Chapter 3 Problem V (+1) Name _____

1. In her physics lab, Melanie rolls a 10 g marble down a ramp and off the table with a horizontal velocity of 1.2 m/s. The marble falls in a cup placed 0.51 m from the table's' edge. How high is the table?

2. Bert is standing on a ladder picking apples in his grandfather's orchard. As he pulls each apple off the tree, he tosses it into a basket that sits on the ground 3.0 m below at a horizontal distance of 2.0 m from Bert. How fast must Bert throw the apple (horizontally) in order for them to land in the basket?

3. Billy-Joe stands on the Talahatchee Bridge kicking stones into the water below. A) If Billy-Joe kicks a stone with a horizontal velocity of 3.50 m/s, and it land in the water a horizontal distance of 5.40 m from where Billy-Joe is standing, what is the height of the bridge? B) If the stone had been kicked harder, how would this affect the time it would take to fall?

4. The movie "The God Must Be Crazy" begins with a pilot dropping a bottle out of an airplane. It is recovered by a surprised native below, who thinks it is a message from the gods. If the plane from which the bottle was dropped was flying at an altitude of 500 m, and the bottle lands 400 m horizontally from the initial dropping point, how fast was the plane flying when the bottle was released?

5. The fastest recorded pitch in Major League Baseball, thrown by Nolan Ryan in 1974, was clocked at 162.3 km/h. If a pitch were thrown horizontally with this velocity, how far would the ball fall vertically by the time it reached home plate, 18.3 m away?

Sample Problem:

A movie director is shooting a scene that involves dropping a stunt dummy out of the airplane and into a swimming pool. The plane is 10.0 m above the ground, traveling at a velocity of 22.5 m/s in the positive x direction. The director wants to know where in the plane's path the dummy should be dropped so that it will land in the pool.