

Homework Assignment 10

Due Date: Friday, 14th of November, 2008

1. Chapter 11, page 425, question 8 (Shapley-Shubik power index with many voters).
2. Consider the weighted voting system:

$$[q : w_A, w_B, w_C, w_D] = [11 : 7, 4, 2, 2]$$

- (a) Determine all of the winning coalitions.
 - (b) Determine all of the blocking coalitions.
 - (c) Compute the Banzhaf power index of this voting system.
 - (d) Pair each winning coalition that A is critical for with the corresponding dual blocking coalition in which A is critical.
3. Compute the Banzhaf power index of

$$[q : w_A, w_B, w_C, w_D] = [13 : 9, 4, 3, 1]$$

4. Use combinations to answer the question below:
 - (a) Suppose there are 15 swimmers on the local swimming team. In how many ways could you choose a group of 7 of these swimmers to participate in a poll?
 - (b) Suppose a lottery has 50 different numbered balls. How many ways could you select 6 numbers (in any order) for your lottery ticket?
5. Use combinations to compute the Banzhaf power index of the weighted voting system $[7 : 3, 2, 2, 2, 2]$.
6. Calculate the following. Your answer should be a number.
 - (a) C_3^7
 - (b) C_{100}^{50}
 - (c) C_2^{15}
 - (d) C_{13}^{15}