MA111: Contemporary mathematics

Entrance Slip (due 5 min past the hour):

Three friends are trying to decide on where to have lunch.

Avery		Blair		Chase	
1st 2nd 3rd	Övid's K-Lair Subway	1st 2nd 3rd	K-Lair Subway Ovid's	1st 2nd 3rd	Subway Ovid's K-Lair
	•				

Jared suggests that the K-Lair / Ovid's people are trying to cheat by repeating "campus dining" twice. He wants them to choose the best of K-Lair or Ovid's, and then go against Subway.

Who wins Jared's game?

Which is more popular amongst the three people, campus dining or subway?

Schedule:

- Mini-exam 1 is in-class on Thursday, Sep 11th, 2014
- HW 2 is due 7am Tuesday, Sep 16th, 2014
- HW 3 is due 7am Tuesday, Sep 23rd, 2014
- Exam 1 is in-class on Thursday, Sep 25th, 2014

Today we try to construct examples and try one last method

• Please turn in your entrance slips. We will do this every non-exam day. Please bring your own 3x5 index cards.

• People did very well on the homework, but ...

• #7 and #14 gave people a lot of trouble, so we'll practice similar

• After that we'll talk about Jared's game

- ballot, preference schedule,
- voting method, majority winner,
- plurality method, soccer rule, Borda count = Thomas's rule, Daisia's rule
- standard elimination (plurality with elimination)
- pairwise comparison, Condorcet candidate

New words: bracket voting and agenda

• Bracket voting takes two ingredients:

(1) The shape of the bracket (depends a lot on how many candidates, 2, 4, 8, 16 have nice answers)

(2) The initial assignment of candidates to positions (the "seed" or "agenda")

• There is a least fair bracket that is fun to study:

Order the candidates (the agenda). First goes against second. Winner against third. Winner against fourth.

• Who has the easiest chance of winning?

• There is a most fair bracket:

Divide the candidates into two approximately equal groups (size differs by at most one), and decide who wins

If there are 2 candidates, do a head-to-head. If there are more, then divide and try again.

- However the "seed" order (who stays in whose group) is very important
- A condorcet winner always wins bracket method, no matter the shape, no matter the agenda
- A condorcet loser always loses

Exit quiz

• A group is trying to decide on lunch.

Alex		Blair		Chase	
1st	K-Lair	1st	Ovid's	1st	Subway
2nd	Ovid's	2nd	Subway	2nd	QDoba
3rd	Subway	3rd	QDoba	3rd	K-Lair
4th	QDoba	4th	K-Lair	4th	Ovid's

- Write down a bracket where Ovid's wins.
- Write down a bracket where Subway wins. (Go Jared!)
- Are there any Condorcet winners?