Name _____ Date _____

LESSON 9.7

Real-Life Application: When Will I Ever Use This?

For use with the lesson "Solve Systems with Quadratic Equations"

Video Games

Video game designers use concepts of physics and math in their designs. Something on the user end that seems as simple as a character jumping, moving, or using an item involves often complex mathematical processes behind the scenes. Formulas for figures in one, two, and three dimensions, quadratic equations, spheres, motion along straight and curved paths, momentum and impact are just some of the math designers contend with.

Use the following information to answer Exercises 1–2.

A video game company is designing a game about monkeys and bananas. The object of the game is to launch your monkeys onto the banana trees to get to the bananas.

The first level uses a slingshot to get the monkeys into the tree. The tree is represented by the equation $y = 40(x - 30)$, where $0 \leq y \leq 25$. The slingshot is located at (0, 0).

1. Fill in the chart for each trajectory of the slingshot shown to see if the monkey will hit the tree, and where.

Trajectory Equation	Point of Intersection for Positive *x*-values Only (to the nearest tenth)	What This Means
a. $y = -\frac{1}{20}x^2 + 3x$		
b. $y = -0.5x^2 + 15.5x$		
c. $y = -0.04x + 1.5x$		
d. $y = -\frac{1}{5}x^2 + 6x$		
e. $y = -0.06x^2 + 2x$		
f. $y = -0.01x^2 + 1.15x$		
g. $y = -0.25x^2 + 8.4x$		
h. $y = -2x^2 + 10x$		

2. If most of the bananas are at the top of the tree, which trajectory gets the monkey the closest to the bananas? Explain.