

PROBLEM SET 1  
due **Tuesday Jan. 21**  
In class (or in my mailbox before)

DECISIONS, GAMES &  
**R**RATIONAL CHOICE

**Exercise 1** (25 pts.) Consider the following choice table with cardinal utilities.

	State 1	State 2	State 3	State 4	State 5
Choice A	5	9	7	5	5
Choice B	3	-3	7	7	4
Choice C	5	10	12	8	5
Choice D	-1	4	15	6	2
Choice E	4	6	6	6	3

- (a) List all choices compatible with the Strong Dominance Rule.
- (b) List all choices compatible with the Weak Dominance Rule.
- (c) List all choices compatible with the Maximax Rule.
- (d) List all choices compatible with the Maximin Rule.
- (e) Give the “Regret Table” for the above decision table.
- (f) List all choices compatible with the Minimax Regret Rule.

**Exercise 2** (5 pts.) Westmoreland and Henry are among the outnumbered British facing the French at Agincourt. Westmoreland wishes to call in more troops, but Henry disagrees: “Suppose we lose this battle. If so, we will already suffer heavy losses with the men we have—better to lose with fewer men than more men. If we win, by contrast, surely there will be greater honor for having done so with fewer men! So we should not request more men.” Henry is employing a decision rule we discussed in class. Which? Is his application here plausible?

**Exercise 3** (10 pts.) [problem from M. Resnik] Jack, who is now twenty, must decide whether to marry his true love Jill immediately, or not see her until he is 21. If he marries her now, then he will lose the million dollars his uncle has left him in trust. Jack cares about love more than about the money. However, if he waits to see Jill until he is 21, he would receive the money and could marry Jill at that time, which would be optimal. But if he waits, maybe Jill will no longer want to marry him! Set up a decision table for Jack’s choice. Ensure

- (i) *states are independent of choices*, and
- (ii) that you have chosen reasonable *cardinal* utilities.

**Exercise 4** (10 pts.) In class we saw that the Minimax Regret Rule fails to satisfy the *independence of irrelevant alternatives* condition. In a short paragraph, say whether you think this condition should be maintained, or rejected, and why.