

Astronomy #4 – Moon Crater Investigation

Impact craters on the moon are features that can be seen from a distance. They were formed when meteorites, asteroids, or comets struck the surface at high speeds. These craters are a visible record of the moon's 4.5 billion year history.

Cameras aboard the Lunar Reconnaissance Orbiter (LRO) allow scientists to study lunar craters and determine important physical details of their formation. This comparative study of the shapes of lunar craters help scientists understand how the surface evolves with time. Each crater is unique in its own way, and over geologic time, will change in shape. LRO examines the shapes of many craters to help estimate the age of these craters based simply on their topography.

Investigation Details: Design an experiment to determine the effects of EITHER mass or size (diameter) of an incoming meteor on the surface of the moon (tub of flour). Once you have designed a well thought out investigation, you will **conduct your tests to gather data and draw a conclusion** based on your evidence..

Available Materials: Tennis balls, ping pong balls, golf balls, baseballs, marbles (two different sizes), rulers, meter sticks, tub of flour

Things to Consider:

- Would you like to test the effects of mass or diameter on moon craters?
- What materials would you use to compare effects?
- What will you control (keep the same) during the experiment.
- What data would you collect to support your claim?
- How would you set-up your data table to make it quicker to collect data during your tests?
- What would your claim be?

Use this sheet to develop your investigation. You will be sharing it with your group members tomorrow to create a group investigation That will be tested.

Brainstorm:

I would like to test the effects of _____ (mass, diameter) on moon crater size.

Materials I would need are...

I am making the claim that...

The procedure I would follow to collect data is as follows (additional paper may be attached if needed):

The data table I would use to collect my data during my investigation is...

Share your investigation design with your group members. Agree on the investigation that your group will use and test. The tested investigation may be a combination of the best ideas presented. The final investigation write up, including your claim and justification with evidence (graph), will be on newsprint to share with your class.