1. In earlier notes, we found seven possible coalitions with players P_1, P_2, and P_3.

   (a) List them again below.

   (b) Suppose the system has a fourth player, P_4. Determine how many coalitions in this case. Try to answer the question without actually listing all of them.

   (c) What if there is a fifth player, P_5?

   (d) Make a conjecture about how many coalitions are possible with n players, $P_1, P_2, P_3, \cdots P_n$. How would you argue that your count is correct?

   (e) What does this suggest about the mechanics of calculating the Banzhaf Power Index for a weighted voting system with a lot of players?

2. What is the Banzhaf Power Index

   (a) when there is a dictator

   (b) for a dummy player

   (c) if all players have an equal number of votes

   (d) if player P_1 has double the number of votes as player P_2?