Physics RUBRIC

Lab - Target Shoot **35**

Title: (+1)

Objective: (+1)

Materials & Apparatus: (+2)
(draw a picture)

Procedure: (+2)

Data:

Table 1: Table of Initial Velocities (m/s): (+2)

Table 2 – Initial Conditions (+1)

Table 3 - Data (+4)

Table 4 – Actual Ranges (+2)

Target (+4)
-deductions for lack of shot accuracy

Analysis –

Sample Calculations:

$v_{0y} = v_0 \sin\theta$ (+1)

$v_{0x} = v_0 \cos\theta$ (+1)

$y = v_{0y} \cdot t + 1/2 \cdot a_y \cdot t^2$ (+1)

$x = v_{0x} \cdot t$ (+1)

% error (+1)

$$\frac{theoretical\ \ range - actual\ \ range}{theoretical\ \ range} \times 100$$

Questions: (+5)

Error Analysis:

Mention % . (+1)

Factors involved (+2)

Conclusions:

Task (+1)

Results (+1)

Generalization (+1)

Extensions:

•Redo your calculations with taking air resistance into account. The horizontal deceleration caused by air resistance is: $\mathbf{a^* = k \cdot A \cdot v^2 / m}$ where *v* is the velocity of the ball, *A* is the cross sectional area of the ball, *k* is the mass density of air (use k ≈ 1.0 kg/m3), and *m* is the mass of the ball. Vertically, the acceleration would not be *g* but (*g - a*)*. (+2)

•Propagate Error. (+2)