This worksheet should help you prepare for the first mini-exam. It doesn't have every possible type of question, but it has a good selection. To be sure you're prepared, review all your class notes, worksheets and WeBWork.

Movies showing on Netflix right now include the Dark Knight (D), the Little Prince (L), Evolution (E), and Schindler's List (S). A club president has his members rank these movies in order of preference, with the following results:

1. If we use the Plurality method, which movie will the club see?

2. If we use the Borda count method, how many Borda points does the movie Schindler's List (S) get? Show your work, not just the final answer.
3. If we used the Method of Pairwise Comparisons, find the winner of each of these matchups (if it is a tie, state so). Show a bit of work. (You do not need to finish by computing the pairwise points.)
L vs D:
D vs. E:

L vs. E:
D vs. S:

L vs. S:
E vs. S:
4. Does this election have a Condorcet candidate? If so, which? If not, why?
5. Does this election have a Majority candidate? If so, which? If not, why?
6. Actually, the president decided to use the Plurality with Elimination method. Show all the steps clearly of implementing this method and determine the winner.

|  | 9 | 2 | 3 | 3 | 3 |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | $1^{\text {st }}$ | L | D | S | S |
| $2^{\text {nd }}$ | E |  |  |  |  |
| $3^{\text {rd }}$ | E | S | D | D | S |
| $4^{\text {th }}$ | S | L | L | E | L |

7. Suppose the president had allowed the club members to rank $\mathbf{1 8}$ of the movies showing on Netflix, instead of narrowing it down to four candidates. (Assume the same number of members are voting.)
a. For the method of pairwise comparisons, how many different pairs would we have to check for these eighteen movies? Show both the formula and the answer.
b. For the Borda count method, what is the total number of Borda points in this election? Show the formula.
8. Now suppose we have a different club with $\mathbf{2 1}$ members, and they plan to watch a movie from a local theater instead of Netflix. They want to choose between Crazy Rich Asians (C), BlacKkKlansman (B) and The Meg (M). Construct an example of an election where The Meg would win using plurality, but Crazy Rich Asians would win using plurality with elimination. Show steps to justify your answer.
