MA111: Contemporary mathematics

Entrance Slip (due 5 min past the hour):

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

	Avery	Blair	Casey	Dee	Elisha
Favorite	Ovid's	K-Lair	Starbucks	Ovid's	Starbucks
Fine	K-Lair	Ovid's	K-Lair	K-Lair	K-Lair
Least	Starbucks	Starbucks	Ovid's	Starbucks	Ovid's

If they only go to one location for lunch, which location will make the group happiest? Explain why.

Schedule:

- HW 1 is due 7am Tuesday, Sep 9th, 2014
- 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 find the group's preferences from its members' preferences

Expectations

- Please turn in your entrance slips. We will do this every non-exam day.

- We'll talk about the answers, and then try to come up with **systematic** answers in groups

- The syllabus you have skimmed has important policies, dates, and requirements. We'll talk about it at the end.

- Class participation is mandatory
  Treat each other with respect, spend our class time learning our class.

- Exams are in-class, once per chapter. Homework is online and free. No textbook.

What should the rule be?

- People came up with different answers to the entrance quiz

- People don't want to argue about lunch, they just want food

- Is there some simple method people could use?

- Write down the **rules** of how to turn a bunch of individual rank orders into the group's rank ordering

- Test it out on the groups given on the worksheet

- You yourself will work in a group (3-6 people, say your table and the table in front or behind you)

- One of you will present your rule to the class
  – everyone else take notes
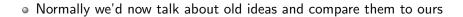
Examine other people's ideas

- In your groups, find at least one good thing and one bad thing about each of the rules presented

- Be polite and respectful

- Try to think of a group whose preferences seem to "break" the rule

- One of our goals is to find a rule that doesn't break easily

Syllabus

- Normally we'd now talk about old ideas and compare them to ours

- First, we should go over the syllabus

- Exam dates, homework due dates, written project date

- Absences

- Grading

Old ideas and new meanings for old words

- Most of the homework will focus on old ideas (the exams will include our new ideas too)

- Sometimes the hardest part in answering a question is understanding what it is asking. What do the words mean?

- I want us all to have a common understanding of some words. You can think of them as a foreign language that only uses English words in funny ways.

Today's words

- A **ballot** is an ordered list of possibilities.

- A **preference schedule** counts how many ballots of each type there are.

	Avery	Blair	Casey	Dee	Elisha
Favorite	Ovid's	K-Lair	Starbucks	Ovid's	Starbucks
Fine	K-Lair	Ovid's	K-Lair	K-Lair	K-Lair
Least favorite	Starbucks	Starbucks	Ovid's	Starbucks	Ovid's

	2	1	2
1st	O	K	S
2nd	K	O	K
3rd	S	S	O

- I'll use words like "favorite" and "first place vote"

Three more words

- A **voting method** takes a preference schedule and returns a single ballot for the group

- The **plurality method** just counts first place votes. Whoever has the most "favorites" on the individual ballots will be the favorite on the group's summary ballot

- A **majority winner** is a possibility that has more than half of the first place votes.

- Groups that have a majority winner are much easier to summarize than ones that don't

Exit quiz

- A few extra people showed up since the entrance quiz.

  Here are the new counts:

	3	2	2	2
1st	O	K	S	K
2nd	K	O	K	S
3rd	S	S	O	O

- How many first place votes for Ovid's?

- How many first place votes for K-Lair?

- How many first place votes for Starbucks?

- Which location is the group's favorite if we use the plurality method?