9 | APPLICATION: INTERNATIONAL TRADE

Questions for Review

1. A unilateral approach to achieving free trade occurs when a country removes trade restrictions on its own. Under a multilateral approach, a country reduces its trade restrictions while other countries do the same, based on an agreement reached through bargaining. The unilateral approach was taken by Great Britain in the 1800s and by Chile and South Korea in recent years. Examples of the multilateral approach include NAFTA in 1993 and the GATT negotiations since World War II.

2. Figure 2 illustrates supply and demand for an importing country. Before trade is allowed, consumer surplus is area A and producer surplus is area B + C. After trade is allowed, consumer surplus is area A + B + D and producer surplus is area C. The change in total surplus is an increase of area D.
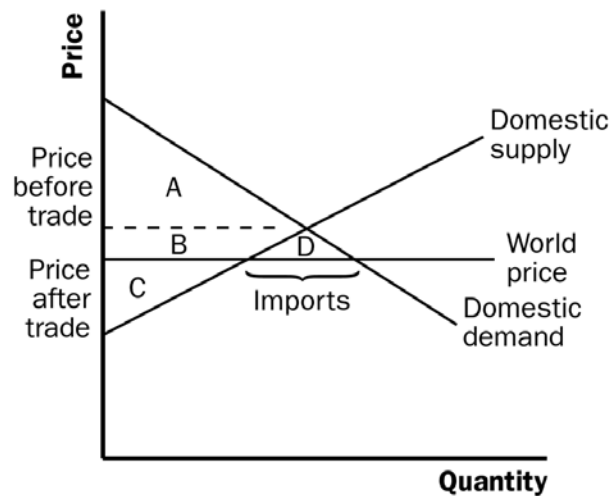

Figure 2

3. The arguments given to support trade restrictions are: (1) trade destroys jobs; (2) industries threatened with competition may be vital for national security; (3) new industries need trade restrictions to help them get started; (4) some countries unfairly subsidize their firms, so competition is not fair; and (5) trade restrictions can be useful bargaining chips. Economists disagree with these arguments: (1) trade may destroy some jobs, but it creates other jobs; (2) arguments about national security tend to be exaggerated; (3) the government cannot easily identify new industries that are worth protecting; (4) if countries subsidize their exports, doing so simply benefits consumers in importing countries; and (5) bargaining over trade is a risky business, because it may backfire, making the country worse off without trade.

4. A country will export a good for which its domestic price is lower than the prevailing world price. Thus, if a country has a comparative advantage in producing a good, it will become an exporter when trade is allowed. A country will import a product for which its domestic price is greater than the prevailing world price. Thus, if a country does not have a comparative advantage in producing a good, it will become an importer when trade is allowed.

5. A tariff is a tax on goods produced abroad and sold domestically. If a country is an importer of a good, a tariff reduces the quantity of imports and moves the domestic market closer to its equilibrium without trade, increasing the price of the good, reducing consumer surplus and total surplus, while raising producer surplus and government revenue.

6. If the domestic price that prevails without international trade is above the world price, the country does not have a comparative advantage in producing the good. If the domestic price is below the world price, the country has a comparative advantage in producing the good.

Problems and Applications

1. a. Figure 9 shows the market for T-shirts in Textilia. The domestic price is $20 Once trade is allowed, the price drops to $16 and three million T-shirts are imported.
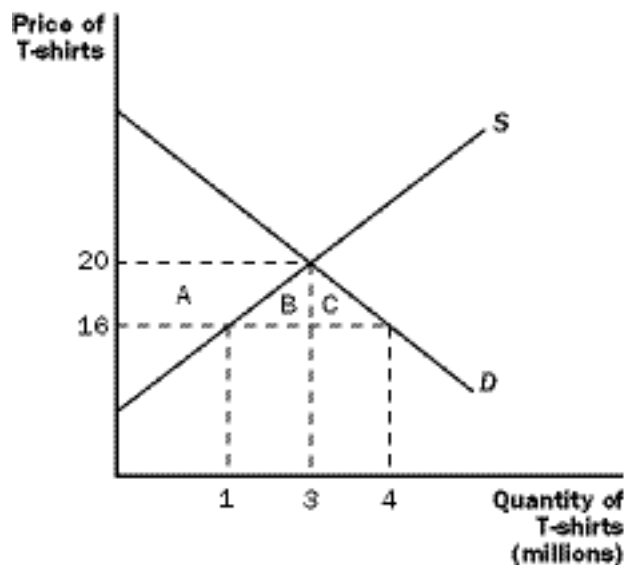

Figure 9

b. Consumer surplus increases by areas A + B + C. Area A is equal to ($4)(1 million) +(0.5)($4)(2 million) = $8 million. Area B is equal to (0.5)($4)(2 million) = $4 million. Area C is equal to (0.5)($4)(1 million) = $2 million. Thus, consumer surplus increases by $14 million.

Producer surplus declines by area A. Thus, producer surplus falls by $8 million.

Total surplus rises by areas B + C. Thus, total surplus rises by $6 million.

2. a. For a country that imports clothing, the effects of a decline in the world price are shown in Figure 7. The initial price is P_{w1} and the initial level of imports is $Q^d_1 - Q^s_1$. The new world price is P_{w2} and the new level of imports is $Q^d_2 - Q^s_2$. The table below shows the

changes in consumer surplus, producer surplus, and total surplus. Domestic consumers are made better off, while domestic producers are made worse off. Total surplus rises by areas D + E + F.
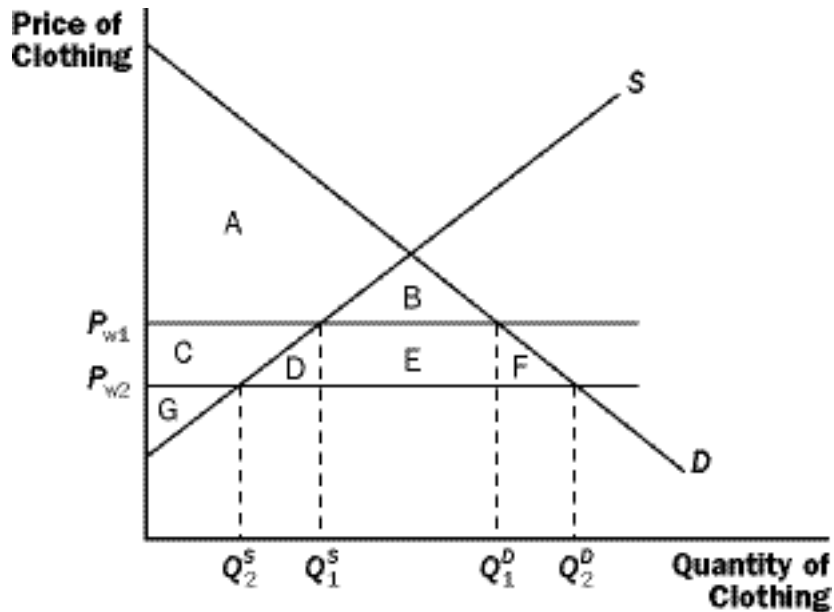

Figure 7

	P_{w1}	P_{w2}	CHANGE
Consumer Surplus	A+B	A+B+C+D+E+F	C+D+E+F
Producer Surplus	C+G	G	–C
Total Surplus	A+C+G	A+B+C+D+E+F+G	D+E+F

b. For a country that exports clothing, the effects of a decline in the world price are shown in Figure 8. The initial price is P_{w1} and the initial level of exports is $Q^s_1 - Q^d_1$. The new world price is P_{w2} and the new level of exports is $Q^s_2 - Q^d_2$. The table below shows the changes in consumer surplus, producer surplus, and total surplus. Domestic consumers are made better off, while domestic producers are made worse off. Total surplus falls by area D.
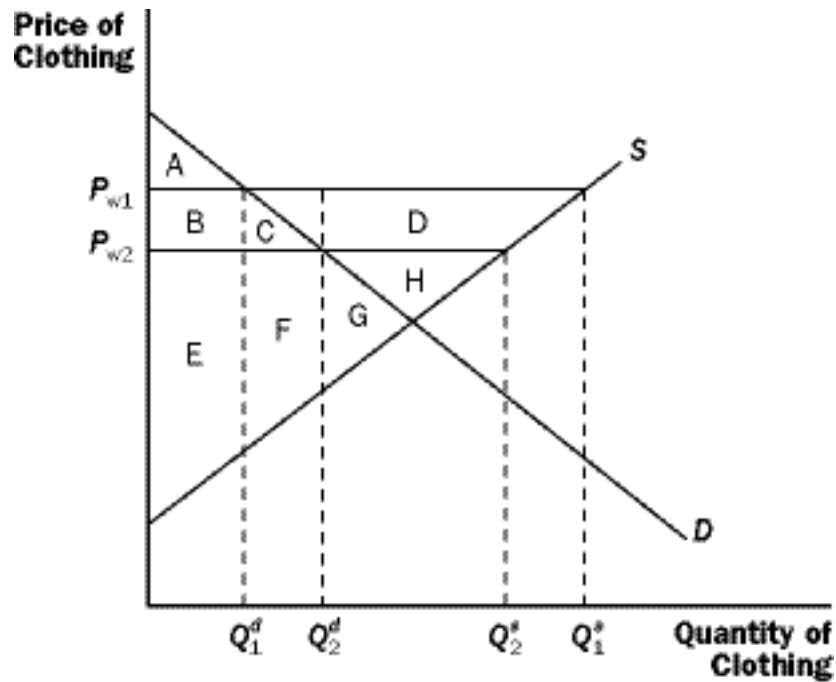
Figure 8

	P_{w1}	P_{w2}	CHANGE
Consumer Surplus	A	A + B + C	B + C
Producer Surplus	B + C + D + E + F + G + H	E + F + G + H	–B – C – D
Total Surplus	A + C + G	A + B + C + E + F + G + H	–D

    c. Overall, importing countries benefit from the fall in the world price of clothing, while exporting countries are harmed.

3. Senator Hollings is correct that the price of clothing is the world price. When trade is allowed, the domestic price of clothing is driven to the world price. The price is lower than it would be in the absence of trade, so consumer surplus is higher than it would be without trade and this means that consumers *do* benefit from lower-priced imports.

4. The impact of a tariff on imported autos is shown in Figure 6. Without the tariff, the price of an auto is P_W, the quantity produced in the United States is Q_1^S, and the quantity purchased in the United States is Q_1^D. The United States imports $Q_1^D - Q_1^S$ autos. The imposition of the tariff raises the price of autos to $P_W + t$, causing an increase in quantity supplied by U.S. producers to Q_2^S and a decline in the quantity demanded to Q_2^D. This reduces the number of imports to $Q_2^D - Q_2^S$. The table shows the areas of consumer surplus, producer surplus, government revenue, and total surplus both before and after the imposition of the tariff. Because consumer surplus declines by C + D + E + F while producer surplus rises by C and government revenue rises by E, the deadweight loss is D + F. The loss of consumer surplus in the amount C + D + E + F is split up as follows: C goes to producers, E goes to the government, and D + F is deadweight loss.
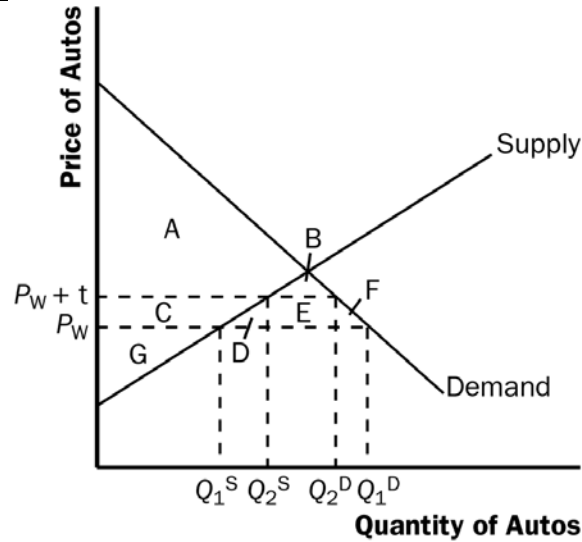
Figure 6

	Before Tariff	After Tariff	CHANGE
Consumer Surplus	A + B + C + D + E + F	A + B	−(C + D + E + F)
Producer Surplus	G	C + G	+C
Government Revenue	0	E	+E
Total Surplus	A + B + C + D + E + F + G	A + B + C + E + G	−(D + F)

5. a. There are many possible answers.

    b. There are many possible answers

6. a. Figure 4 illustrates the Canadian market for wine, where the world price of wine is P_1. The following table illustrates the results under the heading "P_1."
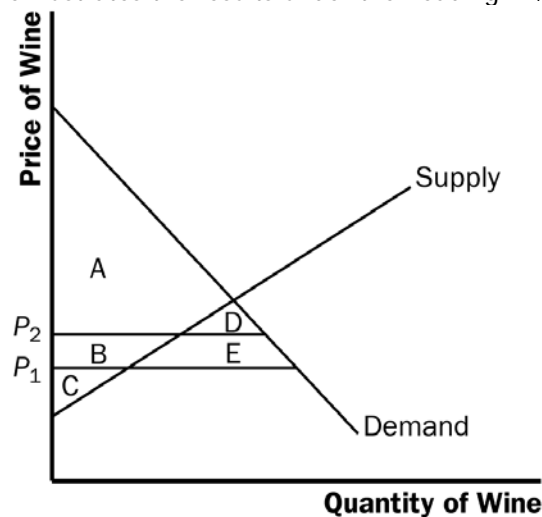

Figure 4

    b. The shift in the Gulf Stream destroys some of the grape harvest in Europe and raises the world price of wine to P_2. The table shows the new areas of consumer, producer, and

total surplus, as well as the changes in these surplus measures. Consumers lose, producers win, and Canada as a whole is worse off.

c.

	P_1	P_2	CHANGE
Consumer Surplus	A + B + D + E	A + D	–(B + E)
Producer Surplus	C	B + C	+B
Total Surplus	A + B + C + D + E	A + B + C + D	–E

7. The tax on wine from California is just like a tariff imposed by one country on imports from another. As a result, Washington producers would be better off and Washington consumers would be worse off. The higher price of wine in Washington means producers would produce more wine, so they would hire more workers. Tax revenue would go to the government of Washington. So both claims are true, but it is a bad policy because the losses to Washington consumers exceed the gains to producers and the state government.

8. a. In Figure 3, with no international trade the equilibrium price is P_1 and the equilibrium quantity is Q_1. Consumer surplus is area A and producer surplus is area B + C, so total surplus is A + B + C.
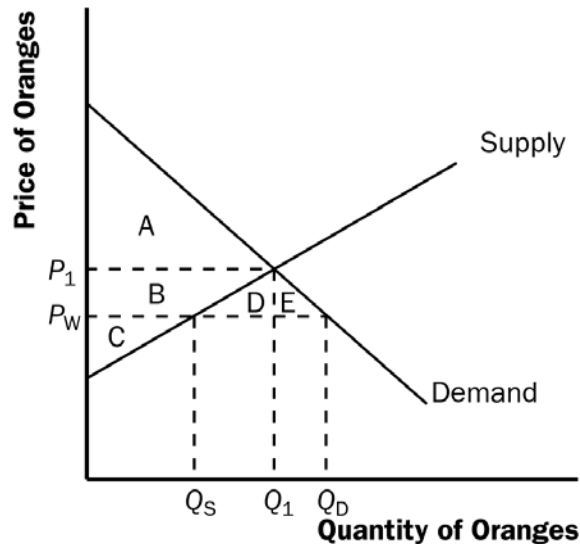

Figure 3

   b. When the Mexican orange market is opened to trade, the new equilibrium price is P_W, the quantity consumed is Q_D, the quantity produced domestically is Q_S, and the quantity imported is $Q_D – Q_S$. Consumer surplus increases from A to A + B + D + E. Producer surplus decreases from B + C to C. Total surplus changes from A + B + C to A + B + C + D + E, an increase of D + E.

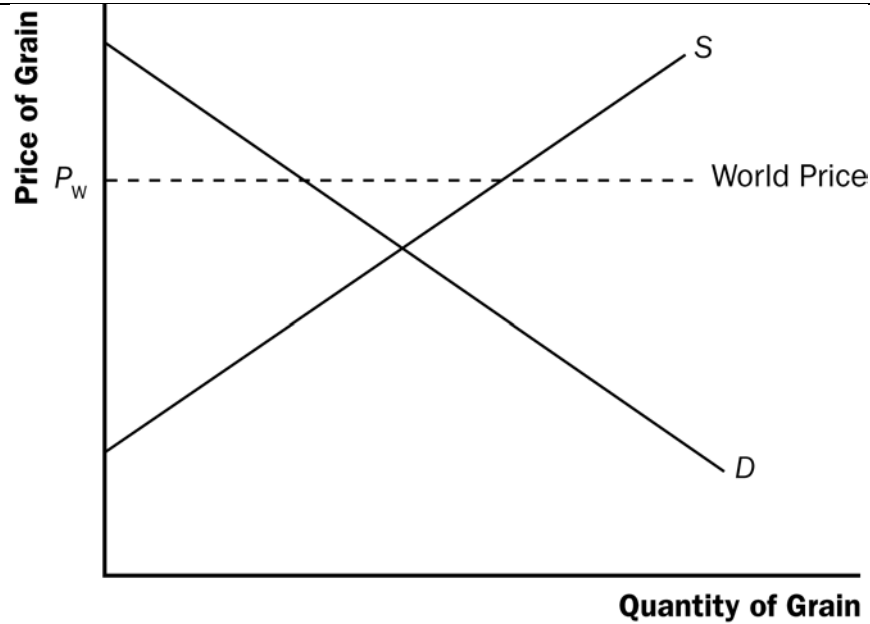9. a. Figure 10 shows the market for grain in an exporting country. The world price is P_W.

Figure 10

b. An export tax will reduce the effective world price received by the exporting nation.

c. An export tax will increase domestic consumer surplus, decrease domestic producer surplus, and increase government revenue.

d. Total surplus will fall because the decline in producer surplus is less than the sum of the changes in consumer surplus and government revenue. Thus, there is a deadweight loss as a result of the tax.

10. a. This statement is true. For a given world price that is lower than the domestic price, quantity demanded will rise more when demand is elastic. Therefore, the rise in consumer surplus will be greater when demand is elastic.

 b. This statement is true. There would be no gain from trade if demand is perfectly inelastic.

 c. This statement is false. Even though quantity demanded does not rise when trade is allowed, consumer surplus rises, because consumers are paying a lower price.

11. a. Figure 11 shows the market for jelly beans in Kawmin if trade is not allowed. The market equilibrium price is $4 and the equilibrium quantity is 4. Consumer surplus is $8, producer surplus is $8, and total surplus is $16.
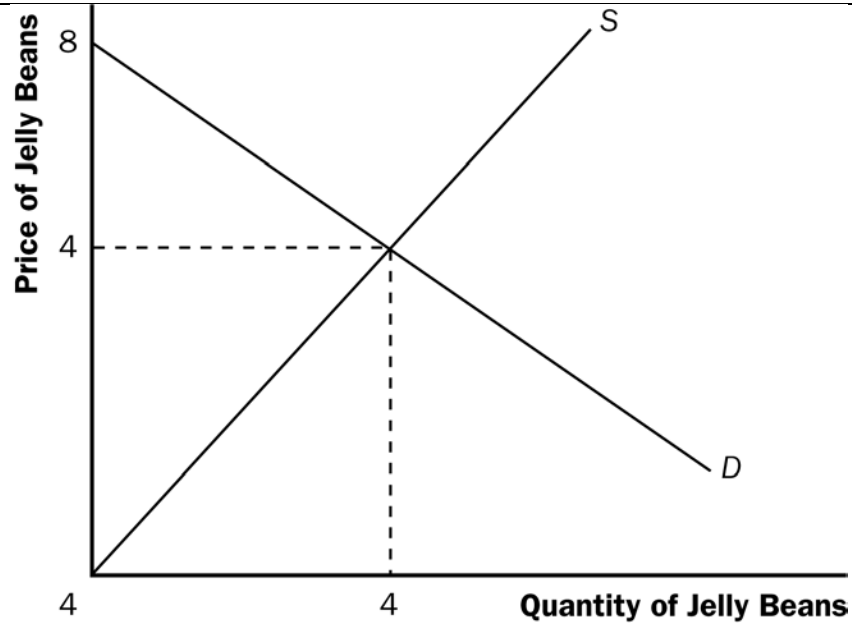
Figure 11

b. Since the world price is $1, kawmin will become an importer of jelly beans. Figure 12 shows that the domestic quantity supplied will be 1, quantity demanded will be 7, and 6 bags will be imported. Consumer surplus is $24.50, producer surplus is $0.50, so total surplus is $25.
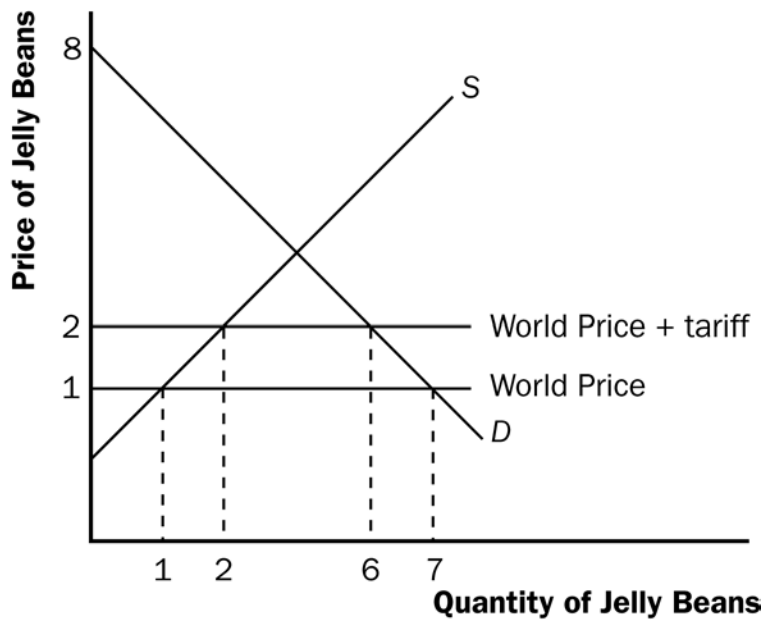

Figure 12

c. The tariff raises the world price to $2. This reduces domestic consumption to 6 bags and raises domestic production to 2 bags. Imports fall to 4 bags (see Figure 12). Consumer surplus is now 418, producer surplus is $2, government revenue is $4, and total surplus is $24.

d. When trade was opened, total surplus increases from $16 to $25. The deadweight loss of the tariff is $1 ($25 - $24).

12. a. When a technological advance lowers the world price of televisions, the effect on the United States, an importer of televisions, is shown in Figure 13. Initially the world price of televisions is P_1, consumer surplus is A + B, producer surplus is C + G, total surplus is A + B + C + G, and the amount of imports is shown as "Imports$_1$". After the improvement in technology, the world price of televisions declines to P_2 (which is P_1 – 100), consumer surplus increases by D + E + F, producer surplus declines by C, total surplus rises by D + E + F, and the amount of imports rises to "Imports$_2$".

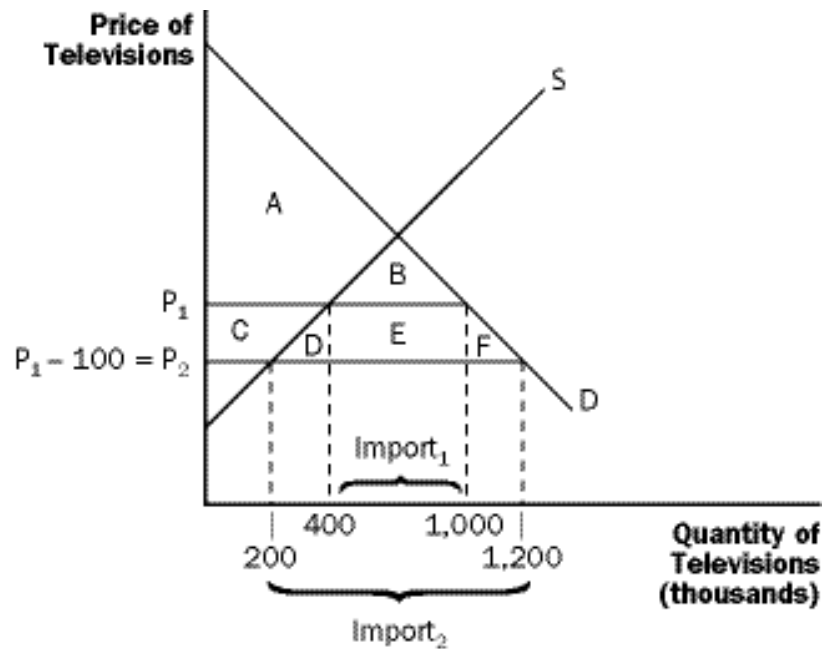
Figure 13

	P_1	P_2	CHANGE
Consumer Surplus	A + B	A + B + C + D + E + F	C + D + E + F
Producer Surplus	C + G	G	–C
Total Surplus	A + B + C + G	A + B + C + D + E + F + G	D + E + F

b. The areas are calculated as follows: Area C = 200,000($100) + (0.5)(200,000)($100) = $30 million. Area D = (0.5)(200,000)($100) = $10 million. Area E = (600,000)($100) = $60 million. Area F = (0.5)(200,000)($100) = $10 million.

Therefore, the change in consumer surplus is $110 million. The change in producer surplus is -$30 million. Total surplus rises by $80 million.

c. If the government places a $100 tariff on imported televisions, consumer and producer surplus would return to their initial values. That is, consumer surplus would fall by areas C + D + E + F (a decline of $110 million). Producer surplus would rise by $30 million. The government would gain tariff revenue equal to ($100)(600,000) = $60 million. The deadweight loss from the tariff would be areas D and F (a value of $20 million). This is not a good policy from the standpoint of U.S. welfare because total surplus is reduced

after the tariff is introduced. However, domestic producers will be happier as they benefit from the tariff.

   d. It makes no difference why the world price dropped in terms of our analysis. The drop in the world price benefits domestic consumers more than it harms domestic producers and total welfare improves.

13. An export subsidy increases the price of steel exports received by producers by the amount of the subsidy, s, as shown in Figure 14. The figure shows the world price, P_W, before the subsidy is put in place. At that price, domestic consumers buy quantity Q_1^D of steel, producers supply Q_1^S units, and the country exports the quantity $Q_1^S - Q_1^D$. With the subsidy put in place, suppliers get a total price per unit of $P_W + s$, because they receive the world price for their exports P_W, and the government pays them the subsidy of s. However, note that domestic consumers can still buy steel at the world price, P_W, by importing it. Domestic firms do not want to sell steel to domestic customers, because they do not get the subsidy for doing so. So domestic companies will sell all the steel they produce abroad, in total quantity Q_2^S. Domestic consumers continue to buy quantity Q_1^D. The country imports steel in quantity Q_1^D and exports the quantity Q_2^S, so net exports of steel are the quantity $Q_2^S - Q_1^D$. The end result is that the domestic price of steel is unchanged, the quantity of steel produced increases, the quantity of steel consumed is unchanged, and the quantity of steel exported increases. As the following table shows, consumer surplus is unaffected, producer surplus rises, government revenue declines, and total surplus declines.

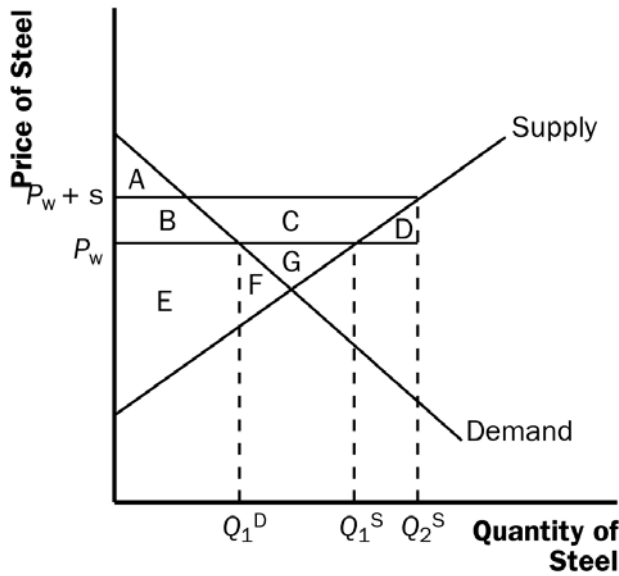Thus, it is not a good policy from an economic standpoint because there is a decline in total surplus.

Figure 14

	Without Subsidy	With Subsidy	CHANGE
Consumer Surplus	A + B	A + B	0
Producer Surplus	E + F + G	B + C + E + F + G	+(B + C)
Government Revenue	0	–(B + C + D)	–(B + C + D)
Total Surplus	A + B + E + F + G	A + B – D + E + F + G	–D