:

a. What is the height of the platform? Explain how you know.

b. What is the height of the projectile 3 seconds after launch?

c. When will the projectile hit the ground?

d. What is the maximum height the projectile will reach and how long does it take to get there?