

PHYSICS

Lab 2-3: Ball in Cup

In this experiment, you will attempt to apply your knowledge of physical principles to a ball rolling down a ramp, then along a table and/or through the air and into a cup located somewhere along the floor. Specifically, your task is to determine by measurement and calculation precisely where to position the cup on the floor such that the ball lands in the cup. This is to be done by calculation, not trial and error, and ***the ball is not to go below the tabletop*** until you have shown your calculations to your instructor and are ready to test them. And the ball should travel at least 40 cm horizontally in the air.

METHOD:

- You will have at your disposal a steel ball, length of steel ramp, meter sticks, stopwatches, and a cup. How you use these is up to you. Different groups may come up with very different ways of obtaining a final result of where to put the cup, though all successful methods will have certain things in common.
- Make your measurements carefully and check your calculations with your instructor before testing your prediction. Whether or not the ball lands in the cup on the first try will be considered as part of your grade for this report.

The report for this assignment should include:

- A detailed description of your method, including a labeled diagram.
- A data section listing ***all*** of the measurements you made for this experiment.
- A neatly labeled, complete step-by-step of your calculations with the final result boxed
- A conclusion in which you explain how well your method ending up working out and discuss what you see as the main sources of error that might have factored into your results.