

Political power: Homework

Mathematics 170

due October 15, 2004

1. Suppose license plates must be six characters: the first three letters, and the last three numbers. How many different license plates are possible?
2. *Mathematics and Politics*, pg. 91, problems 6 and 7.
3. Consider the following simple model of the electoral college: say there are an equal number of “red” and “blue” electoral votes, and that there are 77 electoral votes from swing states. The swing states are:
 - Florida (27 votes)
 - Ohio (20)
 - Michigan (17)
 - Colorado (9)
 - New Hampshire (4)

Whichever candidate gets at least 39 votes will win the Presidency. Compute the Banzhaf index of each state.

Florida has about twelve times the population of New Hampshire. Which state benefits more from the electoral college in this example?

4. (An easy model of the United Nations Security Council.) Suppose there are four countries on the Security Council: the United States and three others (say, Albania, Belgium, and Congo).

A resolution will pass the Security Council if the US votes for it, and if at least two of the three other countries also vote for it. List all the winning coalitions, and then compute the Banzhaf index of each country.