

## HOMEWORK 10 - MATH 111

DUE DATE: Monday, April 25

INSTRUCTOR: George Voutsadakis

Read each problem very carefully before starting to solve it. Each question is worth 1 point. It is necessary to show your work. Correct answers without explanations are worth 0 points.

GOOD LUCK!!

- The motor vehicle department has found that the probability of a person passing the test for a driver's license on the first try is 0.75. The probability that an individual who fails on the first test will pass on the second try is .80 and the probability of an individual who fails the first and second tests will pass the third time is 0.70. Find the probability that an individual
  - fails both the first and second tests
  - will fail three times in a row
  - will require at least two tries to pass the test.
- Suppose that three jars have the following contents: 2 black balls and 1 white ball in the first; one black ball and 2 white balls in the second; 1 black ball and 1 white ball in the third. If the probability of selecting one of the three jars is  $1/2$ ,  $1/3$  and  $1/6$ , respectively, find the probability that if a white ball is drawn, it came from the third jar.
- A building contractor buys 70% of his cement from supplier A and 30% from supplier B. A total of 90% of the bags from A arrive undamaged, while 95% of the bags from B arrive undamaged. Find the probability that a damaged bag is from supplier B.
- In 2000, 7.3% of Americans were diabetic, 19.8% of Americans were obese, and 80% of diabetics were obese. Find the probability that an American is diabetic given that the person is obese.
- How many different 4-letter radio station call letters can be made
  - if the first letter must be K or W and no letter may be repeated?
  - if repeats are allowed but the first letter is K or W?
  - How many of the 4-letter call letters starting with K or W with no repeats end in R?
- From a group of 16 smokers and 20 nonsmokers, a researcher wants to randomly select 8 smokers and 8 nonsmokers for a study. In how many ways can the study group be selected?
- A salesman has 10 accounts in a certain city. (a) In how many ways can he select 3 accounts to call on? (b) In how many ways can he select at least 8 of the 10 accounts to use in preparing a report?
- A car dealer has 8 red, 11 gray and 9 blue cars in stock. Ten cars are randomly chosen to be displayed in front of the dealership. Find the probability that
  - 4 are red and the others are blue.
  - 3 are red, 3 are blue and 4 are grey.
  - exactly 5 are grey and none are blue.
  - all 10 are grey.