



**CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY**

Name(s) Katelyn R. Carbiener	Project Number J0605
Project Title SPLAT! Forming Craters and Predicting Their Size	
Abstract Objectives/Goals My objective for this project is to see if I can predict the size of a crater from the size and speed of the object that made it. I think that the bigger and faster the object, the bigger the crater will be. I believe that I will be able to predict the size of a crater I make because its size will be similar to my data, but it will be harder to predict a much bigger one like the Copernicus crater on the moon. Methods/Materials For my experiment I will drop different size blobs of wet plaster from different heights into pans of wet plaster. I chose this method because I wanted the object that made the crater to become part of the crater, just like the real ones, and so when the plaster hardens it will be easy to measure the size of the crater. In my experiment I used plaster of paris, cake pans, ladders, clamps, kite string, a triple-beam balance, weights, a piece of wood, and a tape measure. Results When I dropped different size blobs from the same height, the bigger blobs made the bigger craters. When I dropped the same size blobs from different heights, the higher heights made the bigger craters. I made separate charts for the blob mass and speed compared to the crater size, but it was hard to use these to predict because the same size crater could be made from different combinations of mass and speed. Then I combined the blob size and crater size in a ratio, and charted it with the blob speed to make my predictions. Conclusions/Discussion My results proved that bigger and faster objects would make bigger craters. I used my results to predict that my biggest blob dropped from my highest height would make a 0.132m diameter crater, and when I made the crater it was 0.115m across. Then I used my results to predict that Copernicus crater is 20.2 times bigger than the meteorite that made it, and I discovered that scientists who research lunar craters have concluded that the craters are 10 to 20 times larger than the object that caused them.	
Summary Statement In this project I was able to make craters similar to those found on the moon, and I could use my results to explain how the moon craters were made even though they were a million times bigger than the craters I made.	
Help Received My father helped me mix the plaster quickly so I could do my experiments before it hardened, and he helped me drop the blobs from 2.67m because I could not reach. I borrowed the triple-beam balance from the Sandia National Laboratories science education outreach program.	