## Algebra II Quadratic Application Problems

**1) A football player is kicking a football off of a platform. The height of the football can be calculated by $h = -2s^2 + 11s + 30$ where "*h*" is the height in feet of the ball, and "*s*" is the number of seconds after it is kicked.**

a) When will the football be the very highest?

b) What is the highest altitude the football will get?

c) How high will the football be after 2 seconds?

d) How tall was the platform it was kicked from?

**2) A baseball is hit so that its height above the ground is given by the equation $h = -16t^2 + 96t + 4$, where *t* is the time in seconds, and *h* is the height in feet.**

a) How long does it take the baseball to reach its maximum height?

b) What will be the maximum height?

c) How high was the ball at the moment it was hit?

d) How high will the ball be in 5 seconds?

**3) The height of a projectile fired straight up in the air with an initial velocity of 64ft/s is $h = 64t - 16t^2$, where *t* is time in seconds, and *h* is height in feet**. (*Notice which value is the "A", and which is the "B"!)

a) How long did it take for the projectile to reach its maximum height?

b) How high did the projectile go?

**4) To increase revenue, a county wants to increase park fees. The overall income will go up, but there will be expenses involved in collecting the fees. The cost for collecting the fees can be modeled with the quadratic equation $C = .6p^2 - 7.2p + 48$ where *p* is the percent increase, and C is the cost in thousands of dollars.**

a) What percent increase will minimize the cost to the county?

b) What will the cost be?

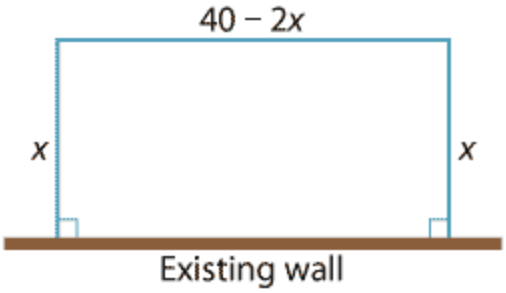
**5) A small motion picture company determines the profit P for producing a certain number of DVD copies of a recent release is $P = -.02n^2 + 3.4n - 16$, where P is the profit and *n* is the number of DVD's produced in thousands.**

a) How many DVDs should be produced to maximize the profit?

b) What is the maximum profit?

**6) A dog kennel has 40 ft. of fencing to use to create a rectangular play area next to an existing building.**

a) Multiply the length by the width to get an algebraic expression that represents the area of the play area.




b) Simplify your expression, if necessary, to be a quadratic equation in standard form.

c) How far from the existing wall should the pen project out in order to maximize the area of the pen?

d) What is the area of the largest pen that can be made, using the 40 ft. fence?