

Quiz 5
Friday, March 9.

NAME _____

1. (a) Explain the difference between sincere and strategic voting.

Answer. Sincere voting means submitting a ballot that reflects the voter's true preferences. Strategic voting means submitting a ballot that does not reflect the voter's true preferences but that will lead to an outcome the voter likes better than would occur if the voter voted sincerely.

(b) Explain the Condorcet winner criterion.

Answer. A voting system satisfies this criterion if, for every election in which there is a Condorcet winner, this candidate wins the election when that voting system is used.

(c) Explain the Pareto condition.

Answer. A voting system satisfies this condition provided that if every voter prefers a candidate to another, then it is impossible for the latter candidate to win the election.

(d) Explain the independence of irrelevant alternatives.

Answer. A voting system satisfies IIA if the only way a candidate (call him A) can go from losing one election to being a winner of a new election is for at least one voter to reverse his or her ranking of A and the previous winner.

(e) Explain monotonicity.

Answer. A voting system satisfies monotonicity provided that ballot changes favorable to one candidate (and not favorable to any other candidate) can never hurt that candidate.

2. Your fly fishing club is attempting to decide where to go for the next day trip. The choices are Alder River (A), Boulder Pond (B), or Collie Creek (C). The preference rankings of the members are shown below.

	Number of votes			
	6	12	15	11
First choice	A	C	B	A
Second choice	B	B	A	C
Third choice	C	A	C	B

For each of the voting systems below, say which location will be chosen :

(a) Borda count.

Answer. Alder River wins the Borda count with 49 points.

(b) Sequential pairwise voting with agenda B,A,C.

B defeats A 27 to 17, and C defeats B 23 to 21, so with this method Collie Creek is chosen.

(c) Hare system.

Answer. C has the least first place points, so is deleted first ; in the resulting duel between A and B, B has 27 first place votes and A has 17, so Boulder Pond is chosen if the Hare system is used.

3. A seventeen-member committee must elect one of four candidates : R,S,T or W. According to their preference ballots as shown below, R wins using the plurality method. Could those members who most prefer W vote strategically in some way to change the outcome in a way that will benefit them? (explain)

	Number of voters			
	6	4	3	4
First choice	R	S	T	W
Second choice	S	R	S	T
Third choice	T	T	R	S
Fourth choice	W	W	W	R

Yes : if these four voters rank candidate T first, then in the new election T would win with 7 votes ; since the voters prefer T to R, this outcome would be more desirable for them.

4. There are 21 delegates at a political party’s convention in which three people A,B and C have been nominated as the party’s candidate for governor. The delegates’ preference ballots are shown below. What nominee would be elected if the party uses a rank system that assigns 3 points for first place, 1 for second and 0 for last? Is the result different from that which results from a Borda count?

	Number of voters		
	10	5	6
First choice	A	B	C
Second choice	B	A	B
Third choice	C	C	A

If one applies the rank method with the weights given above, then A wins with 35 points (B has 31 and C has 18); while if the Borda count is used, B wins with 26 points (A obtains 25 points and C 12 points).