1. Problems with plurality voting?

- winner might have significantly less than a majority
- people might feel pressured to vote strategically, rather than their true preference: insincere voting

2. Instant Runoff Voting (IRV), also known as RANKED CHOICE VOTING

→ Requires a preference schedule.

- Look at all 1st choice votes
  - If majority winner, they win!
  - If not, eliminate candidate w/ least 1st choice votes and shift those votes to their 2nd choice
    - break ties somehow (~ by lot "in AK = coin flip)

Is there a majority? If yes, they win. If not...
repeat the process until someone has a majority.

3. With four candidates, how many rounds of IRV? (Max? Min?)

Min # rounds = 1 ← if someone gets an outright majority

Max rounds = 3 ← eliminate one candidate/round until only 2 remain

Ex: AK governor race in 2022. Won outright with 50.29%

4. Find the winner using IRV for the preference schedule below.

| # votes | 3 | 4 | 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 |

11 voters, majority > 6

**Round 1:** 1st choice votes

A = 3
B = 4 ← plurality winner but not majority
C = 3
D = 1 ← D is eliminated

**New schedule**

| 3 | 4 | 2 | 1 | 1 |
|---|---|---|---|---|
| ~~A~~ | B | C | C | C |
| C | C | B | B | B |
| B | ~~A~~ | ~~A~~ | ~~A~~ | ~~A~~ |

**Round 2**

A = 3
B = 4
C = 5

No majority! A is eliminated

**Round 3**

| 3 | 4 | 2 | 1 | 1 |
|---|---|---|---|---|
| C | B | C | C | C |
| B | C | B | B | B |

B = 4
C = 7

C wins!

(Notice C wins even though they were not the plurality winner)

5. (Example 7) Find the winner using IRV for the preference schedule below.

| # votes | 37 | 22 | 12 | 29 |
|---|---|---|---|---|
| 1st choice | Adams | Brown | Brown | Carter |
| 2nd choice | Brown | Carter | Adams | Adams |
| 3rd choice | Carter | Adams | Carter | Brown |

← total = 100
majority ≥ 51

Round 1:
A : 37
B : 22+12 = 34
C : 29
No winner. C is eliminated

Round 2:
A = 37+29 = 66
B = 22+12 = 34
A wins!

6. What can go wrong with IRV?

   (a) Fail to pick the Condorcet Winner (See example 6 in your text.)

   (b) Fails the **Monotonicity Criterion**:

If voters switch their votes to prefer the winner it should not change the outcome of the election

7. (Example 7 again)

| # votes | 37 | 22 | 12 | 29 |
|---|---|---|---|---|
| 1st choice | Adams | Brown | Brown | Carter |
| 2nd choice | Brown | Carter | Adams | Adams |
| 3rd choice | Carter | Adams | Carter | Brown |

| # votes | 37 | 22 | 10 | 2 | 29 |
|---|---|---|---|---|---|
| 1st choice | Adams | Brown | Adams | Brown | Carter |
| 2nd choice | Brown | Carter | Brown | Adams | Adams |
| 3rd choice | Carter | Adams | Carter | Carter | Brown |

Round 1:
A = 37+10 = 47
B = 24 ← B is eliminated
C = 29

Round 2
A = 37+10+2 = 49
C = 22+29 = 51
* C wins!

Changing votes to support Adams actually resulted in Adams losing!