



**CALIFORNIA STATE SCIENCE FAIR
2002 PROJECT SUMMARY**

Name(s) Nick A. Rael	Project Number J1533
Project Title Impact Craters and Ejecta	
Abstract Objectives/Goals The purpose of this experiment is to determine how the size of the incoming object, the energy of the incoming object, and the type of target surface material effect the size of the impact crater and how far the ejecta will fly. Methods/Materials Each object to be dropped was weighed. Each surface material was weighed and it's density was calculated. I then performed three drops for each combination of surface material, object, and drop height. The crater diameters and ejecta distances were measured and the mean crater diameters and mean ejecta distances were computed. For each of the objects and drop heights; the energy of impact was calculated. Results The results of the experiment clearly show that a larger mass makes a bigger crater and throws the ejecta farther. The results also show that a higher energy object makes a bigger crater and throws the ejecta farther. Finally, it can be clearly seen that crater diameter and ejecta distance are larger when the surface material density is higher. Conclusions/Discussion The first part of the hypothesis, that the object with the greatest mass and energy will make the biggest impact crater and throw the ejecta the farthest, was supported by the data. The second part of the hypothesis, that the surface material that is the least dense will have the largest impact crater and farthest ejecta range, was disproved by the data. The third part of the hypothesis, that the energy of the object will affect the crater size and ejecta range the most, was neither proved or disproved. More data points are necessary to reach a conclusion.	
Summary Statement Dropping different sized objects into different surface materials to make impact craters.	
Help Received Mother helped me create graphs on my computer. Mrs. Kumar provided a triple beam balance scale.	