Chapter D: The Math of Democracy

D1: Voting Methods

<u>Group Activity</u>
1. Ranked Choice Voting Election. Our class will elect the best candy out of the three that are running for office: **R=Reese's Peanut Butter Cups, S=Starburst, K=KitKat**

Please get ballot forms for your group and fill them out anonymously and turn them in. When all the results are tabulated, make a preference schedule.

Preference Schedule

Number of Voters						
1ˢᵗ choice						
2ⁿᵈ choice						
3ʳᵈ choice						

    a. How many voters voted in this election?

    b. How many votes are needed for a majority?

    c. How many votes are needed for a plurality win?

    d. Find the winner under the plurality method.

    e. Find the winner under the Instant Runoff Voting method.

    f. Find the winner under the Borda Count method.

    g. Find the winner under the Pairwise Comparisons method.

    h. Which method do you think is the most fair in this situation and why?

2. A homeowners' association is deciding a new set of neighborhood standards for architecture, yard maintenance, etc. Four options have been proposed. The votes are:

Number of voters	8	9	11	7	7	5
1st choice	B	A	D	A	B	C
2nd choice	C	D	B	B	A	D
3rd choice	A	C	C	D	C	A
4th choice	D	B	A	C	D	B

  a. How many voters voted in this election?

  b. How many votes are needed for a majority?

  c. How many votes are needed for a plurality win?

  d. Find the winner under the plurality method.

  e. Find the winner under the Instant Runoff Voting method.

  f. Find the winner under the Borda Count method.

  g. Find the winner under the Pairwise Comparisons method.

  h. Which method do you think is the most fair in this situation and why?

3. In the election shown below under the plurality method, explain why voters in the third column may feel they cannot vote for their first choice. How could it affect the outcome of the election?

Number of voters	96	90	10
1st choice	A	B	C
2nd choice	B	A	B
3rd choice	C	C	A

a. How many voters voted in this election?

b. How many votes are needed for a majority?

c. How many votes are needed for a plurality win?

d. Find the winner under the plurality method.

e. Under the plurality method, explain why voters in the third column may feel they cannot vote for their first choice. How could that affect the outcome of the election?

f. Find the winner under the Instant Runoff Voting method.

g. Find the winner under the Borda Count method.

h. Find the winner under the Pairwise Comparisons method.

i. Which method do you think is the most fair in this situation and why?