

### ARROW'S CONDITIONS:

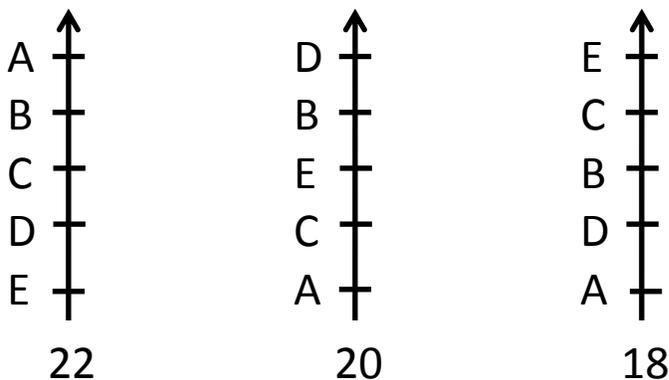
- **Nondictatorship:** The preferences of a single individual should not become the group ranking without considering the preferences of the others.
- **Individual Sovereignty:** Each individual should be allowed to order the choices in any way and to indicate ties.
- **Unanimity:** If every individual prefers one choice to another, then the group ranking should do the same. (In other words, if every voter ranks A higher than B, then the final ranking should place A higher than B.)
- **Freedom from Irrelevant Alternatives:** The winning choice should still win if one of the other choices is removed. (The choice that is removed is known as an irrelevant alternative.)
- **Uniqueness of the Group Ranking:** The method of producing the group ranking should give the same result whenever it is applied to a given set of preferences. The group ranking should also be transitive.

### EXAMPLES:

1. Ms. Jones decides to order pizza for your class on the basis of a vote conducted last week, but, in so doing, selects the preference schedule of just one student. Which of Arrow's conditions are violated by this method?
2. Instead of selecting the preference schedule of one particular student, Ms. Hende places all the individual preferences in a hat and draws one. If this method were repeated, would the same group ranking result? Which of Arrow's conditions does this method violate?
3. Do any of Arrow's conditions require that the voting mechanism include a secret ballot? Is a secret ballot desirable in all group-ranking situations?

**APPROVAL VOTING:** You may vote for as many choices as you like, but you do not rank them. You mark all those of which you approve. For example, if there are five choices, you may vote for as few as none or as many as five.

Example #4: The voters whose preferences are represented below all feel strongly about their first choices but are not sure about their second and third choices. They all dislike their fourth and fifth choices. Since the voters are unsure about their second and third choices, they flip coins to decide whether to give approval votes to their second and third choices.



- a. Assuming the voters' coins come up heads about half the time, how many approval votes would you expect each of the five choices to get? Explain your reasoning.
- b. Do the results seem unfair to you in any way? Explain.

**Homework:** Page 27-31: #5, 6, 10, 12(a & b)