

# Charles Zhang

Group 2

# Purpose

The final report is a group submission, but that means that individuals within a group might work less toward the project's success and receive the same grade as someone who worked more. We want to ensure that this does not happen. To help us achieve this, please provide a description of what each member did as part of your project.

# Initial Project Idea and Theory

- How did your group brainstorm ideas and choose the project?
  - We got together in a call to think of things that we could do with the materials given to us. We originally agreed on just studying friction, but after being told by our TA that we should expand a little more, we added drag and Magnus Effect as well. We originally planned to study this in the context of a soccer ball's flight path, but decided to switch to dropping balls instead since we knew none of us could kick a soccer ball consistently enough to gather relevant data.
- Who within your group worked on researching and developing the theory that your project is based on?
  - In regards to friction and drag, we all had the baseline knowledge we needed to develop a hypothesis and perform data analysis. When it came to the Magnus Effect, Ryan and Brendan took care of learning its implications and got some help from our TA and Neil for data analysis.

# Experimental procedure

- Where did the experimental design of your project come from?
  - Did you develop it as a group, individually, find it online, or get help from your TA etc.?
    - The friction trials are a very common method of testing for coefficients of friction, and the structure of the trials was decided as a group. The dropping trials were also developed as a group, while taking into account recommendations from our TA.
- Who helped set up the experiment?
  - The data for the friction trials was taken by me and the data for the dropping trials was taken by Ryan and Brendan. Whoever gathered the data was also responsible for Tracking it and creating .csv files and uploading them to our Drive for data analysis.

# Analysis

- How did your group perform the data analysis?
  - Who wrote the Python code?
    - Any code that we used was written by Neil, who took all of the .csv files that we created and translated them into graphs/means/standard deviations, etc. for the analysis.
  - Did you discuss the results together or only the person that wrote that part of the report?
    - We discussed the results together and with a TA to see if they met our expectations enough to know we didn't make any huge errors. From there we were able to extrapolate the basic trends we predicted we would find and conclude which of our trials were effective.

# Presentation and Report

- How did you create your presentation?
  - We generally split up work in the presentation so that whoever worked on the section being presented wrote the slides. This meant that I wrote up most of the friction stuff, Ryan and Brendan wrote up most of the dropping stuff, and Neil wrote up the data collection stuff. We then mixed efforts to fill in what we needed for the rest of the presentation (intro, conclusions, etc.)
- Who wrote what in the report?
  - The abstract was mostly written by Neil with a little help from myself. The introduction was written by Brendan. The method was written by me and Neil. The results were imported from out slides, but were generated by Neil and written in by me. The conclusion was written by Ryan.