Name		**LA ( )**

B. Results and data analysis (42 pts)

Part I. Measurements of the initial velocity, time-of-flight and horizontal travelling distance of the projectile (21 pts)

Table 1

Vertical distance = _____ Angle of inclination = _____

Trial	Initial velocity (ms^{-1})	Time-of-flight (s)	Horizontal distance (m)
1			
2			
3			
4			
5			
Average			
Standard error			

Part II. Study of the effect of different angles of inclination (21 pts)

Table 2

Vertical distance = _____ Angle of inclination = _____

Trial	Initial velocity (ms^{-1})	Time-of-flight (s)	Horizontal distance (m)
1			
2			
3			
4			
5			
Average			
Standard error			

TA signature:

C. Answer the following questions after the experiment (8 pts each)

4. Compare the difference between the two initial velocities for different angles of inclination. According to the concept discussed in Section III: "Discussion of Errors in Lab Write-Ups" on page "Error analysis – 4/9" in the lab manual, does the magnitude of the initial velocity change with the angle of inclination?

5. Using Eq. (4) with the known values of the angle of inclination, θ, the mean value of the initial velocity of the ball, v_0, and the measured vertical height of the Projectile Launcher above the floor, y_0, in Part I, calculate the time-of-flight of the ball. There are two solutions, which one represents the correct time-of-flight? What is the significance of the other time value?

6. Calculate the percent error between the value that you calculated in Question 5 and the measured average value. What physical mechanisms (or reasons) might be involved in the difference among the measured five values of the time-of-flight?

7. Calculate the horizontal distance using the measured time-of-flight, the initial velocity and the angle of inclination given in Table 2. Calculate the percent error between the calculated horizontal distance and the measured average distance in Table 2.

8. Suggest how to change the velocity of the ball in order to shoot over much larger distances, say ~100 meters.