(1) According to the IRS, 137.8 million individual tax returns were filed in 2008. Out of that total, 1.4 million taxpayers, or 1.0%, had the good fortune of being audited. Not everyone had the same chance of getting caught in the IRS's headlights: millionaires had the considerably higher audit rate of 5.6% (and that number might even go up a bit more if the feds find out about your bank accounts in the Caymans and your vacation home in Rio). Criminal investigations were initiated against 3749 of all those audited, and 1735 of that group were eventually convicted of tax fraud and sent to jail.

Suppose your hometown has 65,000 taxpayers, whose income profile and proclivity for tax evasion are similar to those of citizens of the United States as a whole, and suppose the IRS enforcement efforts remain much the same in the foreseeable future. What is the probability that at least three of your neighbors will be house guests of Uncle Sam next year?

(2) If a typist averages one misspelling in every 3250 words, what are the chances that a 6000-word report is free of all such errors? Answer the question two ways - first, by using an exact binomial analysis, and second, by using a Poisson approximation. Does the similarity (or dissimilarity) of the two answers surprise you? Explain.

(3) Five hundred people are attending the first annual "I was Hit by Lighting" Club. Approximate the probability that at most one of the five hundred was born on Poisson's birthday.