

AS 101 – Craters
Your Name & Your Lab Partner's Name
Due Date

Pre-Lab

- 1.) How are craters produced?

- 2.) How do you expect the size of a crater to depend on the kinetic energy of an impactor?

- 3.) What are the units of kinetic energy that you will use in lab?

- 4.) Why is the surface of Earth covered with far fewer craters than the moon's surface?

- 5.) How can we use the density of craters on a planetary surface to deduce its age?

5.) Report (3 Page Limit, Please Attach Your Data Pages)

Introduction: *State the goal of, and briefly describe the experiment you performed.*

Equipment: *List the pieces of equipment you used.*

Cratering:

Planetary Surfaces:

Meteorite Fragmentation:

Procedure: *Describe the steps of your experiment.*

Cratering:

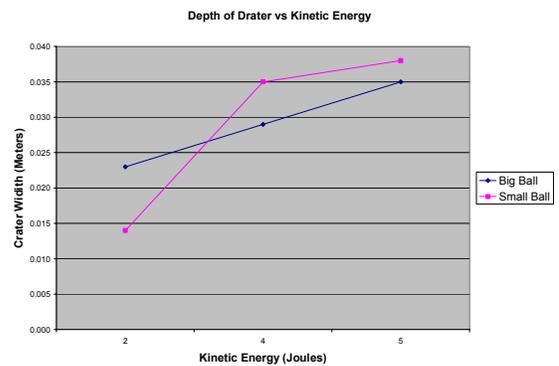
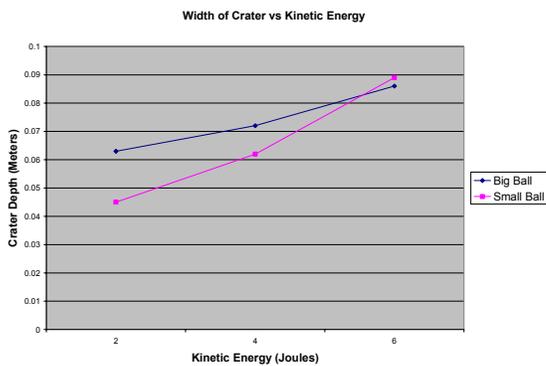
Planetary Surfaces:

Meteorite Fragmentation:

Results:

Cratering:

Create two line-plots. 1: Width of crater vs kinetic energy. 2: Depth of crater vs kinetic energy. Each point is an average of three drops. For example: (replace my plots with yours)



How does crater size vary with kinetic energy?

Does the diameter of the ball play a role in determining the size of the crater?

If a meteorite impacts a planet at an angle of 27°, what shape will the crater be?

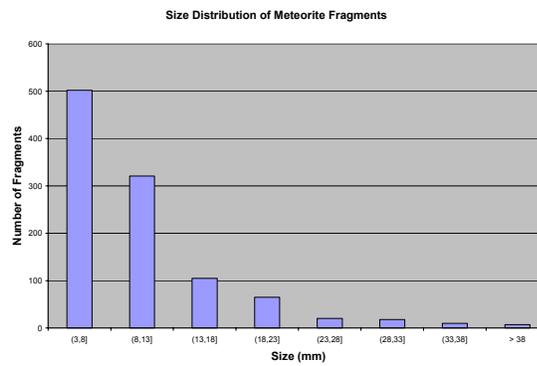
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Planetary Surfaces:

Recreate the tables we made for our planetary surfaces. For each surface, list the number of small, medium, and large craters. Give the surface area of each sample. Compute the crater density for each surface: the total number of craters divided by the surface area. Use these to rank the surfaces in order of their relative age.

Meteorite Fragmentation:

Create a histogram plot showing the size distribution of meteorites created during our fragmentation experiment. (Replace my plot with yours)



Does this data fit with the observed size distribution of craters?

Error:

You drop a ball into the sand from a certain height and it makes a crater. You repeat this and it makes another crater, but this crater's size is slightly different. Why does this happen? To answer this question, describe the conditions you would need to create in order to produce exactly repeatable craters. Each constraint you come up with fixes a source of error. Are these sources of error added or overlooked, random or systematic? Why? Be sure to consider both the process of creating a crater and the measurement of that crater.