Assignment 2
Due Wednesday, February 3

Multiple-page homework must be STAPLED when handed in.

Exercises: (P = Problems, TE = Theoretical Exercises)
Chapter 2: P 2, 6*, 8, 10, 12*, 14*, 15, 25, 27*, 28, 30*
   TE 1, 2, 4, 6, 10, 11*, 12

*Problems marked with an asterisk will be collected and graded. Remember to explain how you arrive at your answers.

Hints: P: 12. A Venn diagram may help.

28. When sampling without replacement we may either think of ordered samples (there are $19 \cdot 18 \cdot 17$ of these) or unordered samples (there are $\binom{19}{3}$); the latter is usually simpler. When sampling with replacement we must use ordered samples (there are $19^3$).

TE: 1, 2, 4. For 1 and 2 you can understand why the conclusion is true using a Venn diagram argument, as we did in class. For these, and for 4, try to give also an argument in words. Follow the model of the proof of the first DeMorgan law on the bottom of page 28.

6. Express your answer in terms of $E$, $F$, and $G$, using set operations of union, intersection, and complement. Examples: (a) $EF^cG^c$, (f) $E^cF^cG^c$ or $(E \cup F \cup G)^c$ (using a DeMorgan law).

10. This is a special case of the general inclusion/exclusion formula. Give a proof similar to the proof of Proposition 4.3, or use Proposition 4.3 itself twice.