

Quadratic Word Problems

1. A ball is thrown vertically upward from the top of a building with an initial speed of 80 feet per second. The height $h(t)$ above the starting point in feet after t seconds is given by the equation $h(t) = -16t^2 + 80t + 20$. What is the maximum height reached by the ball?
2. A shot-put throw can be modeled using the equation $f(x) = -0.0241x^2 + x + 5.5$, where x is distance traveled in feet and $f(x)$ is the height, also in feet. How long was the throw?
3. A farmer has 1000 feet of fencing and a very big field. She can enclose a rectangular area with dimensions x ft and $500 - x$ ft. What is the largest rectangular area she can create?
4. The value of Jennifer's stock portfolio is given by the function $v(t) = 50 + 73t - 3t^2$, where $v(t)$ is the value of the portfolio in hundreds of dollars and t is the time in months. How much money did Jennifer start with? When will the value of Jennifer's portfolio be at a maximum?
5. A high school football player is practicing his field goal kicks. The equation $h(t) = -9t^2 + 45t$ represents the height of the ball at a specific time. Where is the ball at 4 seconds? If the ball is 54 feet in the air, how much time has gone by?
6. Sara and Marisol are kicking a soccer ball back and forth to each other. The equation $h(t) = -4t^2 + 24t$ represents the height of the ball at a specific time where t is the amount of time and $h(t)$ is the height in feet. How long does it take the ball to come back to the ground? What is the highest point the ball will go?



In honor of my ~~Least~~ favorite impending holiday...

Cupid shoots an arrow intending to hit Cassandra. The height of the arrow is modeled by the function $h(t) = -16t^2 + 28t + 3$, where t is time in seconds since the arrow was launched.

- a.) What is the maximum height of Cupid's arrow?
- b.) How high will the arrow be after 0.5 seconds
- c.) If Cassandra is 5 feet tall and the arrow hits her on its downward arc, how long until she gets hit with the arrow?
- d.) If Cupid misses, when will the arrow hit the ground?
- e.) If the arrow does hit Cassandra, how many years will he spend in jail for felony assault?