

# Lab 8

## Shaping Surfaces in the Solar System: The Impacts of Comets and Asteroids

Names: \_\_\_\_\_

### Exercise #1: Creating Impact Craters

Table 1: Crater Sizes (**12 points**)

Height (m)	Crater Diameter (cm) Ball #1	Crater Diameter (cm) Ball #2	Impact Velocity (m/s)
0.5			
1.0			
2.0			

1. Plot the data you have just collected on graph paper. (**10 points**)

### Impact Crater Questions

1. Describe your graph. Can the three points for each ball be approximated by a single straight line? How do your results for the larger ball compare to that for the smaller ball? (**3 points**)
2. If you could drop both balls from a height of 4 meters, how big would their craters be? (**2 points**)

3. What is happening here? How does the mass/size of the impacting body effect your results. How does the speed of the impacting body effect your results? What have you just proven? **(5 points)**

### **Crater Illumination**

1. Describe what you see. **(2 points)**

2. Now what do you see? **(2 points)**

3. When is the best time to see fine surface detail on a cratered body? **(1 point)**

### **Exercise #2: Building a Comet**

#### **Comet Strength**

1. What happened to each object? **(2 points)**

## Comet Questions

1. Draw a comet and label all of its components. Be sure to indicate the direction the Sun is in, and the comets direction of motion. (**8 points**)
2. What are some differences between long-period and short-period comets? Does it make sense that they are two distinct classes of objects? Why or why not? (**5 points**)
3. List some properties of the comet you built. In particular, describe its shape, color, smell and weight relative to other common objects (e.g. tennis ball, regular snow ball, etc.). (**4 points**)

4. Describe what happened when you put your comet near the light source. Were there localized regions of activity, or did things happen uniformly to the entire comet? (**3 points**)
5. If a comet is far away from the Sun and then it draws nearer as it orbits the Sun, what would you expect to happen? (**3 points**)
6. Which object do you think has more internal strength, an asteroid or a comet, and why? (**3 points**)