

# HOMEWORK 10 - MATH 111

DUE DATE: Monday, April 26

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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!!

1. In an Indian state, 60% of the population lives in inner cities, 10% in suburbs and 30% in rural areas. 60% of those living in inner cities receive poor medical care and the corresponding probabilities for those living in the suburbs and in rural areas are 10% and 80%, respectively. Find the probability that a person in the population selected at random receives poor medical care.
2. In the country Fantasia, the official language is Fantastic, whose alphabet has only 12 letters, and the numbering system provides only for 3 digits. In that country, the licence plates of registered vehicles consist of two triples: the first triple consists of two letters followed by a number and the second pair consists of two numbers followed by a letter. How many Fantastic licence plates are possible?
3. How many different strings may be formed by using four A's, three B's and seven C's? (Look at a similar problem in your book!)
4. The U.S. senate has 53 republican and 47 democratic senators. A committee of 14 members is to be formed consisting of 8 republicans and 6 democratic senators. In how many ways is it possible to form such a committee?
5. A bridge hand consists of 13 cards out of a normal deck of 52 cards. Find the probability that a bridge hand contains
  - (a) 3 face cards and 2 aces.
  - (b) 9 cards of one suit and 4 of another.
6. Suppose that a secret Iraqi War Council has a board consisting of 12 American, 4 British, 2 Spanish, 1 Italian and 1 Polish member. A committee of 5 members of this board is to be formed to deal with issues concerning coalition forces. In how many ways can such a committee be formed so that at least three of the non-American members are members of the committee?
7. How many 7-letter strings (in small letters) begin with "a" and end with either "y" or "a"?
8. Consider the experiment of tossing a fair die five times. How many outcomes does the sample space have? How many outcomes are there in the event "exactly two 5's showed"?