

### **Inquiry Lab – Poppers (L-3)** **20 lab points**

You and your team have been given an object that requires analysis. You have only limited lab equipment at your disposal, none of which will directly give you the answers you are looking for. You may use any notes, formula sheets, textbooks, etc. You have available the use of a *meter stick*; please do not use or request use of any other materials.

Specifically, you are looking for three things:

1. The velocity of the popper as it leaves the table.
2. The time to rise to the maximum height.
3. The magnitude of the acceleration during the “pop” itself. You will need to define this carefully.

As a team, you must:

1. First discuss in detail how you will go about solving the problem. The entire lab and results are in your hands: be prepared to defend your methods.
2. Write the research question. This is your objective. Be detailed and specific.
3. Draw a picture of the problem with all the details of the known and unknown data.
4. Write out the procedures for gathering the data. Someone not on your team should be able to follow these procedures completely on their own.
5. Do the experiment and gather the data. Be very specific when you are estimating. For every decision and step in the process, you must explain the team’s reasoning.
6. Do the calculations to determine the correct results. Show and explain the use of any formulas. You decide as a team if there are data tables or graphs. There is no single correct method to solving the problem, but there are correct answers.

**Only one report is required per team. It must be thorough, neat, and complete.** It is due at the end of class. Long, involved paragraphs are not necessary; clear, concise statements (bulleted lists are fine for the methods and calculations, in this lab only) are better.

There must be a proper conclusion that restates the objective and summarizes the results, and comments on the results and underlying physics. In other words, the lab report must be done properly.

You will be graded based on a clear write-up that includes all the asked-for information, designing a proper experiment and correctly deriving the answers to the three questions posed above.