Math 1 Name_____

Lesson 10 Assignment Applications of Quadratics

Date_____ Period____

Solve the following problems. Show all work.

1) An object is launched directly upward at 64 ft/s from a platform 80 ft high. The height h of the object at any given time (in seconds) t can be modeled by the equation $h(t) = -16t^2 + 64x + 80$.
   a. When will the object reach it's maximum height?

   b. What is the maximum height?

2) A baseball is thrown straigh up in the air with an initial velocity of 29 ft/s from a point exactly 6 feet off the ground. The function for the height of this object at any time (t seconds) can be represented by $h = -16t^2 + 29t + 6$.

   When will the baseball hit the ground?

3) Some fireworks are fired vertically into the air from the ground at an initial velocity of 80 ft/s. This can be modeled by the function $h(t) = -16t^2 + 80t$, where h is the height in feet and t is time in seconds.

   a. Find the hightest point reached by the firework.

   b. How long does it take the firework to reach this height?

4) A ball is thrown vertically upward with an initial velocity of 48 ft/s. If the ball started from a height of 8 feet off the ground, determine the time it will take for the ball to hit the ground.
Hint: Use the equation $h = -16t^2 + 48t + 8$.

5) A pistol is accidentally discharged vertically upward from a height of 3 feet above the ground. The bullet has an initial velocity of 200 feet per second and its height can be modeled by $h(t) = -16t^2 + 200t + 3$.

What is the maximum height the bullet will reach?

6) A tennis ball is propelled upward from the face of a racket at 40 ft/s. The racket face is 3 feet above the ground when it makes contact with the ball. This can be represented by $h = -16t^2 + 40t + 3$.

a. What is the maximum height of the ball?

b. When will the ball reach its maximum height?

c. How long does it take for the ball to hit the ground?

7) Sam takes his math textbook to the top of a twelve-story building and look at the pool which is 160 feet straight below him. Sam just lets go of his book, which can be modeled by $h = -16t^2 + 160$.

How long does it take Sam's book to hit the water?

Answers to Lesson 10 Assignment Applications of Quadratics (ID: 1)

1) a) 2 seconds b) 144 feet
2) 2 seconds
3) a) 100 feet b) 2.5 seconds
4) 3.158 seconds
5) 628 feet
6) a) 28 feet b) 1.25 seconds c) 2.57 seconds
7) 3.16 seconds