ECO 610-401 Problem Set #5 KEY Fall 2002

1. (a) **Neither firm has a dominant strategy, but both have a "dominated" strategy. The strategy of highlighting service department quality is dominated by the strategy of being the low-price dealer for both firms. This means that service can be eliminated as an option. The implication is that there are now only 4 options instead of 9.**

(b) **Woman-O'-Peace Ford will choose the strategy of hiring a well-known basketball coach and engaging in extensive advertising while Paul Miller's Sister's Ford will choose the strategy of being the low-price dealer on all automobiles. With the service strategy eleminated, Paul Miller's Sister's Ford has a dominant of being the low cost dealer. Woman-O'-Peace Ford will choose their best strategy given what the competition is going to do, so they choose the low cost strategy to maximize profits.**

		Paul Miller's Sister's Ford:		
		Service	Low Cost	Advertising
Woman-O'-Peace Ford:	Service	~~24,33~~	~~18,36~~	~~15,42~~
	Low Cost	~~36,27~~	24,30	18,24
	Advertising	~~33,18~~	30,24	12,18

2. a) Without commitment:

$\pi_{\text{share the market}} = 2$

$\pi_{\text{price war}} = -0.5$

} As $\pi_{\text{price war}} < \pi_{\text{share the market}}$ => Threat is not credible.

b) Conditions for commitment:

1) $\pi_{\text{price war}} > \pi_{\text{share the market}}$ - Commitment

2) π_{monopoly} - Commitment > $\pi_{\text{share the market}}$

In the problem: $\pi_{\text{price war}} = -0.5$, $\pi_{\text{share the market}} = 2$,

$\pi_{\text{monopoly}} = 5$, and Commitment = 3.5

So, Condition 1 becomes $-0.5 > 2 - 3.5$ => $-0.5 > -1.5$ => Satisified

And condition 2 becomes $5 - 3.5 > 2$ => $1.5 > 2$ => NOT satisfied

} Do NOT commit.

3.

Constructing a 2x2 matrix based on the given data we get the matrix shown below

(e.g., 4 million gallons produced = 2 million made by each. We have,
Profits of Iran = 2*(25-2) = 46 and Profits of Iraq = 2*(25-4) = 42 and so on…)

Payoff (in millions) of each nation

		Iraq	
Iran		2 million gallons produced	4 million gallons produced
	2 million gallons produced	46 , 42	26 , 44
	4 million gallons produced	52 , 22	32 , 24

If played only once, both countries will use a dominant strategy and will end up making 4 million gallons each (bottom right hand corner cell).

If they play it more than once, they will collude overtly (e.g., via a cartel) or covertly and end up in the top right hand corner cell wherein they produce a lower amount of oil (2 gallons each) but reap a higher profit each.