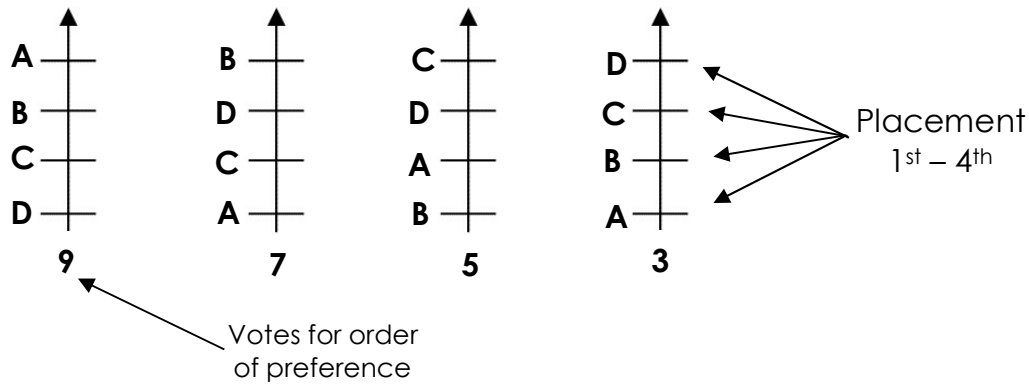


24 people were asked to rank the following sports in order of most favorite to least favorite. A – Basketball; B – Baseball; C – Football; D – Soccer. The following linear graphs illustrates the results along with the number of people in favor.

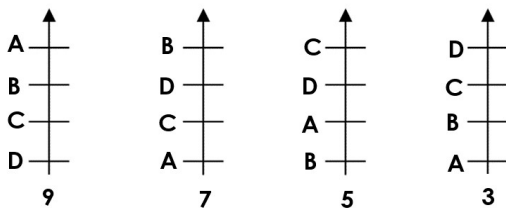


**Plurality Method:** Who has the most first place votes? A (9)

**Majority Method:** The winner must have half plus one of the votes. No majority. Need  $12 + 1$  votes.

**Run off Method:**

- Choose the two candidates that have the most first-place votes.
- Eliminate other choices.
- See who has the higher rankings now.
- Is there a majority?  $(24/2) + 1 = 13$  is needed for a majority. No majority → runoff



A & B have the most first place votes.  
A gets 9 & 5 votes (14); B gets 7 & 3 (10)  
A wins the run off.

**Sequential Run off Method:**

- Eliminates one choice at a time.
- Eliminate the candidate with the least first place votes.
- Those first place votes get reassigned to the person below.
- Continue until you have a winner.

A (9) – B (7) – C (5) – D (3)

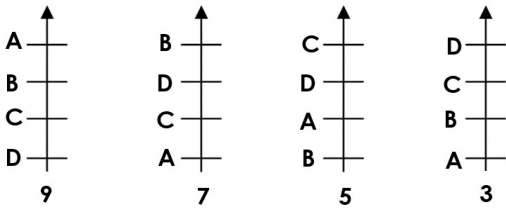
A (9) – B (7) – C (8)

A (9) – C (15)

C is the winner with a majority of votes!

## The Borda Method

- 1st place gets  $n$  points times the number of votes ranking that person first, 2nd place is  $n - 1$  points times the number of votes, etc.
- Sum the values together.
- Whoever has the largest sum wins.



$$A = 4(9) + 1(7) + 2(5) + 1(3) = \mathbf{56 \text{ Points}}$$

$$B = 3(9) + 4(7) + 1(5) + 2(3) = \mathbf{66 \text{ Points}}$$

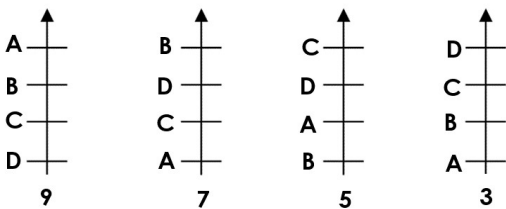
$$C = 2(9) + 2(7) + 4(5) + 3(3) = \mathbf{61 \text{ Points}}$$

$$D = 1(9) + 3(7) + 3(5) + 4(3) = \mathbf{57 \text{ Points}}$$

**The winner is "B" with 66 Points!**

## The Condorcet Method

- The candidate that can obtain a majority over all other individual candidates.
- See how many times A beats B (is it a majority?) and A beats C, etc.
- If it is a majority every time, then that candidate is the winner.



<u>Matchup</u>	<u>Winner</u>
A (9+5) vs. B (7+3)	A (14 - 10)
A (9) vs. C (7+5+3)	C (15 - 9)
A (9) vs. D (7+5+3)	D (15 - 9)
B (9+7) vs. C (5+3)	B (16 - 8)
B (9+7) vs. D (5+3)	B (16 - 8)
C (9+5) vs. D (7+3)	C (14 - 10)

B & C tied; can use head to head to declare B the winner.