

A "Majority winner" is a restaurant with more than half of the first place votes. A "Condorcet winner" is a restaurant that is preferred to every other restaurant in a head-to-head matchup (with all other restaurants eliminated).

1. (a) Why does a majority winner always win Plurality?

$\uparrow$ more than half of $\uparrow$ most 1st place
 1st place votes votes.

If Ovid's has more than half (like 51%), everybody else has to split less than half (like 49% total, 29% for you, 20% for you).

- (b) Is a majority winner still a majority winner after a candidate is eliminated?

Yes. "Everybody else" is still "Everybody else" after elimination. Ovid's might even get more votes, if it was someone's 2nd place.

*Exception: If Ovid's is eliminated, it isn't a majority winner any more.

- (c) Why does a majority winner always win Plurality with Elimination?

From (a) the majority winner is not eliminated, and from (b) that means it is still a majority winner, so from (a) it still won't be eliminated, so (b), (a), (b), (a), etc. It is never eliminated, so eventually is the only one left.

- (d) Why is a majority winner always a Condorcet winner?

Head-to-head means eliminate all but two restaurants. From (b) Ovid's is still majority, and majority always wins the head-to-head.

2.

	Amari	Blair	Charlie	Dakota	Jared	Jordan	Justice	Morgan	Cameron
1st	Ovid's	Ovid's	Ovid's	Ovid's	Subway	Subway	Subway	K-Lair	K-Lair
2nd	K-Lair	K-Lair	K-Lair	K-Lair	K-Lair	K-Lair	K-Lair	Ovid's	Ovid's
3rd	Subway	Subway	Subway	Subway	Ovid's	Ovid's	Ovid's	Subway	Subway

- (a) Write out the head-to-head matches. Who votes for which restaurant, and which restaurants win?

O vs K
 A B C D
 J H J H M C

O vs S
 A B C D M C
 J J J J J

K vs S
 A B C D M C
 J J J J J

- (b) Is there a Condorcet winner? Loser? (Who and why?)

K-Lair, wins both. Subway, loses both.

	Amari	Blair	Charlie	Dakota	Jared	Jordan	Justice	Morgan	Cameron
2. 1st	Ovid's	Ovid's	Ovid's	Ovid's	Subway	Subway	Subway	K-Lair	K-Lair
2nd	K-Lair	K-Lair	K-Lair	K-Lair	K-Lair	K-Lair	K-Lair	Ovid's	Ovid's
3rd	Subway	Subway	Subway	Subway	Ovid's	Ovid's	Ovid's	Subway	Subway

(c) How many first place votes did each candidate get?

O 4 ☺
K 2 ☹
S 3

(d) Which restaurant got the most first place votes? So which one won plurality?

Ovid's, Ovid's

(e) What does that say about Condorcet versus Plurality?

↑ ↑
K-Lair Ovid's

They are different. They can disagree.
The Plurality Winner might lose a smaller rematch.

(f) Which restaurant got the least first place votes?

K-Lair

(g) How many votes did each restaurant get after the restaurant from (f) was eliminated?
(Write out the votes.)

O 4 + 2
K Eliminated
S 3

(h) What does that say about Condorcet versus Plurality with Elimination?

↑ ↑
K-Lair Ovid's

They are different. They can disagree.
Even the PwE winner can lose to another restaurant, head to head.