We can compute chances and probabilities for random processes using the approximate normality of the sum of draws. An example: consider the game of roulette in Las Vegas. There are 38 slots for a ball to fall into at random. 18 of the slots are colored red. 18 of the slots are colored black. 2 of the slots are colored green. For the simplest bet, either red or black, you bet \$5. You will win \$5 if the ball lands in your colored slot. You will lose your \$5 if it falls in a color other than yours.

i. Sketch a reasonable box model for the game of roulette.

- ii. What is the box average for this game?
- iii. What is the box standard deviation for this game?
- iv. Suppose you were to play the game 25 times. What is the probability (or chance) that you will break even (win \$0) or do better? What is the chance that you will not break even?

v. After playing 25 times, what is the probability (or chance) that your net winnings fall between -\$20 and \$40?

http://www.engr.csufresno.edu/~patague/cgi-bin/Roulette.html (a roulette simulation) http://www.vegas.com/gaming/gaming_tips/photos/roulette4.jpg (a picture of a real wheel)