Writing Assignment #1 (75 points)
Due: February 25, 2003

Purposes of the Assignment
- Writing to learn mathematics.
- Gain experience in communicating mathematics.
- Demonstrate knowledge of the voting methods we have studied in class.
- Demonstrate the ability to use the voting methods we have studied in class.

Grading of the Assignment
In grading this assignment, three aspects of your work will be emphasized.
- **Mathematics:** You will need to show that you understand the mathematics involved in the assignment.
- **Context:** You need to clearly explain the situation you are using for this assignment. You will clearly have to explain the election you are using and the candidates. You will also need to clearly explain the assumptions you are using to set up the hypothetical preference schedules for the election.
- **Conventions:** Correct spelling, grammar, and mathematical notation are expected. You are encouraged to have a friend read a draft of the paper.

A tentative evaluation form is included at the end of this assignment.

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The Assignment

Find the data for a real election in which there were three or more candidates and no candidate received a majority of votes. If possible, find an election where the top two vote getters were within five or six percentage points. The election does not have to be a political election.

Discuss how the election could have turned out under the different voting methods discussed in this course*. To do this, you will have to make reasonable assumptions about voters' preference schedules. Do not restrict yourself to one set of assumptions. Use at least two scenarios whose outcomes would result in different outcomes for the election For example, in the 2000 presidential election in the State of Florida, in discussing the plurality vote with elimination, you should describe a situation in which Bush would have won and a situation in which Gore would have won.

Your Paper must be self-contained. This means that, you must include a complete description of each voting method and illustrate the computations involved for that method for at least one candidate. You should summarize the results for each scenario in a table.

If there are more than four candidates for the election, you may restrict your analysis to the candidates who finished first, second and third (and possibly fourth). For example, if for the 2000 presidential contest in the State of Florida, you should restrict your analysis to Bush, Gore, Nader, and Buchanan.

Following are some possible elections that might be able to be used:

- The 1992 Presidential Election (national popular vote) with Clinton, Bush, and Perot. There are probably several states that could be used with this election.

- The 2000 Presidential Election in a state other than Florida with Buchanan, Bush, Gore, and Nader.

- The 2000 Senate Election in the State of Washington with Cantwell, Gorton, and Jared.

- The 1998 Gubernatorial Election in the State of Minnesota.

- The 2002 Gubernatorial Elections in Vermont, Oklahoma, Arizona, and Wisconsin.

- The 2002 Senate Election in the State of Louisiana.

- The 1860 Presidential Election (national popular vote) with Lincoln, Douglas, Bell, and Breckinridge.

*Use at least the following three methods: the plurality method with elimination, the Borda count method, and the method of pairwise comparisons.

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Possible Evaluation Form

Ideas and Content	Weak		Strong

Ideas and Content
- Overall situation described correctly
- Correctly tells the "story" of the election.
- Complete and correct mathematical details
- Equations and mathematical constructions correct

Style and Organization
- Unique/individual introduction that makes you want to read the paper

- Interesting presentation
- Addresses all parts of the assignment
- Includes enough details and examples

Conventions

- Free of grammatical errors
- Free of spelling and punctuation mistakes