Math 107 Quiz #8 Name: _____
March 1, 2011

Show all work and answers on a separate paper. Staple this sheet to your answers.

1. Suppose you make a bet with your friend that if you roll two fair dice and can roll doubles (both dice display the same number), that you will win $22 . If you do not roll doubles, you must give your friend $5.

   (a) (3 pts.) What is the expected value to you?

   (b) (1 pts.) What is the expected value to your friend?

   (c) (2 pts.) If you were to play 200 times, would you expect to gain or lose overall? How much money would you expect to gain or lose?

2. (2 pts.) Suppose you just flipped a fair coin 8 times and you got all heads. What is the probability that the next coin flip will result in a heads?

3. Suppose an insurance company issues a policy and knows the following about its policyholders:
   1 in 200 will make a claim for $50,000 and 1 in 100 will make a claim for $20,000

   (a) (3 pts.) What is the expected value to the company if the company charges $400 for each policy?

   (b) (2 pts.) What should the company charge for each policy if they would like to have an expected value of $100 for each policy?

4. (2 pts.) If the house edge for a particular game in a casino is $0.12 for each dollar gambled, does this mean that each person that plays will lose $0.12? If the answer is no, what does it mean?