

Course: CS 1050 C (Fall'03) – Homework 6

Instructor : Prasad Tetali, office: Skiles 126, email: tetali@math.gatech.edu

Office Hours: Wed. Fri. 4:30–5:30pm, Thurs. 2:00–3:00pm

Due: No need to submit this – would have been due on the day of the test

1. Suppose that a couple decides to have two children. Let's say that each child is equally likely to be a boy or a girl. (Assume that the children are born in succession, and not as twins for the sake of the following questions.)

Before calculations, try to see if you expect three distinct answers or not, for the three probabilities below.

- (a) What is the chance that they have two girls?
- (b) Suppose we know that the first one is a girl. What is the chance that they have two girls?
- (c) Suppose we know that they have at least one girl. Then what is the chance that they have two girls?

2. Suppose there are 10 men and 5 women in a certain school. A governing committee of three people needs to be formed with the condition that at least one person on the committee is a woman. How many possible ways are there to form such a committee?

Is the following argument correct or not for the problem? “Choose a woman out of five women in 5 ways. Now that we have fulfilled the desired condition, we may choose the remaining two out of the remaining 14 people. Thus the answer is $5 \times \binom{14}{2}$.”

Section 6.3: 2, 6, 7, 10, 11, 13, 17

Section 6.4: 6 through 12

Notices.

Quiz. This Friday (Oct. 3rd) in class (15-20 min.); topics: 6.1-6.2

• **Review sessions : Monday (Oct. 6th) 3:15-4:30, and Tuesday (Oct. 7th) 4:30-6:00. Discussion will include Set theory and some of the above problems.**

• Test 2 is on Oct. 8th; material includes Chapter 5 and Sections 6.1–6.4 (basic probability, basic permutations and combinations; inclusion-exclusion is excluded – you will see Chapter 6 and a lot more on *counting* in Math 3012.)

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