CHAPTER 1 - VOTING METHODS

1.2 - BORDA'S METHOD

Borda's Method:

(1) Voters rank the entire list of candidates from first choice to last choice.

(2) For each ballot, the lowest rank candidate is given 1 point, the second lowest 2 points, and so on until the highest ranked candidate is given a number of points equal to the number of candidates.

(3) The total number of points for each candidate is summed across all ballots. This number of points is called the *Borda count*.

(4) The candidate with the highest Borda count wins.

Example 1: The members of a basketball team decide to select a team captain using Borda's method. The preference rankings on the nine ballots are listed here.

	Number of Voters					
	3	**1**	**1**	**1**	**2**	**1**
Thomas	1	1	2	3	2	3
Walker	2	3	1	1	3	2
Goodman	3	2	3	2	1	1

Who is the winner using Borda's method?

How to solve this: There are 3 candidates, so first place votes give the candidate 3 points, second place votes give the candidate 2 points, and third place votes give the candidate 1 point. Thomas has 4 first place votes, 3 second place votes, and 2 third place votes, so he gets $4(3) + 3(2) + 2(1) = 20$ points. One way to organize these calculations is in a chart like the one below.

	1st Place			**2nd Place**			**3rd Place**			Borda Count
Thomas	4	(3)	+	3	(2)	+	2	(1)	=	20
Walker	2	(3)	+	4	(2)	+	3	(1)	=	17
Goodman	2	(3)	+	2	(2)	+	4	(1)	=	10

Date: Jan-22-13.

The winner is Thomas, since he has the highest Borda count.

Example 2: Three candidates are running for president of their club. The preference rankings of the votes break down into the following percentages.

	Number of Voters					
	17	**16**	**22**	**13**	**19**	**13**
Mijares	1	1	2	3	2	3
Zapata	2	3	1	1	3	2
Scwartz	3	2	3	2	1	1

(1) Who is the winner using Borda's method?

(2) Who is the winner in a plurality election?

(3) Who is the winner in a plurality election with a runoff between the top two candidates.

How to solve this: It doesn't matter that the counts in the chart are in percentages. We can act like the percentages are numbers of voters, and do all the calculations as we did before.

(1) The following chart shows Mijares has the highest Borda count, and wins.

	1st Place			**2nd Place**			**3rd Place**			Borda Count
Mijares	33	(3)	+	41	(2)	+	26	(1)	=	207
Zapata	35	(3)	+	30	(2)	+	35	(1)	=	200
Shwartz	32	(3)	+	29	(2)	+	39	(1)	=	193

(2) Looking only at first place votes, Zapata has 35% and wins by a plurality.

(3) In the plurality elections, Zapata, with 35% of the vote, and MIjares, with 33% of the vote, are the top two candidates. Schwarz had 32% of the votes. The 19% of voters in the second to last column who picked Schwarz would pick Mijares as their second choice. The 13% in the last column would pick Zapata as their second choice. So Zapata would get 48% of the votes, and Mijares would get 52%, making Mijares the winner with a majority of the vote.

Example 3: (Strategic Voting)
An engineering team needs to select a team leader The preference rankings of the members were as follows.

	Number of Voters						
	7	**3**	**8**	**5**	**1**	**4**	**3**
Tate	1	1	2	3	2	2	3
Kummer	2	3	1	1	4	3	2
Dobbins	4	4	4	4	1	4	4
Coscia	3	2	3	2	3	1	1

(1) Which candidate is the winner using Borda's method?

(2) If Borda's method is used, could the 4 voters who ranked Coscia first and Tate second achieve a preferable outcome by voting strategically?

How to solve this:

	1st			**2nd**			**3rd**			**4th**			Borda Count
Tate	10	(4)	+	13	(3)	+	8	(2)	+	0	(1)	=	95
Kummer	13	(4)	+	10	(3)	+	7	(2)	+	1	(1)	=	97
Dobbins	1	(4)	+	0	(3)	+	0	(2)	+	30	(1)	=	34
Coscia	7	(4)	+	8	(3)	+	16	(2)	+	0	(1)	=	84

(1) The Borda counts are shown above. Kummer wins with the highest Borda count.

(2) There are **two ways** voters can achieve a preferable outcome in an election using Borda's method. They can rank candidates they prefer higher or rank candidates they dislike lower. These 4 voters can actually do both.

They can reduce Kummer's Borda count by ranking him 4th instead of 3rd, and rank Dobbins 3rd instead of 4th. This makes Dobbins' Borda count 38 and Kummer's Borda count 93 instead of 97, and Tate would win. The 4 voters prefer Tate to Kummer, so this is a preferable outcome.

They could also rank Tate 1st instead of 2nd, and rank Coscia 2nd. Then Coscia's Borda count would be 80 and Tate's Borda count would be 99, so Tate would win.