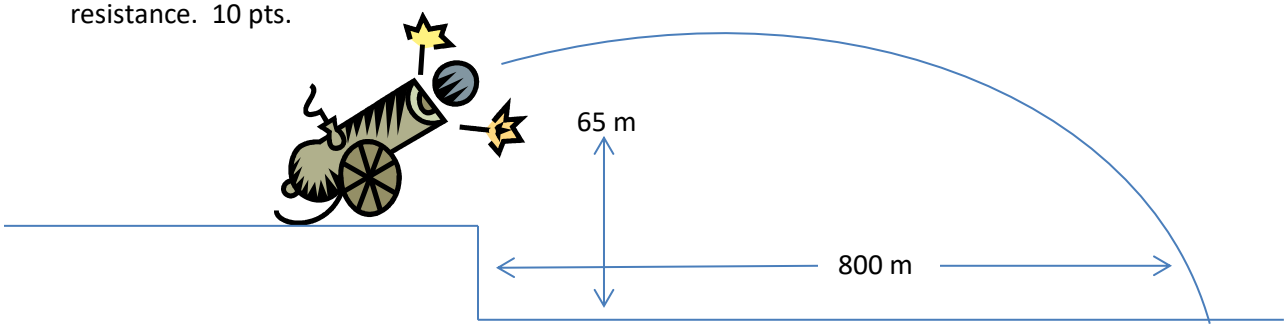
Chapter 4 practice Quiz A,B,C,D /25 Name: _____
UCONN Physics Date: _____ Period ____

Directions: Answer each problem, showing all your work and labeling all of your units!!!

1. In the diagram below, a shell is fired from a cannon on the edge of a cliff. The mouth of the cannon is 65 m above the level of a lake. The shell is observed to fall into the water at a distance of 800 m from the bottom of the cliff 6 seconds after the cannon is fired. Neglect air resistance. 10 pts.



a. Find the initial horizontal velocity of the shell. Ans = 133.33 m/s

b. Find the initial vertical component of the velocity of the shell. Ans = 18.6 m/s

c. Find the initial velocity of the shell when fired. Ans = 134.6 m/s @ 7.9^0

d. How high above the cliff does the shell rise? Ans = 17.65 m

e. Find the velocity with which the shell strikes the water. Ans = 139.3 m/s @ 16.8^0

2. An athlete throws a shotput (mass 7.3 kg) with an initial velocity of 9 m/s at a 45 degree angle to the horizontal. Calculate the horizontal distance traveled. The shot leaves the shotputter's hand at a height of 1.7 m above the ground. 10 pts. Ans = 9.6 m

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \qquad ax^2 + bx + c = 0$$

3. Draw the Free-Body diagram for the Box allowed to slide down the below incline. Label F_x , F_N , F_w , F_{fr} . Draw the right triangle with dotted lines to show F_N ', and F_x added together vectorally. 5 pts.