Homework assignment 6a

1. A discrete random variable x takes the values $\{3, 8, 10\}$ with the respective probabilities 0.2, 0.7, and 0.1. Determine the mean, variance, and standard deviation of x.

2. Ed Tompkins, the assistant dean of a business school, has applied for the position of dean of the school of business at a much larger university. The salary at the new university has been advertised as \$200,000. He has been told by friends within the administration of the larger university that his chances of getting the position are "about 60%." If Ed stays at his current position, his salary next year will be \$120,000. Assuming that his friends have accurately assessed his chances of success, what is Ed's expected salary for next year?

3. A music shop is promoting a sale in which the purchaser of a compact disk can roll a die, then deduct a dollar from the retail price for each dot that shows on the rolled die. It is equally likely that the die will come up any integer from 1 through 6. The owner of the music shop pays \$5.00 for each compact disk, then prices them at \$9.00. During this special promotion, what will be the shop's average profit per compact disk sold? What's the standard deviation of the shop's profit?

4. Suppose you play the following game. A gambler tosses a fair coin repeatedly until it comes up heads [this can go on for ever]. If heads appears on the first roll, she pays you \$2. If heads appears on the second throw, she pays you \$4; if on the third, she pays you \$8; if on the fourth, she pays you \$16; and so on doubling the payoff each time. Let x represent the payoff of this game. What's $\mathbb{E}[x]$? How much would you be welling to pay to play this game?