Exam 1, Fall 2004

Notes on Solution

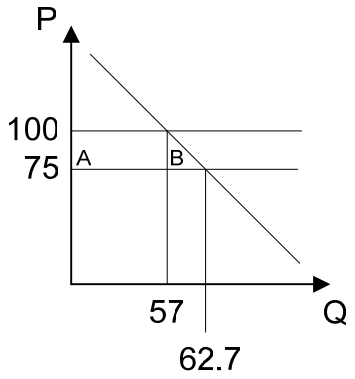
Part 1: Lipitor

Allowing imports would lower the price of Lipitor to $75, a 25% drop. The change in quantity would be:

Elasticity:	-0.4
Percent change in P:	-25
Initial Q:	57

Percentage change in Q:	-0.4*-25	=	10
Change in Q:	0.1*57	=	5.7
New Q:	57+5.7	=	62.7

The diagram looks as follows:



Consumers would gain A and B. The areas are:

A:	57*25	=	1,425.00	million
B:	0.5*5.7*25	=	71.25	million
Total:	A+B	=	1,496.25	million

Part 2: Vehicles

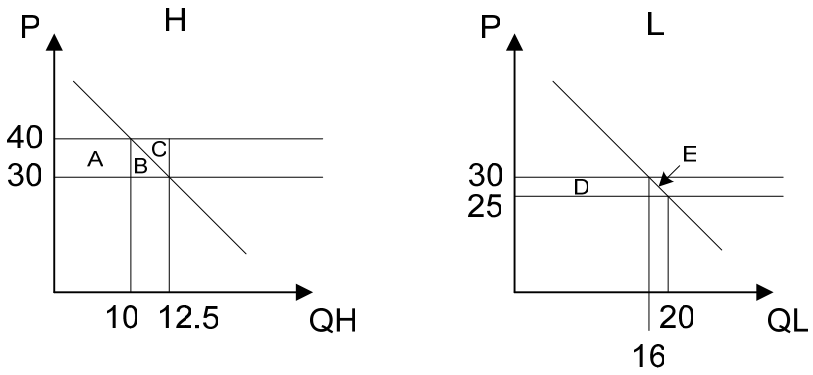
Effects on the two markets would be as follows:

variable	H	L	units
Initial P:	40	25	thousand $
Initial Q:	10	20	thousands of cars
Change in P:	-10	5	thousand $
Percent change in P:	-25%	20%	
Elasticity:	-1	-1	
Percent change in Q:	25%	-20%	
Change in Q:	2.5	-4	thousands of cars
New Q:	12.5	16	thousands of cars
Revenue:	-125	80	million $

One big problem with the policy is that budget does not balance: the government would pay out substantially more in subsidies to H buyers than it would collect from taxes on L buyers. The reason the budget fails to balance is that the increase in the price of L reduces the tax base (number of L cars sold) while the drop in the price of H raises the cost of the subsidy by increasing the number of H cars sold.

Net revenue from the policy: -125+80 = -45 million $

Graphing the markets for the two types of cars:



Subsidy to H is areas A+B+C; tax on L is area D.

Subsidy on H raises consumer surplus by A+B; tax on L lowers consumer surplus by D+E; government gains D-(A+B+C) in revenue. Net effect overall is deadweight loss of C+E.

DWL: 0.5*2.5*10 + 0.5*4*5 = 22.5 million

A second problem with the policy is the DWL: the tax on L lowers consumer surplus by more than the revenue the government collects (E), and the subsidy on H causes people to buy H cars who value them less than the cost of producing them (C). However, if the environmental benefits of shifting the vehicle mix toward H cars is large enough, it may be worth incurring the DWL. The budget problem would still need to be solved.

A final issue that would need to be considered is the effect of the policy on different income groups. If buyers of L cars are predominantly poor and buyers of H cars are predominantly rich, the policy would be regressive: it would impose costs of D+E on poor people and given benefits A+B to the rich.

Part 3: Demand and Supply

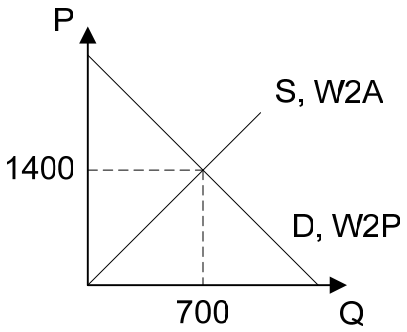
3a) initial equilibrium

W2P = 2100 - Q
W2A = 2Q

W2P = W2A
2100 - Q = 2Q
2100 = 3Q
700 = Q

W2P = 2100 - 700 = 1400
W2A = 2*700 = 1400
P = 1400

Graphing:



3b) equilibrium with a $300 tax

W2P = 2100 - Q
W2A = 2Q
W2P = W2A + 300

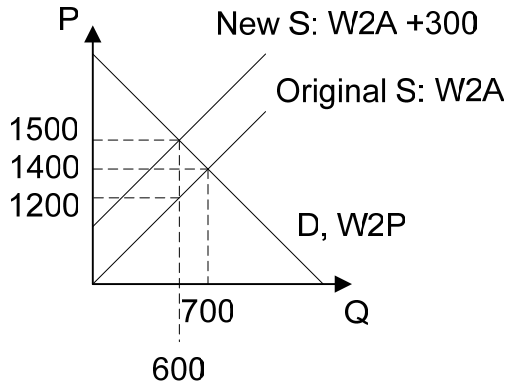
2100 - Q = 2Q + 300
1800 = 3Q
600 = Q

W2P = 2100 - 600 = 1500
W2A = 2*600 = 1200

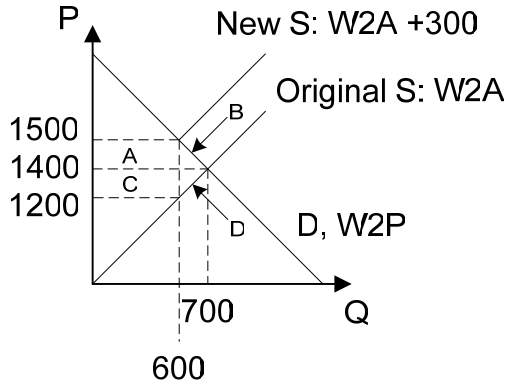
Purchaser price: 1500
Producer price: 1200
Quantity: 600

3c) Diagram

The market equilibrium:



Redrawing the diagram to show changes in surplus more clearly (a single diagram was sufficient for the exam):



Change in CS: -A - B
Change in PS: -C - D
Change in government revenue: +A+C
Deadweight loss: B+D

3d) Numerical values

A:	100*600	=	60,000
B:	0.5*100*100	=	5,000
C:	200*600	=	120,000
D:	0.5*200*100	=	10,000
Change in CS:	-60000-5000	=	-65,000
Change in PS:	-120000-10000	=	-130,000
Change in revenue:	60000+120000	=	180,000
DWL:	5000+10000	=	15,000