

Homework 2, ISyE Spring 2006

Due on Friday, January 27

Problem 1 Suppose A and B are events of a given sample space Ω . Furthermore, suppose you know that $P(A) = 0.6$, $P(A \cap B) = 0.4$, and $P(B - A) = 0.3$. Compute the following: (a) $P(B)$, (b) $P(A \cup B)$, (c) $P(A^c \cup B^c)$, and (d) $P(B^c \cap A)$.

Problem 2 (a) How many license plates are possible if the first three places are occupied by letters and the last three by numbers? (b) Assuming all combinations are equally likely, what is the probability the three letters and the three numbers are all different?

Problem 3 Six students, three boys and three girls, line up in a random order for a photograph. What is the probability that the boys and the girls alternate?

Problem 4 Hayter, Problem 1.7.12

Problem 5 Hayter, Problem 1.7.13

Problem 6 Hayter, Problem 1.7.18

Problem 7 A student studies 12 problems from which the professor will randomly choose 6 for a test. If the student can solve 9 of the problems, what is the probability she can solve at least 5 problems on the test?