SUID:

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Exam 1
Spring 2007

DO NOT OPEN THIS EXAM UNTIL YOU ARE TOLD TO DO SO.

Instructions

1. Write your SUID in the upper right corner of this exam. Do NOT write your name.

2. SHOW ALL YOUR WORK. Answers without supporting work will receive little or no credit.

3. There are 100 points possible on this exam. Some of the questions count for more points than others. *Be sure to budget your time accordingly.*

4. Do all your work on this exam. If you need extra space, write on the backs of the pages. However, if you do write an answer on the back of a page, *be sure you've noted that near the question.*

Area of a triangle: $\frac{1}{2}bh$ Area of a trapezoid: $\left(\frac{b_1 + b_2}{2}\right)h$

Part 1 (35 points)

Suppose a government agency is concerned about the effects of two products, G and B, on public health. Product G improves public health and the agency would like to encourage people to consume more of it. Product B reduces public health and the agency would like to discourage consumption of it. The agency is considering a cross-subsidy policy that would tax good B and subsidize good G.

The agency had the following data about conditions in the two markets (in the absence of the policy). The supply of G is perfectly elastic at a W2A of $10, the quantity of G sold is 200, and the demand for G has an elasticity of -2.0. The supply of B is perfectly elastic at $10 as well; the quantity of B sold is 150, and the demand elasticity of B is -1.0.

(a) *20 points*. The agency wants to increase consumption of G from 200 to 240 by imposing a $2 tax on B and using the revenue to subsidize G. However, it wants to be sure that it won't end up running a deficit. Please calculate the total expenditure on the subsidy and the total revenue raised by the tax. Will the cross-subsidy work (that is, will the policy achieve the goal without running a surplus or deficit?)

Part 1, continued.

(b) *15 points.* Calculate the change in CS in each market as a result of the policy, and the total amount of DWL.

Part 2 (40 points)

Suppose there are two types of buyers, A and B, for a particular good. There are 10 type-A buyers and 20 type-B buyers, and the W2P for an individual buyer of each type is shown below. Also shown is the W2A curve for suppliers of the good as a group (i.e., the market supply curve).

Type A individual:	$W2P_A = 500 - Q_A$
Type B individual:	$W2P_B = 500 - 5 * Q_B$
Market supply:	$W2A = (1/6) * Q$

(a) *25 points.* Find an equation for the market demand curve and then use it to calculate the market equilibrium. What will the price and quantity be?

Part 2, continued

(b) *15 points.* Now suppose the government imposes a $200 tax on the good, to be collected from the seller. What will the new equilibrium price and quantity be? *Note: you do not need to calculate all the changes in surplus – just solve for the new P and Q.*

Part 3 (25 points)

A government running a deficit is evaluating two potential tax policies. Policy 1 would impose a $20 tax on good X, while policy 2 would instead impose a $10 tax on X and a $10 tax on a second good, Y. The supply of each good is perfectly elastic at $100 (suppliers of both have a W2A of $100), and the elasticity of demand for each good is -1.0. Initially, 1000 units of each good are sold. The government would like your advice on which policy it should adopt.

(a) *25 points.* Please calculate the revenue and DWL for each of the policies. Which one do you think is better? Why?