

**Homework #2**  
**Economics 113**  
**Introduction to Econometrics**  
**Professor Spearot**  
**Due Friday, October 10th, 2008 – Beginning of class**

1. The Dude is an avid bowler. Since he is a master of relaxation, the probability of rolling a strike in any given frame is independent of all the others. Suppose that the probability of rolling a strike is 0.7 for each frame:
  - a. A perfect game requires 12 strikes in a row. What is the probability that The Dude rolls 12 consecutive strikes?
  - b. What is the probability that The Dude fails to roll a strike in at least one of the twelve attempts?
2. Suppose that you join a game in which a coin is flipped three times. The probability of getting heads is 0.6. The random variable  $X$  is defined as the number of heads throughout the game.
  - a. Please solve for and diagram the probability distribution of  $X$ .
  - b. What is the expected value of  $X$ ?
3. Suppose that there exists a 10-sided die with numbers 1-5 in Red and 6-10 in Blue. Calculate the probability of rolling an odd number given that the number you roll is blue.
4. Wave height is distributed normally with mean 5ft and standard deviation 2 ft.
  - a. What is the probability that a wave is 6ft tall?
  - b. What is the probability that a wave is between 6 and 7 feet tall?
  - c. What is the probability that a wave is between 2 and 7 feet tall?
  - d. Suppose that two waves are coming, and independent from one another. What is the probability that wave one is between 3 and 7 feet tall OR wave two is between 4 and 6 feet tall?