Econ 327: Game Theory

Homework #3

University of Oregon

Due: Oct. 17^{th}

Question:	Q1	Q2	Q3	Q4	Q5	Q6	Total
Points:	16	16	4	4	4	4	48
Score:							

For homework assignments:

- Complete *all* questions and parts.
- You will be graded on not only the content of your work but on how clearly you present your ideas. Make sure that your handwriting is legible. Please use extra pages if you run out of space but make sure that all parts of a question are in the correct order when you submit.
- You may choose to work with others, but everyone must submit to Canvas individually.

  Please include the names of everyone who you worked with below your own name.

Name _____

Q1. Consider the strategic form game below:

		P_2			
		A	B	C	D
P_1	H	8, 1	-3, 1	0, 1	3, 1
	J	10, -2	0, 6	1, -1	4, 0
	K	9, 1	6, 3	2, 2	7, 4
	L	11, 10	-1, 16	4, 12	5, 5

(a) [2 points] Which strategy would Player 1 *never* play if they are rational?

(b) [4 points] Use Iterated Deletion of Strictly Dominated Strategies and write out a simplified game table with any remaining cells.

(c) [4 points] Find all Nash equilibria in *pure strategies*.

(d) [4 points] Explain why you know that the strategy profile(s) you found in part b are Nash equilibria.

(e) [2 points] Is the outcome of the Nash equilibrium of this game Pareto optimal? Why or why not?

Q2. Here's a little ditty, about Jack and Diane, two American kids growing up in the heartland. [1]

Suppose that Jack and Diane move *simutaneously*.

		Diane		
		x	y	z
Jack	a	1,1	2,1	2,0
	b	2,3	0,2	2,1
	c	2,1	1,2	3,0

(a) [4 points] Describe all of Jack's best responses.

(b) [4 points] Describe all of Diane's best responses.

(c) [4 points] List any strictly dominated strategies, or if there are none, explain why not.

(d) [4 points] Find all strategy profiles which are Nash equilibria. Explain why each strategy profile is a Nash.

[1] Cliff Bekar, Lewis and Clark College

Q3. [4 points] Solve for all Nash equilibria in pure strategies.

		Column	
		Left	Right
Row	Up	1,3	2,4
	Down	2,5	3,2

Q4. [4 points] Solve for all Nash equilibria in pure strategies.

		Column	
		Left	Right
Row	Up	5,3	1,1
	Down	0,0	2,2

Q5. [4 points] Solve for all Nash equilibria in pure strategies.

		Column		
		Left	Middle	Right
Row	Up	3,8	6,4	7,1
	Center	7,3	10,1	6,2
	Down	5,2	3,6	8,0

Q6. [4 points] Solve for all Nash equilibria in pure strategies.

		Column		
		Left	Middle	Right
Row	Up	2,2	3,1	2,0
	Center	1,5	2,2	7,4
	Down	0,1	4,0	6,2