Students have fifty minutes to complete this exam. Be sure to write down all steps and work, not just an answer. Each question is worth the shown number of points.

1) A card is dealt from a complete deck of 52 playing cards (no jokers). (10 points)

    a) Find the probability of drawing the queen of spades.

    b) Find the probability of drawing not a jack.

2) Find the probability that the sum is even or doubles when a pair of dice is rolled. (10 points)

3) You order twelve burritos to go from a Mexican restaurant, five with hot peppers and seven without. However, the restaurant forgot to label them. If you pick three burritos at random, find the probability of the event that none has hot peppers. (10 points)

4) Two hundred people apply for two jobs. Sixty are women. If two people are selected at random, what is the probability that only one is a woman. (10 points)

5) (10 points)

    a) Find the probability of winning first prize in a 4/30 lottery.

    b) What must the jackpot be for it to make sense to buy a ticket for $1.00?

6) Based on his sales records, a salesman knows that his weekly commissions have the following probabilities: (10 points)

commission	$0	$1000	$2000	$3000	$4000
probability	.13	.21	.43	.13	.1

7) In 1973, the University of California at Berkeley admitted 1,513 of 4,409 female applicants for graduate study, and 3,758 of 8,491 male applicants. (10 points)

    a) Find the probability that an applicant was admitted.

    b) Find the probability that an applicant was admitted, given she was female.

8) A flush in a hand of 5-card poken with all five cards having the same suit. Find the probability of drawing a flush from a deck of 52 cards (no jokers) in 5-card poker. (10 points)

9) A PC manufacturer buys 40% of its chips from Japan and the rest from America. 1.1% of the Japanese chips are defective, and 2.4% of the American chips are defective. Find the probability that a chip is defective and made in Japan. (10 points)

10) You are dealt two cards from a deck of 52 cards (no jokers). (10 points)

    a) Find the probability that both cards are aces.

    b) Find the probability that both cards are spades.

    c) Find the probability that both cards have the same value, given one card is the Ace of spades.

Extra Credit: (10 points)

Being long a put option gives you the _____ to _____.

Being long a call option gives you the _____ to _____.

Being short a put option gives you the _____ to _____.

Being short a call option gives you the _____ to _____.