



**CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY**

Name(s) Zachary M. Sohn	Project Number S1616
Project Title The Effect of Encryption Key Combination on Data Security	
Abstract Objectives/Goals As data technology advance and computer networking becomes more and more rampant, data protection and intact transit of authentic data become ever more important and challenging. Increasing security risks forces the data industry to respond mainly in two ways: find another way to cleverly hide unpack-able data or use a longer key. My goal is to present an encryption method that is more secure than simply lengthening keys. Methods/Materials For this experiment, I wrote both a symmetrical key string cipher, and a brute force algorithm to break it. I tested appending keys for security against my own method, which was to overlap encryption using prime number keys (compound key) for optimum security and compared it to a simple appended key (simple longer key). Results Compound key outperformed the appended key in securing the data when tested with a brute force decoding program. Conclusions/Discussion Data presented supports my hypothesis that a compound key offer a higher degree of security.	
Summary Statement Method of encryption that will ensure a higher degree of security without making a more cumbersome key.	
Help Received Some help with organization.	