

## QUADRATIC APPLICATION WORD PROBLEMS (ALGEBRICALLY)

Things to remember when completing quadratic application word problems:

$t$  is \_\_\_\_\_. Its unit is \_\_\_\_\_.

$h$  or  $d$  is \_\_\_\_\_/distance. Its unit is \_\_\_\_\_.

When an object hits the **ground** (water), its height = **0**.

1. After  $t$  seconds, a ball tossed in the air from the ground level reaches a height of  $h$  feet given by the equation  $h = 144t - 16t^2$ .
  - a. What is the height of the ball after 3 seconds?
  - b. What is the maximum height the ball will reach?
  - c. Find the number of seconds the ball is in the air when it reaches a height of 224 feet.
  - d. After how many seconds will the ball hit the ground before rebound?

2. 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 given by  $h = -16t^2 + 64t + 80$ .
- a. What is the height of the rocket after 1.5 second?
  - b. What is the maximum height reached by the rocket?
  - c. How long will it take for the rocket to hit 128 feet?
  - d. After how many seconds after it is launched will the rocket hit the lake?
3. 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 given by  $d = -16t^2 + 4t + 382$ . How long after the rock is thrown is it 370 feet from the ground?