

Election

Learning Objectives

- Solving problems which involve logic and calculating and ordering with whole numbers.
- Understanding and looking critically at different voting systems.
- Target Age range: 12-14 years

Resources

You will need one copy of the 'Election' resource sheet, one copy of the 'Election' information sheet and a pair of scissors for each student or group of students.

Description of Activity

Ensure that students understand the five voting systems described on the information sheet. You may wish to assign a different voting system to each group of students and ask them to explain their system to the rest of the class. The five voting systems are organised into increasing levels of difficulty on the information sheet.

Students cut out the eleven ballot papers and use them to decide which candidate is elected under each of the voting systems. They will need to consider how to arrange the ballot papers in piles and how to tabulate the results of the election.

The results of the election should stimulate discussion around the relative merits of each voting system. Emphasise that the choice of voting system can influence the outcome of the election (this ballot has been 'rigged' to ensure each candidate is elected under at least one of the systems).

Solutions

- Relative Majority: Cortez is elected.
Total votes are Ahmed 2, Boateng 3, Cortez 5, Donald 1
- Absolute Majority: Boateng is elected.
Total votes after 1st round are Ahmed 2, Boateng 3, Cortez 5, Donald 1 (Donald eliminated).
Total votes after 2nd round are Ahmed 3, Boateng 3, Cortez 5 (Ahmed eliminated on 1st round votes).
Total votes after 3rd round are Boateng 6, Cortez 5.
- Borda Points with Arithmetic Weighting: Ahmed is elected.
Total points are Ahmed 30, Boateng 25, Cortez 26, Donald 29
- Borda Points with Geometric Weighting: Cortez is elected.
Total points are Ahmed 42, Boateng 38, Cortez 46, Donald 39
- Condorcet Pair-Wise Counting: Donald is elected.
Eliminate Ahmed and Boateng to give total votes for Cortez 5, Donald 6.
Eliminate Ahmed and Cortez to give total votes for Boateng 5, Donald 6.
Eliminate Boateng and Cortez to give total votes for Ahmed 5, Donald 6.

Variations

You could carry out your own election with students nominating their own candidates (you may wish to limit these to a maximum of five) and designing their own ballot papers. Alternatively, you could vote on 'the best film', 'favourite ice cream', etc. This may also give rise to discussions regarding tactical voting.

You could use other voting systems not included on the information sheet, e.g. a 'second ballot'. The Election Reform Society web-site (www.electoral-reform.org.uk) contains useful information on a variety of voting systems. The Inter-Parliamentary Union web-site (www.ipu.org) gives general information on parliaments around the world including a description of the electoral system used.

Election

Cut out the 11 ballot papers and decide which candidate would be elected under each of these voting systems:

- Relative Majority
- Absolute Majority (Alternative Vote)
- Borda Points with Arithmetic Weighting
- Borda Points with Geometric Weighting
- Condorcet Pair-Wise Counting

Ballot Paper

Place a 1 in the box next to your first preference, a 2 in the box next to your second preference, and so on.

Candidate		
Ahmed	(Progressive Party)	3
Boateng	(Radical Alliance)	4
Cortez	(Independent)	1
Donald	(Peoples' Forum)	2

Ballot Paper

Place a 1 in the box next to your first preference, a 2 in the box next to your second preference, and so on.

Candidate		
Ahmed	(Progressive Party)	2
Boateng	(Radical Alliance)	1
Cortez	(Independent)	4
Donald	(Peoples' Forum)	3

Ballot Paper

Place a 1 in the box next to your first preference, a 2 in the box next to your second preference, and so on.

Candidate		
Ahmed	(Progressive Party)	1
Boateng	(Radical Alliance)	3
Cortez	(Independent)	4
Donald	(Peoples' Forum)	2

Ballot Paper

Place a 1 in the box next to your first preference, a 2 in the box next to your second preference, and so on.

Candidate		
Ahmed	(Progressive Party)	3
Boateng	(Radical Alliance)	4
Cortez	(Independent)	1
Donald	(Peoples' Forum)	2

Ballot Paper

Place a 1 in the box next to your first preference, a 2 in the box next to your second preference, and so on.

Candidate		
Ahmed	(Progressive Party)	2
Boateng	(Radical Alliance)	3
Cortez	(Independent)	1
Donald	(Peoples' Forum)	4

Ballot Paper

Place a 1 in the box next to your first preference, a 2 in the box next to your second preference, and so on.

Candidate		
Ahmed	(Progressive Party)	3
Boateng	(Radical Alliance)	1
Cortez	(Independent)	4
Donald	(Peoples' Forum)	2

Ballot Paper

Place a 1 in the box next to your first preference, a 2 in the box next to your second preference, and so on.

Candidate		
Ahmed	(Progressive Party)	1
Boateng	(Radical Alliance)	2
Cortez	(Independent)	4
Donald	(Peoples' Forum)	3

Ballot Paper

Place a 1 in the box next to your first preference, a 2 in the box next to your second preference, and so on.

Candidate		
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Candidate		
Ahmed	(Progressive Party)	2
Boateng	(Radical Alliance)	1
Cortez	(Independent)	4
Donald	(Peoples' Forum)	3

Ballot Paper

Place a 1 in the box next to your first preference, a 2 in the box next to your second preference, and so on.

Candidate		
Ahmed	(Progressive Party)	2
Boateng	(Radical Alliance)	3
Cortez	(Independent)	4
Donald	(Peoples' Forum)	1

Ballot Paper

Place a 1 in the box next to your first preference, a 2 in the box next to your second preference, and so on.

Candidate		
Ahmed	(Progressive Party)	3
Boateng	(Radical Alliance)	4
Cortez	(Independent)	1
Donald	(Peoples' Forum)	2

Election

Relative Majority

Often called “First past the post”. Electors have a single vote, shown by an ‘X’, for one candidate only.

- The candidate with the most votes is elected.

Note: On the resource sheet, assume that the first preference (1) on the ballot papers is the single vote (X).

Absolute Majority (Alternative Vote)

Electors vote for candidates using preferences (the first choice is shown by a ‘1’, the second choice by a ‘2’, and so on).

- The candidate with the fewest first preferences is eliminated.
- Each vote from the eliminated candidate is transferred to the second preference.
- This process is repeated until one candidate has more than half of all votes.
- If two candidates have the same number of votes, then the votes from the previous round(s) are used to work out who is eliminated.

Borda Points with Arithmetic Weighting

Electors vote for candidates using preferences (the first choice is shown by a ‘1’, the second choice by a ‘2’, and so on).

- Points are awarded to candidates, according to the electors’ preferences, as shown below.
- If there are four candidates:
 - 4 points are awarded for each first preference
 - 3 points are awarded for each second preference
 - 2 points are awarded for each third preference
 - 1 point is awarded for each fourth preference
- The candidate with the largest points total is elected.

Note: For n candidates, there will be n points for each first preference, $n-1$ points for each second preference and so on down to 1 point for each n^{th} preference.

Borda Points with Geometric Weighting

Electors vote for candidates using preferences (the first choice is shown by a ‘1’, the second choice by a ‘2’, and so on).

- Points are awarded to candidates, according to the electors’ preferences, as shown below.
- If there are four candidates:
 - 8 points are awarded for each first preference
 - 4 points are awarded for each second preference
 - 2 points are awarded for each third preference
 - 1 point is awarded for each fourth preference
- The candidate with the largest points total is elected.

Note: For n candidates, there will be 2^{n-1} points for each first preference, 2^{n-2} points for each second preference and so on down to 1 point for each n^{th} preference ($2^0=1$).

Condorcet Pair-Wise Counting

Electors vote for candidates using preferences (the first choice is shown by a ‘1’, the second choice by a ‘2’, and so on).

- For each pair of candidates, the preferences for those two candidates only are considered.
- If a candidate is preferred to all other candidates, then that candidate is elected.
- If there is no such candidate, then another voting system must be used.

Note: For four candidates, there will be six pairs to consider.