

Conservation of Energy Lab Challenge

Challenge: Your task is to determine the amount of elastic potential energy stored in a toy “popper” using the law of conservation of energy. Since we do not have an equation for elastic potential energy in a popper, we must find another method. The only equipment available to you is a ruler, a balance, and a calculator. Due to error inherent in the lab, you should perform at least five trials and average your results.

Energy Diagrams:

Fill in energy diagrams for the following scenarios. Each scenario shows a different location in the popper’s movement.



Just before release

Just after release

At Max Height

Just before hitting ground

<i>GPE</i>				
<i>EPE</i>				
<i>KE</i>				
<i>TE</i>				

Procedure:

In your lab notebook, write a detailed procedure (step-by-step) how you plan to determine the elastic potential energy stored in your popper. Include all measurements you plan to take and list the equations you plan to use. Then make a **data table** to organize all measurements. Run the lab, making sure to show all calculations clearly. You must run at least 5 trials since there is a lot of error involved in the lab.

Post-lab Questions:

1. Based on your results, how much elastic potential energy was stored in the popper before it was released?
2. How much kinetic energy did the popper have just after being released?
3. What is the popper’s initial velocity as it leaves the ground?
4. How much total energy does the toy have when it is at half of its maximum height?
5. List two main sources of error in this lab. (Be specific!)