

# Post-Field Trip Worksheet



Name: \_\_\_\_\_

Date: \_\_\_\_\_

Use the Excel file "Post Field Trip Spreadsheet" to complete the following activities.

1. Have each student in your class enter your personal data into the "Basic Data" tab of the post-field trip spreadsheet. (The yellow cells indicate where to insert your data. All other cells will calculate automatically.)
2. Look at the "Velocity Vs. Area" Chart in the spreadsheet. Use your own words to describe the relationship between frontal area and your class's predicted terminal velocity. What shape does the data take? (i.e., linear, quadratic, etc.).
3. Look at the "Velocity Vs. Mass" Chart in the spreadsheet. Use your own words to describe the relationship between mass and your class's predicted terminal velocity. What shape does the data take? (i.e., linear, quadratic, etc.)
4. During your field trip, you assumed a value of  $C_d$  during the lab activity. Now try different values of  $C_d$  to see if you can get your predicted value of terminal velocity to agree more closely with your measured value. Use the chart below to record your results:

$C_d$	% Error
1.2	

6. Make a graph of % error (y axis) versus assumed  $C_d$  (x axis). You can use the blank graph provided in the post field trip spreadsheet. Can you use the graph to help you estimate the value of  $C_d$  which makes your predicted velocity equal to the measured value?
7. Compare your result with other students in the class. On the basis of your experimental results, what value of  $C_d$  for high school students would you recommend that iFLY's engineers use when designing new wind tunnels?