

Name: \_\_\_\_\_ Section #: \_\_\_\_\_ Date: \_\_\_\_\_

## Projectile Motion

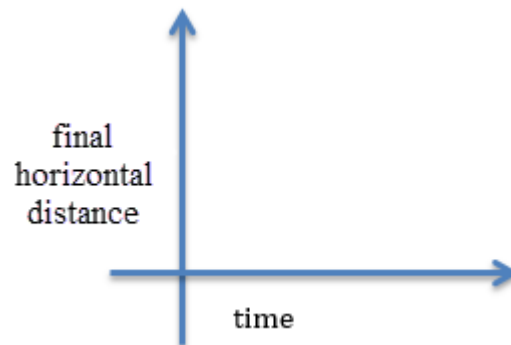
### Part 1: Projectile Motion

Record the height ( $h$ ) from the bottom of the ball to the origin point marked on the floor.

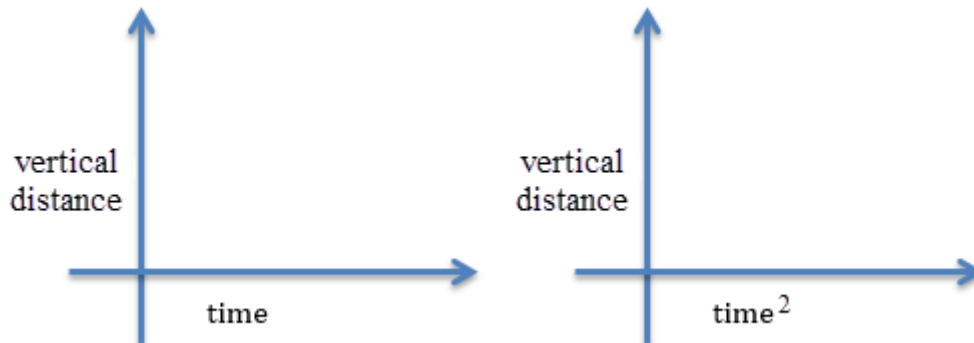
#### Prediction

Make a sketch of the graphs you think will be produced by the ball launched horizontally.

(a) for a motion in the horizontal direction



(b) for a motion in the vertical direction



### After the Experiment

Discuss the view of the graphs produced by the ball launched horizontally. Do the graphs look as any of you in the group expected them to look? Write the major points of your discussion below.

### Calculations

Show your calculation of gravitational acceleration using the slope of the  $H$  vs.  $(t_{23\text{corr}})^2$  graph. Also show the calculations for the discrepancy between your experimental value and the theoretical one ( $g = 9.81 \text{ m/s}^2$ ).

## Part 2: Where to catch the ball?

Chose a random height for the lab jack. Use the value of the launched velocity that you found in Part 1 to calculate where you should place the lab jack in order for a ball to fall straight into the cup. Show all your calculations with equations and numbers. Enter all the required values in the Inlab on WebAssign. Run the experiment.

### After the Experiment

Discuss with your group members how close your predicted and experimental values are. (Hint: you might want to calculate the percent difference between predicted and experimental values of range to make the explanation more specific.) If there is a major discrepancy between them, what can be the reason for it? If there is not, then also explain why. What helped you to make such a successful prediction?

Have your TA sign this worksheet below and then upload it to the Inlab.

TA Signature: \_\_\_\_\_