# The Mathematics of Democracy

## Multi-Candidate Voting / Decision Making

- Multiple Methods for deciding who wins
- Geometry of elections
- Paradoxes

## Weighted Voting

- Electoral College
- United Nations
- Power Indices

## Apportionment

- Multiple Methods for deciding who gets "extra seats"
- Paradoxes
- Gerrymandering

## Census

- Probability
- Undercounting
- Statistics
- Who gets left out?

## Polling

- Sampling
- Margin of Error
- Push-Polling
- Who gets left out?

## Fair Division

- Multiple Methods for dividing a treasure
- Continuous vs. Discrete treasure

## Mathematical Reasoning

1. Students will reason and solve problems using a system of numeric or symbolic concepts as encountered in the fields of mathematics, computer science, or logic.
2. Students will recognize errors, fallacies, or distortions in the presentation of logical arguments, problem solutions, or displays of quantitative information.
3. Students will apply the principles and skills of mathematical reasoning to generate a solution (or solutions) to problems commonly encountered in several different types of everyday experiences.
4. Students will pursue additional learning of quantitative, critical thinking, and problem solving skills, building on their foundation in mathematical reasoning.