Physics 100 (Stapleton) Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Hovercraft Video Analysis

You may work in Excel or Google Sheets. Save your work in your drive.

Analyze **two videos** and find the major forces acting in those two videos. Find…

1. The force generated by a student pushing away from a wall.
2. The force of friction acting on a hovercraft that is sliding across the camera’s field of view.

**For each video,** create an easy-to-understand spreadsheet showing calculations and explaining your methods:

1. Identify the student in the video.
   1. Use spreadsheet formulas to calculate the total mass of everything on the hovercraft. Calculations must be performed by entering formulas into the spreadsheet cells.
   2. On your spreadsheet, explain how you arrived at this total mass. You may do this by inserting a comment or a note, or by some other sensible means.
2. Calculate the acceleration of the hovercraft.
   1. Calculate the hovercraft’s acceleration by entering formulas into the spreadsheet.
   2. Insert data
   3. Answer the following questions somewhere on your spreadsheet. Place these answers in a sensible manner. Make them easy to find:
      1. How did you find acceleration? Summarize your method.
      2. What software did you use?
      3. How did you determine the scale of the video?
      4. What was the video’s frame rate?
      5. What formula(s) did you use?
3. Calculate force (student-generated force or friction force)
   1. Calculate force by entering formulas into the spreadsheet.
   2. Explain how you calculated this force. [Insert a comment, a note, or some other type of explanatory material].

**Grading will be based on:**

* Completeness
* Correct reasoning
* Accuracy of calculations
* Spreadsheet organization – how easy it is to read and understand.