**Coffee Filter Skydiver Lab**

**Question:**   
How does the velocity and acceleration of a falling object change over time when under the dual influence of gravity and air resistance? How does the mass (# of filters) of an object affect the relationship between gravity and air resistance?  
  
**Purpose:**   
To describe how the velocity and acceleration of an object change over time when falling under the dual influence of gravity and air resistance and to explain why such changes are observed; also to determine how changing the mass (# of filters) of an object can affect the values of velocity and acceleration.  
  
A complete lab write-up includes a Title, a Purpose, a Data section, a Conclusion/Discussion of Results. The Data section should include velocity-time and acceleration-time graphs for a falling filter. The data section should also include mass-velocity and mass-acceleration graphs. The Conclusion/Discussion should reference the data to describe how the velocity and acceleration of the falling filter changed over time. An effort should be made to discuss the balanced and/or unbalanced forces to thoroughly explain why such changes occurred. Free-Body diagrams of the force vectors acting on the coffee filters should also be included for the trials. The Conclusion/Discussion should also relate how changing the mass affected the velocity and acceleration of the coffee filter(s).

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|  | Included, labeled and organized all parts of the lab report. | \_\_\_\_\_/12 |
|  | Data section includes a sketch of the two graph plots (velocity-time and acceleration-time) for a falling coffee filter; axes are labeled. Two mass plots (mass-velocity) and (mass-acceleration) for 1-5 coffee filters. |
|  | Conclusion/Discussion accurately and thoroughly describes how the velocity and acceleration of the filter changed over time. References are made to specific parts of each graph to support such conclusions. Efforts to explain such changes  using free-body diagrams are thorough, logical and intelligent. The relationship between mass and velocity as well as mass and acceleration is described accurately. Free-body diagrams are also included. |