



**CALIFORNIA STATE SCIENCE FAIR  
2011 PROJECT SUMMARY**

<b>Name(s)</b> <b>Joshua S. Goldwasser</b>	<b>Project Number</b> <b>S1409</b>
<b>Project Title</b> <b>An Exploration of Bases: Predicting Palindromic Patterns</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> My goal was to investigate the patterns of one's digits of perfect squares in different bases. Upon finding that the pattern was palindromic, I sought to explain the reason for that pattern and a means of calculating the particular pattern for any base.</p> <p><b>Results</b> I proved that the patterns of one's digits of perfect squares are palindromes in any base, found a general formula for calculating the pattern in any base, and confirmed that the formula works in base 25. Along the way I also found that the patterns in bases that are divisible by four contain double palindromes.</p>	
<b>Summary Statement</b> I show why, in any base, the one's digits of perfect squares form a palindrome, and I find a general way of calculating its pattern.	
<b>Help Received</b> I designed, carried out, and wrote up this project myself. My advisor and my father made suggestions for editing and presenting it.	