Rollin' Rollin' Rollin'

Name_____   Period_____

Hot Wheels Track

Photogate

Lab Report

Measure   Time of the Photogate   _____s   _____s   _____s
               Average Time   _____s
               Diameter of the Ball   _____m
               Distance to the Floor   _____m

Calculate   Time of Free Fall (d = ½ g t^2)   _____s
               Horizontal Velocity (v = d/t)   _____ m/s
               Range (horizontal distance)   _____m

Purpose: The object of this lab is to determine the distance from the edge of the table that the ball
               will hit the ground. Before dropping the ball off of the table you will calculate the
               distance using the measured information and your knowledge of vectors.

Directions: Start by measuring the diameter of the ball and the distance to the floor from the table
               top.

               Next, from the same height allow the ball to roll down the track through the photogate,
               but catch it before it hits the ground. Use this information to calculate the average time
               of the ball passing through the photogate and then the horizontal velocity. Use the
               distance to the floor to calculate the time of free fall. Since this is the same time that it
               will travel horizontally, use this time to calculate the range.

Before testing your answer, place a roll of masking tape at the calculated distance and call me to see your answer.

Result:

1.) Did the ball hit where you expected it to?

2.) If it did not hit the same place, what might be some reasons why it did not?

3.) How could you correct for this?

4.) How could this be used in a real life situation?
(give three applications in real life)