Does My Vote Matter?

1. What is the general formula for the probability he will cast the deciding vote based on the size of the population? The formula I used was which is derived using binomial distribution and Stirling’s approximation for factorial numbers.
2. Some tools, for example Microsoft Excel, fail when the size of the population gets not all that big (in the version of Excel I have, at size 1,024), which isn’t very convenient. Lots of populations are greater than this size. Can you find an alternative method to solving this problem that works on a population of size 10,000,000? What is that method, and what is the probability he would cast the deciding vote in a population of size 10,000,000? I decided to use the formula above in the *vote.py* file to give an estimation of the percent chance that our friend will cast the deciding vote.

D100 Outcomes

1. What is the EV[one D100 roll]? 50.00
2. What is the EV[maximum of 2 D100 rolls]? 66.67
3. What is the EV[maximum of 5 D100 rolls]? 83.33
4. What is the EV[minimum of 5 D100 rolls]? 16.67

Crazy 8s

1. What is the expected number of credits won or lost by playing the game? The monte carlo simulation estimates a loss of 8 credits