



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Ariana G. Haro	Project Number J1206
Project Title Magnitude Math: A Study of Mathematical Patterns	
Abstract Objectives/Goals By analyzing the recorded data of the past and developing mathematical tables, spreadsheets and graphs, I attempted to find conclusive patterns that would assist in future earthquake predictions. Methods/Materials I gathered earthquake information from the U.C. Berkeley web site for the Los Angeles basin, and then transferred data into mathematical tables from which magnitudes were pulled to form spreadsheets by year. Utilizing these spreadsheets, I created graphs using different variables for each magnitude group. These individual year graphs showed no apparent pattern. To further evaluate the data, continuing with the magnitude groups, I combined the years in groups of five, ten, and twenty years. I then gathered totals and averages, and created new spreadsheets from which new graphs were created for analysis. Results To carry out this experiment, each graph was thoroughly analyzed for a repeatable pattern. The individual year graphs showed no obvious pattern. The five, ten, and twenty year graphs however did show a some possible repeatable pattern. It would appear the increase in the lower magnitude earthquakes did indicate an increase in frequency of greater magnitude earthquakes, but only within a general time frame, not to a specific point of time reference. Conclusions/Discussion The original hypothesis was that by looking at the patterns of the past we might be able to develop mathematical models for future prediction. Based on my analysis, this hypothesis could be accepted as true in part. The increase in the lower intensity earthquakes did correlate with a rise in greater intensity earthquakes. Although this project shows an evident pattern in the relationship between the lower intensity and the higher intensity earthquakes, there is no precise equation to show the relationship in quantity and magnitude, nor highly exact time frames; only generalities and trends.	
Summary Statement By using mathematical tables, spreadsheets, and graphs, I was able to analyze earthquake magnitudes to define patterns.	
Help Received	