Lab: Craters & Canyons

Name:_____ **Date:**_____

Objective: To apply scientific method and determine cause of craters and canyons on the Moon.

Background: The Moon's surface is covered with canyons, mountains and craters. Craters are indentations or "pot holes" that form when asteroids slam into the Moon. The Moon does not have an atmosphere to slow down objects coming towards it. For that reason, asteroids are able to hit the Moon's surface at high impacts, leaving many scars, or craters, on the lunar surface.

Problem:	**Hypothesis**:

Procedures:

1. Choose four (4) different sized objects to represent "asteroids".
2. Measure the greatest **diameter** (cm) *(one side to the other)* of all four (4) objects. ***Record*** your results in the data table.
3. Measure the **mass** (grams) of all four (4) objects and ***record*** your results in data table.
4. **Hypothesize** which "asteroid" will leave the ***largest*** crater in the Moon and why.
5. Get a small bucket with sand. **Smoothen** the surface. This is your "lunar surface".
6. Hold each "asteroid" 1 meter above the lunar surface and drop ***each*** "asteroid" onto the sand *(lunar surface)*.
7. Leave each "asteroid" in place, undisturbed until you've dropped each.
8. In the space provided, **draw** a map of your lunar surface, noting the placement of each "asteroid" and the size of each crater created.
9. One at a time, carefully **remove** each "asteroid" out of the sand. **Measure** and **record** the ***width*** (cm) across each crater and the ***depth*** (cm) of each crater.

Data Table:

Asteroid Object	Diameter of Asteroid (cm)	Mass of Asteroid (g)	Width of Crater (cm)	Depth of Crater (cm)

Lunar Map: Draw a detailed map of your lunar surface. You must also indicate the width (cm) and depth (cm) of each crater on your lunar map.

Conclusion & Analysis: Answer the following questions in ***COMPLETE SENTENCES***.

1. What is the **independent** variable in your experiment?

2. What is the **dependent** variable in your experiment?

3. Which "asteroid" left the biggest crater? **Explain** why you believe this is true.

4. What is the ***difference*** in diameter **AND** mass between the **largest** " and **smallest** "asteroid"?

5. What is the ***difference*** in depth **AND** width of craters made by **largest** and **smallest** "asteroid"?

6. How do you think the mass of an "asteroid" affects the size of the crater it makes?

7. **Inference and Prediction**:
   a. How do you think the crater size would change if the ***speed*** of the asteroid hitting the Moon's surface were increased?

   b. How could you test your idea from 7a?