1050-11-32 **Steven J Miller*** (Steven.J.Miller@williams.edu), Department of Mathematics and Statistics, Williams College, Williamstown, MA 01267. *Benford's Law, Values of L-Functions and the 3x+1 Problem.*

Many systems exhibit a digit bias. For example, the first digit (base 10) of the Fibonacci numbers or of 2^n equals 1 about 30% of the time; the IRS uses this digit bias to detect fraudulent corporate tax returns. This phenomenon, known as Benford's Law, was first noticed by observing which pages of log tables were most worn from age – it's a good thing there were no calculators 100 years ago! The first digit of values of L-functions near the critical line also exhibit this bias. A similar bias exists (in a certain sense) for the first digit of terms in the $3x+1$ problem, provided the base is not a power of two. For L-functions the main tool is the Log-Normal law; for $3x+1$ it is the rate of equidistribution of $n \log_B 2 \bmod 1$ and understanding the irrationality measure of $\log_B 2$. (Received January 16, 2009)