

TEST FOUR, MA 114, DR. JING'S SECTION
NOVEMBER 15, 2005.

Print Your Name:

Row:

Seat number:

Please turn in the current page together with your work sheets and place at appropriate pile.

PLEASE SHOW YOUR WORK FOR PARTIAL CREDITS.

1. (20 pts) What is the cardinality of the sample space for the following problem:
 - (a) When you select one member from a pool of 10 people.
 - (b) A coin is tossed twice to observe whether you get a head or tail.

2. (10 pts) Suppose $P(A) = 0.5$, $P(B) = 0.7$, and $P(A \cup B) = 0.9$, Compute
 - (a) $P(A \cap B)$
 - (b) $P(A \cap B^c)$

3. (20 pts) A group of 4 boys and 3 girls are going to sit together in a row of 7 theater seats. If they seat themselves randomly,
 - (a) What is the probability they will be seated in alphabetical order?
 - (b) What is the probability the boys will be seated together and the girls will be seated together?

4. (20 pts) A class of 35 students is selecting 3 members to represent the class. There are 20 male students and 15 female students. Assume that the selection is made randomly.
 - (a) What is the probability that three members consist of 2 men and 1 woman?
 - (b) What is the probability that three members consist of all three women?
 - (c) What is the probability that at least one member is woman?
 - (d) What is the probability that three members are men given that you know that John is already selected?

5. (20 pts) There are 10 married couples attending a party where two door prizes (the prizes are the same) are awarded to two different people.
 - (a) What is the probability a married couple wins the prizes?
 - (b) What is the probability that one prize goes to a man and one prize goes to a woman?
 - (c) What is the probability that Mark will win a prize given that Mark's wife Joan has won a prize?
 - (d) What is the probability that Mark will win a prize given the fact that Joan does not win a prize?