1. **Majority vs Plurality, Preference Schedule**

Definition: **Plurality** Winner
The candidate who receives the most (first-choice) votes.
Definition: **Majority**
more than 50% (50% + 1 vote)
Ten Alaskans are asked to vote on the "best" of four Alaskan villages.

Voters: Bishop, Claman, Dunbar, Giessel, Hughes, Kawasaki, Myers, Olson, Tobin, Wilson
Villages: **A**dak, **B**ettles, **C**hevak, **D**iomede

Total # voters = 10

(a) Given the vote below, who wins? Did they win a **majority?**

voter	Bishop	Claman	Dunbar	Giessel	Hughes	Kawasaki	Myers	Olson	Tobin	Wilson
vote	A	A	A	A	B	B	B	C	C	D

A: 4 C: 2 B: 3 D: 1

A has a plurality

50% of voters = $\frac{10}{2} = 5$.

Majority = 6 votes.

No one has a majority!

(b) Suppose, in a different world, they voters voted this way. Now what?

voter	Bishop	Claman	Dunbar	Giessel	Hughes	Kawasaki	Myers	Olson	Tobin	Wilson
vote	A	A	A	B	B	B	C	C	C	D

A, B, C are tied with 3 votes each!

(c) One option is to **collect more information.** See the new vote tally.

voter	Bishop	Claman	Dunbar	Giessel	Hughes	Kawasaki	Myers	Olson	Tobin	Wilson
1st choice	A	A	A	B	B	B	C	C	C	D
2nd choice	C	C	C	C	C	C	D	D	B	C
3rd choice	B	B	B	D	D	D	B	B	A	B
4th choice	D	D	D	A	A	A	A	A	D	A

Observe that the vote tally in part (c) can be usefully summarized as follows:

# votes	3	3	3	1
1st choice	A	B	C	D
2nd choice	C	C	D	C
3rd choice	B	D	B	B
4th choice	D	A	A	A

← preference schedule

2. **Fairness Criteria**

Statements that seem like they should be true in a fair election

ex: ...

3. **Condorcet Criterion**

The winner of an election should also win every head-to-head matchup they participate in.

4. Show that Chevak (C) is the Condorcet Winner in the vote tally summarized in part 1d.

# votes	3	3	2	1	1
1st choice	A	B	C	C	D
2nd choice	C	C	D	B	C
3rd choice	B	D	B	A	B
4th choice	D	A	A	D	A

A vs B

3 vs 7

# votes	3	3	2	1	1
1st choice	A	B	C	C	D
2nd choice	C	C	D	B	C
3rd choice	B	D	B	A	B
4th choice	D	A	A	D	A

A vs C

3 vs 7

# votes	3	3	2	1	1
1st choice	A	B	C	C	D
2nd choice	C	C	D	B	C
3rd choice	B	D	B	A	B
4th choice	D	A	A	D	A

A vs D

4 vs 6

# votes	3	3	2	1	1
1st choice	A	B	C	C	D
2nd choice	C	C	D	B	C
3rd choice	B	D	B	A	B
4th choice	D	A	A	D	A

B vs C

3 vs 7

# votes	3	3	2	1	1
1st choice	A	B	C	C	D
2nd choice	C	C	D	B	C
3rd choice	B	D	B	A	B
4th choice	D	A	A	D	A

B vs D

7 vs 3

# votes	3	3	2	1	1
1st choice	A	B	C	C	D
2nd choice	C	C	D	B	C
3rd choice	B	D	B	A	B
4th choice	D	A	A	D	A

C vs D

9 vs 1

# votes	3	3	2	1	1
1st choice	A	B	C	C	D
2nd choice	C	C	D	B	C
3rd choice	B	D	B	A	B
4th choice	D	A	A	D	A

C won all its head-to-head matchups, so it is the Condorcet winner!