EC 491 - Homework 1 - Due 9/15 (feel free to work in groups, but each person must write up their own solution)

(a) A pitcher is trying to decide whether to throw a curveball or fastball. The batter is trying to decide whether to look for a fastball or curveball. The batter's payoff is the probability he gets a hit. The pitcher's payoff is the probability he gets an out. The payoffs are given bellow. What is the mixed strategy equilibrium of this game?

	fastball	curveball
fastball	.35, .65	.3, .7
curveball	.2, .8	.5, .5

(b) A cop is deciding whether or not to set up a speed trap or get donuts. A driver is deciding whether or not to speed or drive the limit. Their payoffs in the various scenarious are given bellow. What is the mixed strategy equilibrium of this game?

	Speed Trap	Krispy Kreme
Speed	$10, 100$	$70, 50$
Don't Speed	$40, 20$	$40, 50$

(c) Find all pure strategy equilibria (don't worry about mixed) for the following game:

	A	B	C	D
A	$0, 1$	$0, 1$	$1, 0$	$3, 2$
B	$1, 2$	$2, 2$	$4, 0$	$0, 2$
C	$2, 1$	$0, 1$	$1, 2$	$1, 0$
D	$3, 0$	$1, 0$	$1, 1$	$3, 1$

(d) There are 10 students taking an exam. If everyone writes their name on their exam, the teacher will be able to enter all scores. Even if only one person doesn't write her name, the teacher will be able to figure out who it is and enter all scores. However, if two or more people don't write down their name, then the teacher can't tell which exam belongs to which person, so she must give a zero to any students who didn't write her name down. Assume that each person who writes his name on his exam gets a utility of 100. If you don't write your name down but I am able to figure out whose exam it is, you get a utility of 101 (you are a little lazy). If you get a zero on the exam, your utility is 0. What are all the pure-strategy Nash equilibria of this game?