



California Science Center
CALIFORNIA STATE SCIENCE FAIR
2001 PROJECT SUMMARY

Your Name (List all student names if multiple authors.) Rachel C. Leuthold	Science Fair Use Only <h1 style="margin: 0;">J1117</h1>
Project Title (Limit: 120 characters. Those beyond 120 will be ignored. See pg. 9) Benford's Law: What Works and What Doesn't	Division <u>J</u> Junior (6-8) <u>J</u> Senior (9-12)
Preferred Category (See page 5 for descriptions.) 11 - Mathematics & Software	
Abstract (Include Objective, Methods, Results, Conclusion. See samples on page 14.) Use no attachments. Only text inside these boxes will be used for category assignment or given to your judges.	
<p>Benford's Law is a mathematical law stating that the probability that the left most digit of a number is a 1 is greater than the probability that it is a 2, the probability that it is a 2 is greater than the probability of it being a 3, and so on. Not every data set follows Benford's Law. My project was to find out which rules could predict if a data set followed Benford's Law. To do this, I gathered data and put it in graphs. By looking at the graphs and doing some calculations, I was able to decide whether or not a type of data followed Benford's Law. I found out that there are 8 reasons that determine if a set of data will follow Benford's Law: small amount of data, small variety of data, data is a fraction, bounded, made-up, equally possible, log scale, and having zeros in the data. By knowing these rules, I can predict if Benford's Law applies to a particular type of data.</p>	
Summary Statement (In one sentence, state what your project is about.) My project was to find out which rules could predict if a data set follows Benford's Law.	
Help Received in Doing Project (e.g. Mother helped type report; Neighbor helped wire board; Used lab equipment at university X under the supervision of Dr. Y; Participant in NSF Young Scholars Program) See Display Regulation #8 on page 4. Dad helped me learn some Excel functions.	