Names _____ Date _____ Period _____

_____

"IN THE CUP"

Purpose: To determine the correct range in order to get a metal ball to land directly into a cup.

Materials:

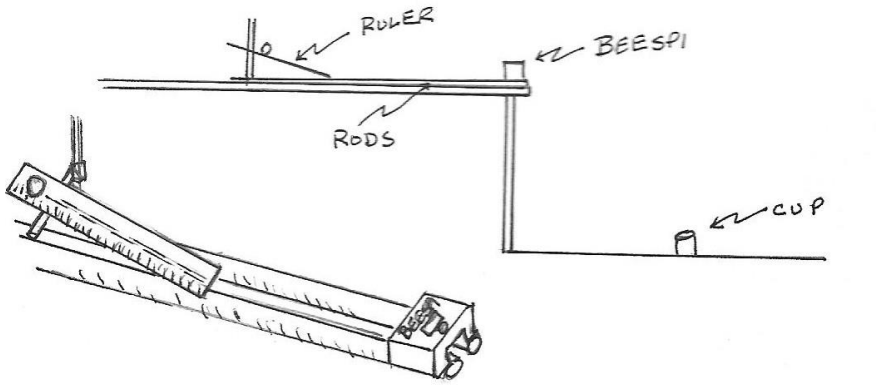
Bee Spi Timer

Metal Ball

Ramp

2 metal rods

Cup



Procedures:

1. Place metal rods side by side with a small gap between them.
2. Place ramp (ruler) on metal rods (~ 50 cm from end) so ball will roll from ramp directly down in between metal rods. End of metal rods should be at edge of table.
3. Place the beespi timer at end of rods as shown in diagram. Set timer to zero. The beespi will read the velocity of the ball in km/hr, you will need to convert to m/s. This is the horizontal velocity, v_x. You MUST stop the ball from leaving the table.
4. Measure the distance from the end of the metal rods to the floor. This is the vertical displacement, d_y.
5. Given that the initial velocity in the vertical direction, v_y, is zero, calculate the range, d_x, the ball will have when it is projected from the end of the table.
6. Call the teacher over to your lab table when you think you know the range.
7. Place cup on the floor at your calculated range.
8. Let ball go down ramp and hopefully into the cup.

(WARNING: IF YOU LET THE BALL GO OFF THE TABLE IN STEP 3 OR DO A "TRIAL" RUN BEFORE THE TEACHER COMES OVER, YOU AUTOMATICALLY FAIL THE LAB.)

Variables:

a_y = _____ a_x = _____

v_y = _____ v_x = _____

d_y = _____ $\boldsymbol{d_x}$ = _____

t = _____ Grade: _____