ECO 610
Fall 2017
Problem Set #7

KEY

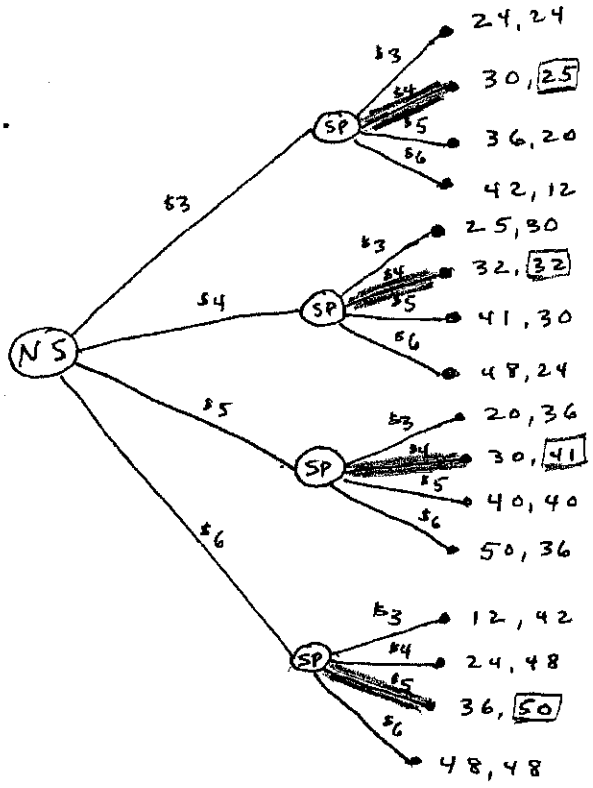
1. (15 pts.) Two firms in Lexington compete in the market for drinking water supplied to offices. One is Northern Springs whose water is crystal clear but not carbonated. The other is Southern Pelligrino whose water is naturally carbonated but is somewhat "hard." The marketing department of each firm has worked out the following profit matrix depending on the price per 5-gallon bottle charged by each firm. Southern Pelligrino's profits are shown as the first entry in each pair, and Northern Spring's profits are the second entry:

		Northern Spring's Price			
		$3	$4	$5	$6
Southern Pelligrino's Price	$3	24, 24	30, 25	36, 20	42,12
	$4	25, 30	32, 32	41, 30	48, 24
	$5	20, 36	30, 41	40, 40	50, 36
	$6	12, 42	24, 48	36, 50	48, 48

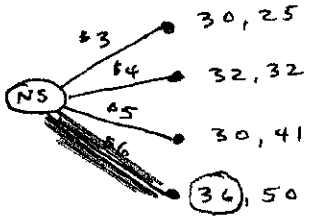
a. What do you predict will be the outcome of this game if the two firms set prices simultaneously? Explain your reasoning.
b. Define Nash equilibrium and explain whether this outcome is a Nash equilibrium.
c. Suppose that Northern Springs must set its price first and stick with it, and then Southern Pelligrino is free to respond as it chooses to Northern Springs' price. Draw the game tree and predict the outcome of this sequential move pricing game.

a, b. Evaluating each firm's best responses, the predicted outcome is for each to charge $4. This is a Nash equilibrium because each firm's chosen strategy is its best response, given the other firm's strategy choice.

c.



so NS's choices look like this:



so NS will choose P = $6 and SP will respond with P = $5, and each will earn more than in the simultaneous move game.