Mystery gang goes abroad

Daphne, Fred, Scooby Doo, Shaggy, and Velma have solved many mysteries and are ready to take a much-needed vacation. Their top four travel choices are Australia, Canada, India, Japan.

Here is a summary of what we know:

Voters: Daphne, Fred, Scooby Doo, Shaggy, Velma.

Candidates: Australia, Canada, India, Japan.

Pairwise rankings:

Daphne: Australia > India > Japan > Canada.

Fred: Canada > India > Japan > Australia.

Scooby Doo: Japan > Australia > India > Canada.

Shaggy: Australia > Canada > Japan > India.

Velma: Japan > Australia > India > Canada.

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This is the template of a well-known example: see, e.g.,
www.whydomath.org/node/voting/impossible.html

Pairwise voting: Each voter ranks the candidates from favorite to least favorite. For every pair of candidates, A and B, we run a 1-on-1 election:

- A gets a point for every voter that ranked A above B.

- B gets a point for every voter that ranked B above A.

- The candidate with the most points wins the 1-on-1 election between A and B.

The candidate with the most 1-on-1 election wins is the winner of the entire election.

If a candidate is the winner of every one of their 1-on-1 elections, then that candidate is called the *Condorcet winner.*

Voter table:

	A vs. C	A vs. I	A vs. J	C vs. I	C vs. J	I vs. J
Daphne						
Fred						
Scooby Doo						
Shaggy						
Velma						
Winner						

Point Tally Table:

	Number of 1-on-1 wins
Australia	
Canada	
India	
Japan	

Question: Does this election have a Condorcet winner?

Now run the election using the following voting system:

Each voter gives 3 points to their favorite candidate, 2 points to their second favorite candidate, 1 point to their third favorite candidate, and 0 points to their fourth favorite candidate. Recall that this voting method is the Borda count [3,2,1,0].

Voter Table:

	Australia	Canada	India	Japan
Daphne				
Fred				
Scooby Doo				
Shaggy				
Velma				

Point Tally Table:

	Number of points
Australia	
Canada	
India	
Japan	

Results Table:

	Candidate(s)
First Place	
Second Place	
Third Place	
Fourth Place	

Question: Does Borda count always elect the Condorcet winner?