

Assignment 2:

- 1) If a multiple-choice test consists of 5 questions each with 4 possible answers of which only 1 is correct,
 - a) In how many different ways can a student check off one answer to each question?
 - b) In how many ways can a student check off one answer to each question and get all the answers wrong?
- 2) In a fuel economy study, each of 3 race cars is tested using 5 different brands of gasoline at 7 test sites located in different regions of the country. If 2 drivers are used in the study, and test runs are made once under each distinct set of conditions, how many test runs are needed?
- 3) How many different linear arrangements are there of the letters A,B,C,D,E,F for which
 - a) A and B are next to each other;
 - b) A is before B;
 - c) A is before B and B is before C;
 - d) A is before B and C is before D;
 - e) A and B are next to each other and C and D are also next to each other;
 - f) E is not last in line?
- 4) A student is to answer 7 out of 10 questions in an examination. How many choices has she? How many if she must answer at least 3 of the first 5 questions?
- 5) In how many ways can a man divide 7 gifts among his 3 children if the eldest is to receive 3 gifts and the others 2 each?
- 6) At a certain University, 20 percent of the men and 1 percent of the women are over six feet tall. Furthermore, 40 percent of the students are women. If a student is randomly picked and is observed to be over 6 feet tall, what is the probability that the student is a woman?
- 7) An automobile manufacturer is concerned about a possible recall of their best-selling four-door sedan. If there were a recall, there is 0.25 probability that a defect is in the brake system, 0.18 in the transmission, 0.17 in the fuel system, and 0.40 in same other area.
 - a) What is the probability that the defect is the brakes or the fueling system if the probability of defects in both systems simultaneously is 0.15?
 - b) What is the probability that there are no defects in either the brakes or the fueling system?
- 8) For married couples living in a certain suburb the probability that the husband will vote on a bond referendum is 0.21, the probability that his wife will vote in the referendum is 0.28, and the probability that both the husband and wife will vote is 0.15. What is the probability that
 - a) at least one member of a married couple will vote?
 - b) a wife will vote, given that her husband will vote?
 - c) a husband will vote, given that his wife does not vote?
- 9) A certain federal agency employs three consulting firms(A,B, and C) with probabilities 0.40, 0.35, and 0.25, respectively. From past experience it is known that the probabilities of cost overruns for the firms are 0.05, 0.03, and 0.15, respectively. Suppose a cost overrun is experienced by the agency.
 - a) What is the probability that the consulting firm involved is company C?
 - b) What is the probability that it is company A?

10) Three printers do work for the publications office of Georgia Tech. The publications office does not negotiate a contact penalty for late work, and the data below reflect a large amount of experience with these printers.

Printer,i	Fraction of Contracts Held by Printer i	Fraction of Time Delivery More than One Month Late
1	0.2	0.2
2	0.3	0.5
3	0.5	0.3

A department observes that its recruiting booklet is more than a month late. What is the probability that the contract is held by printer?

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