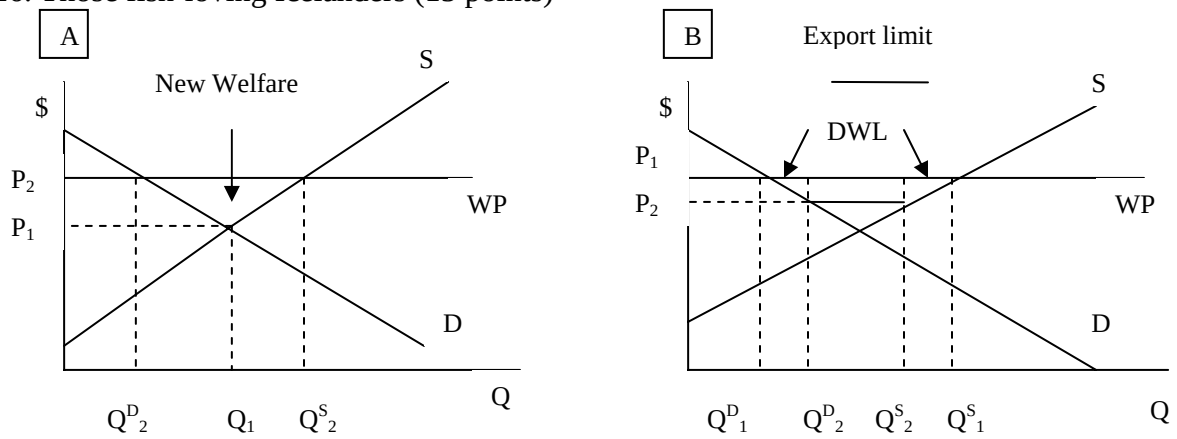
Exam 1 Answers

1. A	6. C	11. D	16. B	21. D
2. C	7. B	12. A	17. B	22. C
3. B	8. C	13. C	18. D	23. D
4. B	9. A	14. D	19. B	24. D
5. C	10. A	15. C	20. A	25. C

26. Those fish-loving Icelanders (15 points)



Notation for (A): no-trade outcomes are denoted by subscript 1; free-international-trade outcomes are denoted by subscript 2. Domestic prices are denoted by P, and domestic quantities (with supply or demand superscript if needed) are denoted by Q.

Notation for (B): free-international-trade outcomes are denoted by subscript 1; limited-export outcomes are denoted by subscript 2. Other notation is as above.

The Icelandic fishers' producer surplus obviously falls as their exports are limited. Moving from left to right, let the shapes between P_1 and P_2 be labeled A, B, C, D, and E. The rectangle A and triangle B are transferred to consumers. The next triangle C is deadweight loss: this is the additional amount that foreign consumers would have valued the fish (that is, beyond the domestic consumers' valuation), but that was lost because of the export limit. The next rectangle D is actually maintained as producer surplus; it is the additional revenues that fishermen get by being able to sell some of their catch at the higher world price. The last triangle E is again deadweight loss, this time because of the reduced production on the part of domestic suppliers.

27. Checking out your crystal ball (10 points)

The fundamental problem is that there has been a negative supply shock. Costs have risen, and the number of sellers has decreased, further rotating supply inward. It is impossible for the new (damaged) industry to produce the same amount of gasoline as before without losing money. To equilibrate the market, consumers must move along and up their demand curve, which higher prices accomplish. This guarantees that especially scarce gasoline goes to consumers with the highest valuation in the immediate short-run. In the longer run, these higher prices encourage other suppliers to make efforts to shift and increase production to take advantage of these higher prices and profits. The high prices also serve as incentives for repairing the industry as quickly as possible. Both consumer and producer reaction to higher prices thus mitigate the harm of the original supply shock, which does not happen under controls.

28. Hogwarts and hogwash (25 points)

Before beginning, it is useful to put all expressions in a common perspective, converting the given demand into willingness-to-pay and the given marginal cost into supply:

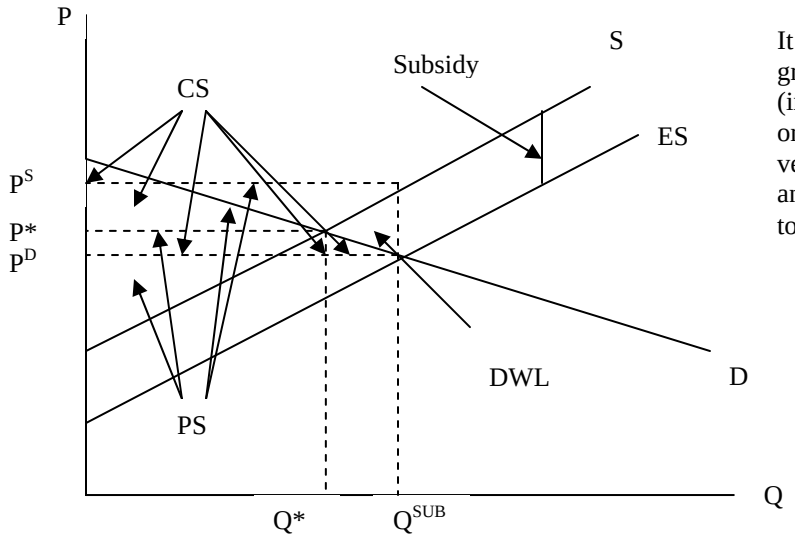
WTP = 710 – (1/3) Q $\qquad$ $Q^D = 2130 - 3\,P^D$

MC = 210 + (1/2) Q $\qquad$ $Q^S = -420 + 2\,P^S$

A. The equilibrium price is such that, at that price, $Q^D = Q^S$: $2130 - 3\,P^* = -420 + 2\,P^*$, so that P* = \$510. The equilibrium quantity can then be recovered by plugging P* into either quantity expression: 2130 – 3 (510) = -420 + 2 (510) = 600, that is, 600,000 cloaks. One could alternatively make use of the fact that WTP = MC to find the equilibrium quantity.

B. One begins any tax or subsidy question by relating the price consumers pay to the price that suppliers receive: here $P^S = P^D + SUB = P^D + 150$. (It is equally correct to say that $P^D = P^S - 150$ and proceed analogously.) With this price expression, one can find the effective supply (that is, supply where suppliers think in terms of the price that consumers pay). $EQ^S = -420 + 2\,(P^D + 150) = -120 + 2\,P^D$. This effective supply intercepts the original demand at the price that solves $2130 - 3P^D = -120 + 2P^D$, which is $P^D = 450$. Using this as our baseline, suppliers will receive PS = 600, and the subsidized equilibrium outcome is $Q^{SUB} = 780$, that is, 780,000 cloaks. The subsidy therefore costs the government \$117M (=150*780K). Note that the government must subsidize those persons who would have bought cloaks even in the absence of the subsidy, and thus it is the total quantity rather than the change in quantity that is relevant here. Although the \$150 subsidy was targeted at consumers, consumer prices fall only \$60 (=510-450), and therefore consumers capture only 40% of the subsidy.

C.



It is equally acceptable to graph out effective demand (instead of effective supply) or to point out that the vertical distance between D and S at Q^{SUB} must be equal to the subsidy.

The cost (i.e., the government expenditures) of the subsidy are captured by the rectangle from P^S to P^D and out to Q^{SUB}: SubsidyPayments = $SUB*Q^{SUB}$.

D. Deadweight loss from a subsidy in a market without externalities arises from the fact that some consumers who value the good at less than its marginal cost consume it. This consumption then destroys some amount of welfare. Deadweight losses from subsidies take the general form DWL = (½) SUB*(ΔQ) … this is analogous to the formula for taxes. Deadweight loss form this cloak subsidy is therefore DWL = ½ *150*180K = \$13.5M.