

MGF 1107**WEEK 1 REVIEW**

1. Pedro, Sergio, Jose, and Liz are running for president of their school's Math Club. The method of voting is sequential pairwise voting and the 27 voters have the following preference lists.

12	7	5	3
P	S	J	L
S	J	L	J
J	L	P	S
L	P	S	P

a) Find an agenda under which Peter would win.

b) Find an agenda under which Sergio would win.

c) Find an agenda under which Liz would win.

2. In Minnesota's 1998 gubernatorial race, former pro wrestler Jesse "The Body" Ventura, running as the Reform Party candidate, stunned the political world by defeating both Minnesota Attorney General Skip Humphrey (Democrat) and St. Paul Mayor Norm Coleman (Republican). Minnesota used the plurality method and Ventura won receiving 37% of the votes. Exit polls indicated that voters' preferences were similar to the following table, where the numbers at the top indicate the percentage of the electorate having that preference.

35	28	20	17
N	S	J	J
S	N	N	S
J	J	S	N

a) Suppose Minnesota had instead used the plurality with runoff method. Who would have been elected governor then?

b) Does this election have a Condorcet winner? If so, who?

c) What does the original plurality election that Jesse Ventura won and part (b) of this problem tell us about whether or not plurality voting satisfies the Condorcet Winner Criterion?

3. Suppose Cindy prefers chocolate ice cream more than vanilla ice cream and she prefers vanilla to strawberry.

a) Does she prefer chocolate over strawberry or strawberry over chocolate?

Cindy is one of three triplets and she and her sisters Mindy and Mandy are having a birthday party. Their mom will only let them serve one flavor of ice cream at the party so they decide to vote. Here are their preferences:

Cindy	Mindy	Mandy
C	V	S
V	S	C
S	C	V

b) If the choices are chocolate or vanilla, which flavor do the sisters prefer?

c) If the choices are vanilla or strawberry, which flavor do the sisters prefer?

d) If the choices are chocolate or strawberry, which flavor do the sisters prefer?

e) This problem illustrates what surprising fact about a group's voting preferences?

4. The 37 members of the McCoy family are planning a reunion and voting whether to meet in Atlanta, Boston, Chicago or Detroit. Their preferences are indicated in the following lists.

10	15	12
C	A	B
A	B	D
B	D	C
D	C	A

a) Using sequential pairwise voting and the agenda ABCD, who wins the election?

b) How many of the 37 voters prefer B to D?

c) This example shows that Sequential Pairwise voting fails to satisfy what desirable property of a voting system?