

LAB: CONSERVATION OF ENERGY

Name Absent Lab Data Class _____ Date _____

	Possible Points	Points Earned
Analysis Questions	21	
Data Table	3	
Calculations Ep	6	
Graph	5	
Total score	35	

Scoring rubric

Turn in the lab in this order:

- Cover page with scoring rubric
- Analysis questions - writing out fully on separate piece of paper.
- Calculations - show all on back of data table.
- Data table
- Graph - include all components of a good graph

LAB: CONSERVATION OF ENERGY

Energy has the ability to cause change in a system. Energy can cause changes in temperature, speed, position, momentum, pressure or other physical variables. In this lab you will look at the work a ball does on an object, you will calculate the potential energy it has as you change the ramp height, and determine the kinetic energy it possesses at the end of the ramp.

Mass: _____

Procedure:

1. Take a look at the data table on the back of this paper and be sure you understand each column
2. You will change the ramp height six times and roll the ball down the ramp three times at each height (as measured from the table top). Record the trials and calculate the average distance the box moves each time. Measure and record each change in height. Calculate and record the initial potential energy. **Show all calculations when you submit your lab report on back of data table.**
3. Using graphical analysis graph the stopping distance. vs ramp height.

Analysis Questions: Answer questions fully and in complete sentences - on a separate piece of paper which should have a formal heading and be attached to your lab data and graph.

1. What is the relationship between ramp height and stopping distance?
2. What does the ball do to the carton at the bottom of the ramp?
3. As the ball rolls down the ramp it loses potential energy. What happens to the potential energy as the ball goes down the ramp?
4. In terms of potential energy explain how changing ramp heights allows the ball to move the box greater distances.
5. Explain what the graph tells you about the relationship between potential energy and work done? Remember $W = Fd$, $E_p = mgh$
6. What was the total mechanical energy on the first trial? Show your work.
 $TME = E_p + E_k$
7. At the half mark what was the potential energy and kinetic energy on the first trial?

$E_p = mgh$ $E_k = \frac{1}{2}mv^2$

Height (m)	Initial Potential Energy (J)	Trial #1 (m)	Trial #2 (m)	Trial #3 (m)	Avg Stopping Distance (m)	Kinetic Energy at bottom of ramp (J)
0.25m		0.35m	0.36m	0.37m		4.9j
0.2m		0.36m	0.38m	0.33m		3.92j
0.16m		0.25m	0.29m	0.26m		3.136j
0.12m		0.18m	0.2m	0.2m		2.352j
0.08m		0.13m	0.15m	0.13m		1.568j
0.04m		0.09m	0.09m	0.08m		0.784j

