LESSON MAKER PRO

Rank It Right

Use Borda count to choose a winner from ranked ballots.

HIGH SCHOOL · MA.912.LT.3

MA.912.LT.3 "Apply techniques from Election Theory and Fair Division Theory to solve problems."

NAME _____ **DATE** _____

BORDA COUNT BASICS

In Borda count, a first-place ranking earns one fewer point than the number of candidates. Each lower ranking earns one less point, and the last-place ranking earns 0 points. Multiply each ranking's points by the number of voters, then add each candidate's total.

WORKED EXAMPLE

Use Borda count for this election: 17 voters rank P > Q > R, 12 voters rank Q > R > P, and 8 voters rank R > P > Q. Who wins?

1. Use 2 points for first, 1 point for second, and 0 points for last.
2. P: 17(2) + 12(0) + 8(1) = 42.
3. Q: 17(1) + 12(2) + 8(0) = 41.
4. R: 17(0) + 12(1) + 8(2) = 28, so P wins.

Answer: P wins with 42 points.

PRACTICE 6 problems

1 A voter ranks J > K > L. Using Borda count, how many points does each candidate receive from this ballot?

ANSWER _____

2 Nine voters rank W > X > Y, and 2 voters rank X > Y > W. How many Borda points does X receive?

ANSWER _____

3 Sixteen voters rank L > M > N, and 7 voters rank M > N > L. Who wins by Borda count?

ANSWER _____

4 Eleven voters rank A > B > C > D, and 9 voters rank D > C > B > A. How many Borda points does B receive?

ANSWER _____

5 Thirteen voters rank K > L > M. How many Borda points does L receive from this group?

ANSWER _____

6 Fifteen voters rank A > B > C, 10 voters rank B > C > A, and 9 voters rank C > B > A. Who wins by Borda count?

ANSWER _____

APPLY IT Show your work

1 The student activities committee is choosing a concert headliner. Fourteen students rank Indie > Hip-Hop > Pop > DJ, 11 rank Hip-Hop > Pop > DJ > Indie, and 9 rank Pop > DJ > Hip-Hop > Indie. Use Borda count to choose the headliner.

WORK SPACE

ANSWER _____

2 Students are choosing a spirit-week theme. Sixteen students rank Neon > Throwback > Movie, 13 rank Throwback > Movie > Neon, and 7 rank Movie > Throwback > Neon. Which theme wins by Borda count?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Four candidates are running for student body president. Fifteen voters rank A > B > C > D, 14 rank B > C > D > A, 11 rank C > D > B > A, and 10 rank D > C > B > A. State the plurality winner and the Borda count winner. Then explain in one sentence why the winners are different.

WORK SPACE AND ANSWER

Rank It Right

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A voter ranks J > K > L. Using Borda count, how many points does each candidate receive from this ballot?	**J = 2, K = 1, L = 0**
2	Nine voters rank W > X > Y, and 2 voters rank X > Y > W. How many Borda points does X receive?	**13 points**
3	Sixteen voters rank L > M > N, and 7 voters rank M > N > L. Who wins by Borda count?	**L wins with 32 points.**
4	Eleven voters rank A > B > C > D, and 9 voters rank D > C > B > A. How many Borda points does B receive?	**31 points**
5	Thirteen voters rank K > L > M. How many Borda points does L receive from this group?	**13 points**
6	Fifteen voters rank A > B > C, 10 voters rank B > C > A, and 9 voters rank C > B > A. Who wins by Borda count?	**B wins with 44 points.**

PART 2 · APPLY IT

1. **Hip-Hop wins with 70 points.** With four choices, use 3, 2, 1, and 0 points. The totals are Indie 42, Hip-Hop 70, Pop 63, and DJ 29.
2. **Throwback wins with 49 points.** Use 2, 1, and 0 points for each ranking. The totals are Neon 32, Throwback 49, and Movie 27.

CHALLENGE

Plurality winner: A. Borda count winner: C. A has the most first-place votes, but C earns enough second-place and other ranking points to have the highest Borda total, 96 points.

Accept correctly computed point tables and equivalent statements of the winners. For Borda count, accept totals shown in any clear order as long as the scoring is 2, 1, 0 for three candidates and 3, 2, 1, 0 for four candidates.