MATH 11008: The Borda Count Method
Section 1.3

The Borda Count Method: Each voter must give a complete ranking of the candidates. Each place on the ballot is assigned points. For N candidates, each candidate receives 1 point for each last place vote, 2 points for each next to last vote continuing all the way up to N points for each first place vote. The points are tallied for each candidate separately, and the candidate with the highest point total wins.

- While not common, two or more candidates could tie with the highest point count. In these cases, the tie must be broken using some predetermined procedure or allow the tie to stand. Unless otherwise noted, we will assume that ties are allowed to stand.
- The important defining feature of this method is that the points for the various spaces must be equally spaced. In other words, the difference between the points given for any two consecutive rankings must be equal.
- Developed by mathematician **Jean-Charles de Borda** in 1770. As a member of the Academy of Science, he devised this voting method to elect officers of the academy.
- The Borda Count Method is widely used in a variety of important real world elections, especially when there is a large number of candidates. For example, the winner of the Heisman Trophy and the winners of various music awards (Country Music Vocalist of the Year, etc) are decided using the Borda Count Method.

Example 1: The Math Appreciation Society (MAS) is dedicated to the fostering of enjoyment and appreciation of mathematics among college students. During a recent meeting, they have four candidates running for president: Alisha (A), Boris (B), Carmen (C), and Dave (D). Each of the 37 members of the club votes by preference ballot indicating their choices. Below is the preference schedule for this election.

Number of voters	14	10	8	4	1
1st choice	A	C	D	B	C
2nd choice	B	B	C	D	D
3rd choice	C	D	B	C	B
4th choice	D	A	A	A	A

Use the Borda Count Method to determine the president.

Example 2: A 13-member committee is selecting a chairperson. The 3 candidates are Albert (a), Barbara (b), and Charles (c). Each committee member completely ranked the candidates on a separate ballot. The preference schedule is listed below.

Number of voters	Ranking
4	$a > b > c$
2	$b > c > a$
4	$b > a > c$
3	$c > a > b$

Use the Borda Count Method to determine the chairperson.

- **Borda Count Method and fairness criterion**
  - The Borda Count Method violates the majority criterion and the Condorcet criterion.
  - Although violations of the majority criterion can happen, they do not happen very often, and when there are many candidates such violations are rare.
  - Violations of the Condorcet criterion automatically follow violations of the majority criterion. Therefore, if there is no violation of the majority criterion, then a violation of the Condorcet criterion is still possible, but it is also rare.

Example 3: An election is held with five candidates (A, B, C, D, and E) and 20 voters. The winner of the election is determined using the Borda Count Method.

(a) What is the maximum number of points a candidate can receive?

(b) What is the minimum number of points a candidate can receive?

(c) How many points are given out by one ballot?

(d) What is the total number of points given out to all five candidates?

(e) If A gets 69 points, B gets 70 points, C gets 64 points, and D gets 48 points, how many points did E get?