Homework Set 3

1. (20%) In the Emerald City, public water is currently free. Next year the projected demand for water is 100,000 gallons per household per year. But the projected capacity of the Emerald City's water system is only 80,000 gallons per household per year. Two plans are proposed. One is to build a new pumping plant, which will provide another 20,000 gallons per household per year of capacity. The cost of building and operating that plant will be $30 per household per year; the plan is to cover the costs of the plant by billing households $30 per year for the water rights (i.e., a lump sum pricing system). The second proposal is to begin charging households by the gallon for water they use.

   A team of eminent econometricians has estimated the demand curve for water as of next year. They report the following demand curve:

   $$q = 100 - 20p$$

   where

q = demand by household in thousands of gallons per year and

   p = price in dollars per thousand gallons.

   In answering this question, you may assume that (a) all households are identical, (b) the demand curve is accurate, and (c) all households are connected to the water system.

   - One fear is that, faced with a charge for water, some citizens will elect to stop using city water and hence save the $30 charge. Do the calculation that will either validate or assuage this fear. (Remember, this is a question in economics, not medicine).

   - A price of $1 per thousand gallons will reduce demand to 80,000 gallons per household per year; the annual water bill will then be $80 per household. Which scheme do you think households would prefer? Why? (Remember that the citizens have all taken a course in economics and understand the concept of Dead Weight Loss; they will prefer the price rationing plan if DWL is less than the cost of the plant)

2. (10%) Rumor has it that the city of Cleveland, which is in poor financial condition is considering a $3 per month employment tax. One group of the mayor's advisors, sensitive to imposing new taxes on overtaxed workers

(after all, they do pay an income tax), suggest that the tax be levied on the employers. A second group, not wanting to drive out what industry Cleveland has, argues that the tax should be imposed on the workers instead. Given what you know about Cleveland, and what you know about economics, which side do you think is right? Why? Note that you are not being asked to debate the merits of an additional tax, just comment on which is the better of the two proposals.

3. , (10%) Draw the indifference curves between bourbon and temperance lectures for

   (a) W. C. Fields

   (b) Cary Nation

   (For those rusty on American history, W. C. Fields was an actor noted for his love of liquor, while Cary Nation was noted for attaching saloons with an ax). Be sure you graphs are clearly labeled and well explained

4. (10%) The state of Ohio, ever watchful for new things to tax, has just discovered widgets. The solons know that only economists really care about widgets so why not tax them? Only the economists will be offended and no one else will care. So, a $5 a widget tax is planned.

   A team of eminent econometricians has estimated the demand curve for widgets. They report the following demand curve:

   $$q = 2000-30p$$

   Since widgets are generally made out of hot air, their price is zero. Compute the deadweight loss of the tax.

5. (10%) Inasmuch as E-bay employs a Vickery auction, it makes sense for people to bid only once on any item, with the expectation that people will bid early. In fact, we notice that people enter repeated bids on items, and that most bidding takes place at the very end of the auction? Why?

6. (10%) Smith now works 40 hours a week for $5 an hour. (He could work more or fewer hours, but the pay rate is set)

   a) He is offered a new job where he can choose the number of hours he works. He will be paid $6 an hour for the first 20 hours, and $4 an hour after that. Will he take it?

b) Suppose he had instead been offered a new job where he can choose the number of hours he works, but with the pay set at $4 an hour for the first 20 hours and $6 an hour after that? Would he take that?

c) If Smith were offered his choice of his current job, offer (a), or offer (b), can you tell which would be his first choice? His last choice? Explain your answer.

7. (10%)At a given wage rate, an individual would choose to work six hours per day, but institutional constraints force that person to work eight hours or not at all. Show that the unemployment benefit necessary to induce the person to quit is less than if he or she were allowed to work six hours.

8. (10%) Jones now works 40 yours a week for a salary of $400. He would like, but cannot get, overtime, even at $10 an hour. He is now offered a new position where he is paid entirely only on commission. Specifically, he will be paid four percent of sales. He can work as many or as few hours as he chooses. In checking out the new job, he comes across the following data on current employees:

Employee	Average Weekly Hours	Average Weekly Sales
Wilson	40	$10,000
Smith	50	$12,500
Brown	30	$7,500

Jones believes [and so should you] that he is no better or worse as a salesman than Wilson, Smith or Brown. Will he take the new job? Why or why not?

9. (10%) John Smith now works 40 hours a week at United Rowboats at a job paying $10 per hour. He could work more or less hours, but he chooses to work 40 hours a week. Federated Rowboats offers John a job similar to that he performs at United Rowboats. Because of complicated work rules, Federated can only offer John $8 an hour. But they promise John, that, if he takes the job, they will give him a weekly bonus of $80 a week if he works at least 30 hours a week. John has a very simple philosophy. He always changes jobs if he is better off, but will never change just to change,

A. Will John Take the job at Federated Rowboats? Why or why not? In answering this question, remember the old Chinese Proverb that a

well-labeled graph is worth a thousand words. And, if he takes it, will he work more or fewer hours a week?

B. How would John respond if Federated made the offer of the $80 bonus conditional on his working 40 hours a week? Explain your answer.