

Crater Lab Rubric

LT: To analyze evidence which shows gravitational potential energy depends on the mass of an object and how far it falls.

Name _____
Date _____ Period _____ Score _____ / $28 \div 7 = \underline{\hspace{2cm}} / 4$

Category	4	3	2	1
Heading / Title Purpose / Hypothesis ____ / 4	Hypothesis provides a research-based rationale for the prediction. The research source is cited.	Heading Title Purpose Hypothesis clearly predicts how height and mass affect GPE. Predictions are based on calculation table. The relationship between drop height and crater depth is included.	One of the required elements is missing	Two or more of the required elements are missing.
Materials/ Procedure ____ / 4	Exceptional detail – includes drawing of set up (this may be included with the results / observations)	All materials are listed and adequately identified (drawing/description) so another person could find all of the supplies All steps are detailed so another person could repeat your technique exactly	Material are partially listed and/or described. Steps are partially described so a reader would be able to repeat most steps accurately	Materials and/or steps are missing and a reader would be misled by reading your lab.
Results ____ / 4	In addition to a high quality data tables Additional comments are included (i.e., crater width) which add to the understanding of the data.	Two data tables are included that clearly identifies the data for the marble and the ball bearing. A ruler is used.	Data is included which identifies the depth for the marble and ball bearing – either no table was used or a ruler was not used.	Data is missing and/or inaccurate. No table was used.
Graph ____ / 4	In addition to an exceptionally well-constructed graph of the crater depth (mm), additional annotation is provided to help clarify the impact of the objects	Title Each axis labeled with units – drop height in m on x-axis and crater depth in mm on the y-axis. Each treatment identified with a unique color. Depth is plotted accurately. A ruler is used	One or more elements for a proficient score are missing. Graph still communicates depths.	Graph looks like it was put together just to get it done with no intent on communicating the depths accurately.
Note New Value	8	6	4	2
Analysis Paragraph ____ / 8	Level 4: in addition to thoroughly completing levels 1-3, the discussion continues to include detailed additional insight on how mass and speed influences the force of falling objects (or examples of non-falling objects). Additional comments on gravity (the acceleration of falling objects) are appropriate. Possible sources of error are discussed (not just mentioned)	Level 1: Topic sentence which states the factors which influence gravitational potential energy (GPE). Level 2: Next sentence(s) explain that we used a marble (lighter mass) and a ball bearing (greater mass) to test the affect mass has on GPE. Additional sentence(s) describes how changing the drop height changed the GPE. Level 3: The following sentences clearly interpret the data from the graph and additional observations to identify and analyze the affect of mass and drop height	One element of 1-3 is missing	Two elements of 1-3 are missing.
Note Value	4	3	2	1
Conclusion ____ / 4	In addition to the proficient requirements, paragraph includes insightful additions to the rationale to the discussion of the hypothesis, and what you learned. Clear reference to scientific principles and data should be included.	Topic sentence restates the purpose Acceptance/rejection of the hypothesis is clearly identified. A brief explanation of why the hypothesis was accepted/rejected. A logical “what you learned” statement related to the data/purpose.	One element of a proficient response is missing.	Two or more elements of a proficient response are missing.

