SUID:

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Exam 1
Fall 2006

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 (25 points)

Suppose a state government wants to raise additional revenue by increasing the tax on cigarettes. At the moment there is a $1 tax on each pack of cigarettes, and suppliers are willing to sell as many cigarettes as people want to buy as long as they get to keep at least $4 per pack (that is, their W2A curve is perfectly elastic at $4). There are 100 million packs sold each year, and the elasticity of demand for cigarettes is -0.5.

A proposal has been made to raise the tax substantially: from $1 per pack to $3 per pack. Please calculate the following: the new price, the new quantity consumed, the *change* in consumer surplus due to the tax *increase*, the *change* in producer surplus, the *change* in government revenue, and the deadweight loss, if any.

Part 2 (35 points)

Suppose that the market demand and supply for a particular good are given by the equations below:

$$W2P = 5{,}500 - (1/2) * Q$$
$$W2A = 5Q$$

(a) Calculate the initial market equilibrium. What will the price and quantity be?

(b) Now suppose the government imposes a $550 tax on sales of the good. The tax is collected from the seller on each unit sold. Solve for the new equilibrium price and quantity.

Part 2, continued.

(c) Calculate the changes in consumer surplus, producer surplus, government revenue and deadweight loss caused by the tax in part (b). Who bears most of the burden of the tax, producers or consumers? Why does it turn out that way?

Part 3 (25 points)

A government wishes to use a subsidy to increase the public's use of a particular health care service. The supply of the service is perfectly elastic at $100, and initially there is no tax or subsidy on the service. The service is consumed by two groups of consumers. Group A consumes 100 units and has a demand elasticity of -2. Group B consumes 200 units and has a demand elasticity of -0.5.

Suppose the government decides to provide sellers with a $20 subsidy on each unit of the good. A consultant has predicted that the total amount spent on the subsidy will be $20*300 = $6,000, and you have been asked to evaluate the consultant's report. Please calculate the following: the new price, the change in each group's consumption of the service, and the total amount spent by the government on the subsidy. If the total cost of the subsidy is not $6,000, explain what the consultant did wrong.

Part 4 (15 points)

Suppose that a particular good comes from two sources: domestic firms and foreign suppliers. Domestic firms have a perfectly *inelastic* supply curve and produce 60 units of the good. Foreign suppliers, on the other hand, have a perfectly *elastic* supply curve at a W2A of $50. The market demand curve has an elasticity of -0.5. Initially, there are no taxes, subsidies, tariffs or import quotas, and the total quantity demanded is 100 units.

Suppose that government decides to cut the amount of *imports* in half by imposing a tariff. Please calculate what the tariff would have to be ($ per unit of the good) in order to achieve that goal. Be sure to show your work. *Hint: if you think carefully about how to set this problem up, the actual calculations will be very clear and easy.*