

Name: _____

Saladyga

Period: _____

Fall 05

Kinetic Energy of a Rollercoaster!!!

I. Pre - Lab:

Problem Question: How does the height of the marble on the roller coaster affect its kinetic energy?

Independent Variable: _____

Dependant Variable: _____

Hypothesis: _____

Procedure: OK... I'll help you with this one!!! Pay attention and take notes here!!!

- Mass of the marble = .0282 kg
- $d = .0191$ m

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II. Lab:

Collect Data: Record ALL data in Data Table 1.

Units: You will be measuring height in cm, but you need to convert to m!!! $100\text{cm} = 1\text{m}$. So, you need to divide the cm by 100 to get m. (Ex. $15\text{cm} = .15\text{m}$)

Data Table 1: HEIGHT and TIME

Position	Height (m)	Time (s) Trial 1	Time (s) Trial 2	Time (s) Trial 3	Avg. Time (s)
1					
2					
3					
4					
5					

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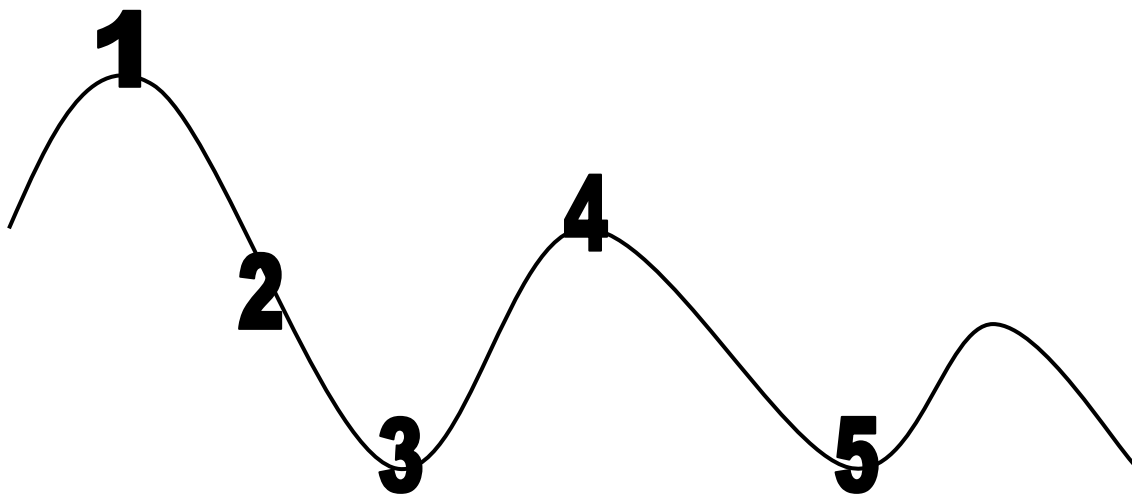
III. Post Lab:

1. **Calculations (*velocity AND K_E*):** Use DUFAS and *staple them to this packet. Round to 3 decimal places.* (Ex. 0.258 J) Record all answers in Data Table 2. USE the P_E values from the first lab.

Data Table 2: Calculation Results

Position	Height (m)	Velocity (m/s)	Kinetic Energy (J)	Potential Energy (J)	Total Energy (J)
1					
2					
3					
4					
5					

2. Label the P_E and K_E values at each position on the rollercoaster:



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3. Fill in the Results Data Table Below:

*** Arrange the data in order from lowest position to highest position.

Height (m)	K_E (J)

4. Graph the information from the RESULTS data table. Remember to label, title, write units, stretch the data over the graph, etc. *Staple the graph to this packet.*

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6. As the marble travels over the rollercoaster track, the P_E changes to K_E . According to the Law of Conservation of Energy, energy cannot be created or destroyed, it can only change forms. Does your data agree with this law? (HINT: Are all of your T_E values the same?) _____

Explain how it agrees or disagrees. _____

Suggest some reasons why the data did not agree. (Hint: Are there other forms of energy that we did not measure?) _____
