Recommended practice:

HHM 2.6 pp. 165-166 # 2
HHM 2.6.2 pp. 170-171 # 5,6,7,9
HHM 2.6.3 pp. 175-176 # 9,10
HHM 2.6.5 pp. 183-184 # 2, 4, 7
Ver Part 2 pp. 33-34 #1, 6
Ver Part 3 pp. 10-11 # 3, 5.

Assigned questions to hand in:

(1) Suppose a drawer contains ten red beads, eight blue beads, and eleven green beads. Determine a generating function that encodes the answer to each of the following problems.
(a) The number of ways to select $k$ beads from the drawer.
(b) The number of ways to select $k$ beads if one must obtain an even number of red beads, and odd number of blue beads, and a prime number of green beads.
(c) The number of ways to select $k$ beads if one must obtain exactly two red beads, at least five blue beads, and at most four green beads.

HHM 2.6.3 p. 166

(2) Two lottery systems are proposed for a new state lottery. In the first system, players select six different numbers from $\{1,2,\ldots,50\}$. In the second system, players select six numbers from $\{1,2,\ldots,45\}$, and may select any number as many times as they want. (In the second system, each ball selected in the lottery drawing is replaced before another ball is selected.) Which system has more possible tickets?

HHM 2.6.2.8 p. 171

(3) A binary sequence is a sequence in which each term (entry) is 0 or 1. Determine a recurrence relation for the number of binary sequences of length $n$ that do not contain two adjacent 1s.

HHM 2.6.5.6 p. 184

(4) Determine the number of compositions of $n$ with any number of parts (sequences with positive entries $\langle a_1, \ldots, a_k \rangle$ of any length $k$ where $a_1 + \cdots + a_k = n$) where each part (entry) is odd.

Ver Part 2 #7 p. 34

(5) Solve the following recurrence equation with the initial condition $a_0 = 0, a_1 = 5$:

$$a_n - 13a_{n-1} + 36a_{n-2} = 0.$$

Ver Part 3 #3a p. 10