

Name (please print):

Math 461, Sections B/C, Spring 2009  
HW Assignment 1, due Friday, 1/30/2009

### Instructions

- **Write your name on the cover sheet and staple the sheet to the assignment.** Do the problems in order, and make sure that each problem is clearly labelled. The assignment is due **in class** on the above due date. **Late homework, or homework dropped off in mailboxes, will not be accepted.** (You can, however, turn in the homework early, in my office, 241 Illini Hall, at any day before the due date.) If you cannot turn in an assignment on time, but have a legitimate excuse (e.g., illness), with appropriate documentation, the assignment will be marked as “excused”; see the Course Information Sheet handed out at the beginning of class for details.
- **Solutions versus answers:** Solutions, rather than answers, are expected for all problems. An answer is the final answer to the question asked in the problem. By contrast, a solution is more; it also includes the argument/reasoning/work that leads to the answer. **In order to earn credit on a problem, your write-up must clearly show how you arrived at a particular answer; an answer (such as  $7 \cdot 6 \cdots 3$ , or  $7!/(2!3!2!)$  or 726) without any explanation will not earn credit.** For example, if the answer to a combinatorial question is  $\frac{7!}{2!3!2!}$ , you should indicate where the various terms in this expression ( $7!$ ,  $2!$ ,  $3!$ ,  $2!$ ) come from. Use the class examples or the examples in the book for guidance. The explanations do not have to be wordy; for example, writing “# of permutations of I’s” with an arrow pointing to the term  $3!$  would be an adequate justification for this term.
- **Raw answers versus numerical answers:** For combinatorial problems, you should give answers in “raw”, unevaluated form, i.e., the form in which they arise naturally in the argument. For example, if a counting argument leads to the expression  $\binom{8}{3}\binom{4}{3} + \binom{8}{3}\binom{2}{1}\binom{4}{2}$ , leave it as is (with appropriate explanations for the various binomial coefficients), rather than trying to simplify (e.g., by working out a numerical value, or writing 2 instead of  $\binom{2}{1}$ ). Grading will be based only on these “raw” answers, along with the explanations; you will not get extra credit for computing numerical values. However, for your own benefit you might want to work out numerical values as this allows you to check your work against the answers in the back of the book (p. 508).

### HW 1 Problems (pp. 16–18)

All of the problems below are from the problems section at the end of Chapter 1 (p. 16–18), and relate to material in Sections 1.1–1.5 in the book and covered in the first three class hours (through Monday, 1/26). The assigned problems are a good representation of the various types of problems that might come up in this context. If you want additional practice, do the remaining non-asterisk problems from this section. (The asterisk problems \*31, etc., relate to the optional section \*1.6, which we will not cover.) Some of the unassigned problems are of warmup/quickie type, while others are very similar to problem that are already included in the assignment.

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|--------|--------|----------------|
| 1. #7  | 5. #12 | 9. #21 and #22 |
| 2. #8  | 6. #15 | 10. #24        |
| 3. #10 | 7. #16 | 11. #28        |
| 4. #11 | 8. #20 | 12. #29        |