# More than Two Choices

Let's explore different ways to determine a winner.

## 6.1 Field Day

Students in a sixth-grade class were asked, "What activity would you most like to do for field day?" The results are shown in the table.

| activity | number of votes |
|---|---|
| softball game | 16 |
| scavenger hunt | 10 |
| dancing talent show | 8 |
| marshmallow throw | 4 |
| no preference | 2 |

1. What percentage of the class voted for softball?

2. What percentage did not vote for softball as their first choice?

# 6.2 Field Trip (Part 1)

Suppose students at our school are voting for the sixth-grade field trip. The following is a list of options for your class to vote on.

Option 1: Baseball Game

- During school hours
- Buy lunch at the game
- Free souvenir

Option 2: Amusement Park

- During and after school
- Lunch included
- Unlimited rides

Option 3: Museum

- During school hours
- Lunch included
- Free souvenir

Option 4: Dance at School

- After school hours
- Snacks included
- DJ games and prizes

| options | vote 1 | | | |
|---|---|---|---|---|
| baseball game | | | | |
| amusement park | | | | |
| museum | | | | |
| dance | | | | |

1. After the second round of voting, did any choice get a majority? If so, is it the same choice that got a plurality in Voting System #1?

2. Which choice won?

3. What percentage of voters are satisfied with these results (voted for the winning option)? What percentage were not satisfied?

4. Compare the satisfaction results for the plurality voting rule and the runoff rule. Did one produce satisfactory results for more people than the other?

# 6.3 Field Trip (Part 2)

Let's analyze a different election.

In another class, there are four clubs. They plan to use the ranked-voting system. Everyone in each club agrees to make the same choice for the field trip for each round of voting. That means that everyone's choices are set by their first vote. The table shows their choices.

| | sports club (21 members) | adventure club (13 members) | art club (7 members) | music club (9 members) |
|---|---|---|---|---|
| baseball game |  |  |  |  |
| amusement park |  |  |  |  |
| museum |  |  |  |  |
| dance |  |  |  |  |

Figure out which option won the election by answering these questions.

1. If this were a vote by plurality, where everyone votes for their first choice, how many votes would each option get? Did any choice get a majority?

2. If they continued voting by removing the least voted option, which option would be removed after the first vote?

3. On the second vote, how many votes did each of the remaining three options get? Did any option get a majority?

4. Which option is removed from the next vote?

5. On the third vote, how many votes did each of the remaining two options get? Which option won?


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