

Dropping Objects Lab

What happens if a space rock hits a planet or moon?

Name: _____

Period: ____ Date: _____

Purpose: To investigate how the surface of a planet changes (or not) when it's hit by space rocks.

Student roles: space rock specialist, impact videographer, measurement specialist, team leader

Instructions:

- Talk with your group and reach consensus on which situation you want to test, either A or B:
 - You get two space rocks (frozen dough balls) of about the **same size**, but you drop each from a **different height** (maybe one from 6cm above the cup, and one from 12cm above the cup – but you can choose the heights) and record what happens (video and written description).
 - You get two space rocks of **different sizes** (one small, one larger), and you drop each of them from the **same height**, and record what happens (video and written description).

CIRCLE the option you are testing (A or B above).

- Send your *space rock specialist* to your teacher (bring this lab sheet) to check out your group's space rocks (two frozen dough balls) and other materials.
- Discuss how you are going to do your experiment to collect the information below. Make sure that your *impact videographer* is ready to video record each drop in slow motion before you begin. Your *measurement specialist* should supervise or conduct the data collection. Make sure you keep notes on what parts of the experiments seems realistic and what parts don't.

	Space Rock #1 Data	Space Rock #2 Data	Realistic Or Not?
Mass of system (flour + cup) before impact (in grams)	Work down this column before you work on the 2 nd column		
Mass of space rock (dough ball) (in grams)			
Height of space rock above surface before drop (in cm)			
Mass of system (flour + cup + dough ball) after (in grams)			
Describe what happens to surface during the impact (watch slo-mo video)			
Describe the shape of the surface after the impact			

Questions:

1. You decided to test (CIRCLE ONE): A (same size, different height) or B (different size, same height).

Please explain the results of your experiment—what were the differences you noticed between the impacts of space rocks #1 and #2?

2. Explain what happened to the mass of planet/moon system after each impact. Be specific—use data from your table above as evidence in your explanation.

3. What happened to each space rock after the impact?

4. Why do you think we used frozen dough balls (made of water and flour, then frozen) to represent space rocks?

NOTE: Do NOT remove space rock #1 after the first impact, leave it in the flour. Just make sure to drop space rock #2 into a different location in the cup for comparison.

5. Which part(s) of the lab did your group think were realistic? Which parts didn't seem as realistic? Why?