Math 172—Combinatorics—Spring 2010
Problem Set 2

Suggested study exercises (with solutions in the book, not to hand in): Chapter 4, Ex. 3, 4 (have you seen this before?), 6, 8, 9, 10, 11, 17, 18, 20, 25, 26, 27; Chapter 5, Ex. 1, 2, 3, 4, 5, 10.

Problems from the book:

Chapter 4: Ex. 32 (see 19 for definition), 33, 35, 37, 44

Chapter 5: Ex. 18, 22

Additional problems:

A. Prove the identity in Chapter 4, Ex. 34 two ways: combinatorially, and using the binomial theorem.

B. Prove the identity

$$\sum_m \binom{n}{m} S(m,k)S(n-m,l) = \binom{k+l}{l} S(n,k+l),$$

valid for all non-negative integers k, l, n.