Name: _____
Date: _____

Procedure

1. Roll the marble, with the photogate at the prescribed location.
2. Record the time for the marble to pass the photogate into Table 1.
3. At each position on the rollercoaster, use the meterstick to measure the height from the lab bench in meters. Record these values in Table 2.
4. Calculate the potential energies and kinetic energies and record into Table 2.
5. Calculate the total energies and record into Table 2.
6. In Excel®, make a graph with Distance along the track (m) on the x-axis and Energy (J) on the y-axis. Put both energy curves on the same plot. This plot must be printed out and stapled to your lab sheet.

Data Sheet

Table 1.

Position (m)	Distance (m)	Time (s)	Speed (m/s)
0.1			
0.2			
0.3			
0.4			
0.5			
0.6			
0.7			
0.8			
0.9			
1.0			
1.1			
1.2			

Table 2.

Position (m)	Height (m)	Speed (m/s)	PE (J)	KE (J)
0.1				
0.2				
0.3				
0.4				
0.5				
0.6				
0.7				
0.8				
0.9				
1.0				
1.1				
1.2				

Investigating Questions

1. From your graph, what can you say about the relationship of potential, kinetic and total energies of the marble?
2. Was the percentage of the marble's total energy that was left at the end of the roller coaster just before it stops at or close to 100%?
3. Does there appear to be a damping effect when it comes to kinetic and/or potential energy? Why or why not?
4. How does Question #2 confirm or deny the Law of Conservation of Energy?
5. Suppose your answer to #2 was "No," was energy lost? Where did the energy go? What supporting evidence do you have to support this?