International Trade Theory and Policy Analysis

Answer Keys

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Trade Answer Key Jeopardy 5-1

1. What is micro-economics?
2. What is macro-economics?
3. What is laissez-faire?
4. What is autarky?
5. What is production and consumption efficiency?
6. What is the compensation principle?
7. Who is John Maynard Keynes?
8. What is a beggar-thy-neighbor policy?
9. What is a strategic trade policy?
10. What is the controversy between free trade and protectionism?

Trade Answer Key Jeopardy 10-1
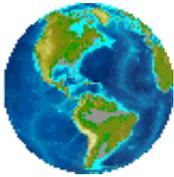
1. What is a voluntary export restraint?
2. What is an export subsidy?
3. What is the US harmonized tariff schedule?
4. What is a specific tariff?
5. What is a government procurement policy?
6. What are red-tape barriers?
7. What is the World Customs Organization?
8. What is a tariff-rate quota?
9. What is the Agreement on Textiles and Clothing (ATC)?
10. What is an ad valorem tariff?

Trade Answer Key PS 20 1-1

Q1. How is an antidumping action initiated in the US?	**A1.** Antidumping (AD) actions can be initiated if a domestic concern files a petition with the International Trade Administration (ITA) and the International Trade Commission (ITC). The ITA can also initiate an action by its own accord.
Q2. Explain how the antidumping process could add to the cost of doing business in the US by foreign firms even if an antidumping petition is denied?	**A2.** First, the foreign firms charged with dumping would be asked to complete lengthy questionnaires concerning their business practices in the US. This activity will require the industry to devote some resources (perhaps hiring a law firm) to protect its export interests. Second, in the period between the ITA's decision on the margin of dumping and the ITC's decision concerning injury, the foreign firms must pay a security deposit equal in size to the value of the dumping margin times its domestic sales. These payments are only returned after a negative injury determination by the ITC. Note, in over 95% of AD actions the ITA discovers a dumping margin.
Q3. What is an antidumping duty? How is its size determined?	**A3.** An antidumping duty is a tariff applied on imports from the country found guilty of dumping. The size of the tariff will be set equal to the margin between the domestic price and the "fair" market price.
Q4. What must US government agencies determine before applying antidumping duties against foreign firms?	**A4.** Two things must be determined. First the ITA investigates to determine if "less than fair value" (LTFV) sales have occurred. Second, the ITC must render a judgement about whether the dumped imports caused, or threatened to cause material injury to the import-competing industry.

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Q5. Name two WTO-sanctioned unfair trade laws.	A5. Antidumping laws and Countervailing duty laws
Q6. How does US trade law define dumping?	A6. In the US dumping is defined as sales at "less than fair value" (LTFV). LTFV sales can occur in three different ways. First, LTFV sales occur if foreign firms sell their product at a price less than cost. Second, LTFV sales occur if foreign firms charge less in our market than they do in their market for the same product. Third, LTFV sales occur if the foreign firms sell their products in our country at a price less than the price it charges in a third country.
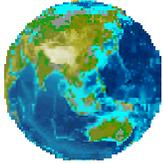
Trade Answer Key PS 20 1-2

1. Match the following five terms with a description of its application within the WTO. Place the letter of the appropriate statement next to each term.

Term	Description
Trade-weighted Average Tariff _____B_____	A. Type of analysis where the effects of policy actions are examined only in the markets which are directly affected and in which supply and demand curves are used.
Partial Equilibrium _____A_____	B. This results when one divides total tariff revenue by the value of imports.
National treatment ____E____	C. A trade law that provides protection against unfair pricing by foreign firms.
Anti-Dumping _____C_____	D. Requires that a product made in one WTO member country be treated no less favorably than a similar good originating in another member country.
Most Favored Nation ___D____	E. Requirement that foreign goods, once they have entered a WTO country, be treated no less favorably

A. Pascal Lamy as of Sept 1, 2005

B. January 1, 1995

C. 149 of December 2005.

D. The WTO is GATT plus a lot more. GATT (the institution) was small and provisional, and not even recognized in law as international organization. It has now been replaced by the World Trade Organization. GATT (the agreement) has been amended and incorporated into the new WTO Agreements. GATT deals only with trade in goods. The WTO Agreements now cover services and intellectual property as well.

E. For the most part, all WTO members subscribe to all WTO agreements. These are the multilateral agreements. There are, however, a few agreements which have a narrower group of signatories and are known as "plurilateral agreements.

F. The principle of "national treatment" means that imported and locally-produced goods should be treated equally - at least after the foreign goods have entered the market. The same should apply to foreign and domestic services, and to foreign and local trademarks, copyrights and patents. National treatment only applies once a product, service or item of intellectual property has entered the market. Therefore, charging customs duty on an import is not a violation of national treatment even if locally-produced products are not charged an equivalent tax.

G. In the WTO, when countries agree to open their markets for goods or services, they "bind" their commitments. For goods, these bindings amount to ceilings on customs tariff rates. Sometimes, promising not to raise a trade barrier can be as important as lowering one, because the promise gives businesses a clearer view of their future opportunities.

H. The regular surveillance of national trade policies through the Trade Policy Review Mechanism provides a means of encouraging transparency both domestically and at the multilateral level. The four biggest traders - the European Union, the United States, Japan and Canada (the "Quad") - are examined approximately once every two years. The next 16 countries (in terms of their share of world trade) are reviewed every four years. The remaining countries are reviewed every six years, with the possibility of a longer interim period for the least-developed countries.

I. Trade in services, intellectual property rights, international investments, agricultural subsidies, trade in textiles and clothing, voluntary export restraints, et. al.
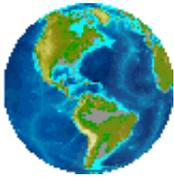
A. The Office of the United States Trade Representative was created by Congress in the Trade Expansion Act of 1962 and implemented by President Kennedy in Executive Order 11075 on January 15, 1963.

B. In 1980, the office was renamed the Office of the United States Trade Representative (USTR).

C. Initially named the Office of the Special Trade Representative this Agency was authorized to negotiate all trade agreements programs under the Tariff Act of 1930 and the Trade Expansion Act of 1962. As part of the Trade Act of 1974, Congress established the Office as a Cabinet-level agency within the Executive Office of the President and gave it other powers and responsibilities for coordinating trade policy. President Carter's Executive Order 12188 of January 4, 1980, authorized the USTR to set and administer overall trade policy. The USTR was also designated as the nation's chief trade negotiator and as the representative of the United States in the major international trade organizations.

D. Rob Portman (as of January 2006)

E. Primary objectives of the private sector advisory system are: to consult with the U.S. government on negotiation of trade agreements, to assist in monitoring compliance with the agreements and to provide input and advice on the development of U.S. trade policy. The advisory system is composed of a series of Committees with differing responsibilities. The Advisory Committee on Trade Policy and Negotiations (ACTPN), a Presidentially appointed committee, has 45 members from representative elements of the U.S. economy with international trade interests. Its mandate is to provide overall policy guidance on trade issues.

F. The office of USTR is structured along four organizational lines: Bilateral Negotiations, Multilateral Negotiations, Sectoral Activities, and General Support.

G. USTR's Geneva Office is organized to cover general WTO affairs, Non-Tariff Agreements, Agricultural Policy, Commodity Policy and the Harmonized Code System. Special attention is given to textiles with one member of the staff designated as U.S. Representative to the Textiles Surveillance Body. The Geneva Deputy USTR is the U.S. Ambassador to the WTO and to the UNCTAD on commodity matters. The Geneva staff represents the United States' interests in negotiations, and in other contacts on trade and trade policy in both forums.

A. The USITC is an independent, nonpartisan, quasi-judicial federal agency. USITC activities include:

   ❍ determining whether U.S. industries are materially injured by reason of imports that benefit from pricing at less than fair value or from subsidization;
   ❍ directing actions, subject to Presidential disapproval, against unfair trade practices such as patent, trademark, or copyright infringement;
   ❍ making recommendations to the President regarding relief for industries seriously injured by increasing imports;
   ❍ advising the President whether agricultural imports interfere with price-support programs of the U.S. Department of Agriculture;
   ❍ conducting studies on trade and tariff issues and monitoring import levels; and,
   ❍ participating in the development of uniform statistical data on imports, exports, and domestic production and in the establishment of an international harmonized commodity code.

   The USITC is NOT a policymaking body. It is NOT a court of law. It does NOT negotiate trade agreements..

B. The USITC is headed by six Commissioners who are nominated by the President and confirmed by the U.S. Senate. No more than three Commissioners may be of any one political party. Currently three Democrats and three Republicans serve as Commissioners.

   The current Commissioners of the USITC (as of January 2006) are:

   ❍ Stephen Koplan (Chairman)
   ❍ Deanna Tanner Okun (Vice Chairman)
   ❍ Jennifer A. Hillman
   ❍ Charlotte R. Lane
   ❍ Daniel R. Pearson
   ❍ Shara L. Aranoff

C. In countervailing duty and antidumping investigations the USITC works in concert with the U.S. Department of Commerce. The Commerce Department determines whether the alleged subsidies or dumping are actually occurring and, if so, at what levels (called the subsidy or dumping "margin"). The USITC determines whether the U.S. industry is materially injured by reason of the

dumped or subsidized imports. If the Commerce Department's final subsidy or dumping determination and the USITC's final injury determination are both affirmative, the Commerce Department issues an order to the U.S. Customs Service to impose duties..

D. Under section 201, (the US escape clause) domestic industries seriously injured or threatened with serious injury by increased imports may petition the ITC for import relief. The ITC determines whether an article is being imported in such increased quantities that it is a substantial cause of serious injury, or threat thereof, to the U.S. industry producing an article like or directly competitive with the imported article. If the Commission makes an affirmative determination, it recommends to the President relief that would prevent or remedy the injury and facilitate industry adjustment to import competition. The President makes the final decision whether to provide relief and the amount of relief.

E. The Uruguay Round Agreements Act, approved in late 1994, amended the antidumping and countervailing duty laws in several respects. One of the most significant changes is the new provision requiring the Department of Commerce and the ITC to conduct "sunset" reviews no later than five years after an antidumping or countervailing duty order is issued to determine whether revoking the order would be likely to lead to continuation or recurrence of dumping or subsidies (Commerce) and of material injury (ITC).

F. Section 201, Trade Act of 1974 (Global Safeguard Investigations), Import Relief for Domestic Industries

Section 302, NAFTA Implementation Act (Bilateral Safeguard Investigations)

Section 337, Tariff Act of 1930, Investigations of Unfair Practices in Import Trade

Countervailing Duty and Antidumping Duty Laws Under the Tariff Act of 1930

Section 332, Tariff Act of 1930, General Factfinding Investigations

Section 22, Agricultural Adjustment Act, Import Interference With Agricultural Programs

Section 406, Trade Act of 1974, Trade With Communist Countries

Section 603, Trade Act of 1974 (Preliminary Investigations), Expedition of Preliminary Investigations

Trade Answer Key Internet 20 1D

A. When a member government believes another member government is violating an agreement or a commitment that it has made in the WTO, it may bring its complaint to the dispute settlement board.

B. In the first stage countries in dispute have to talk to each other to see if they can settle their differences by themselves. If that fails, they can also ask the WTO director-general to mediate or try to help in any other way.

C. If consultations fail, the complaining country can ask for a panel to be appointed. Panels consist of three (occasionally five) experts from different countries who examine the evidence and decide who is right and who is wrong. The panel's report is passed to the Dispute Settlement Body, which can only reject the report by consensus.

D. Panellists for each case are generally chosen from a permanent list of well-qualified candidates. They each serve in their individual capacities and cannot receive instructions from any government.

E. A procedure for settling disputes existed under the old GATT, but it had no fixed timetables, rulings were easier to block, and many cases dragged on for a long time inconclusively. The Uruguay Round agreement establishing the WTO introduced a more structured process with more clearly defined stages in the procedure.

F. Usually about 9 months without an appeal and 12 months with an appeal.

G. A panel report becomes the Dispute Settlement Body's ruling or recommendation within 60 days unless a consensus rejects it. This means if only one member accepts the report, it becomes a binding ruling.

H. If the country that is the target of the complaint loses, it must follow the recommendations of the panel report or the appeals report. It must state its intention to do so at a Dispute Settlement Body meeting held within 30 days of the report's adoption. If complying with the recommendation immediately proves impractical, the member will be given a "reasonable period of time" to do so. If it fails to act within this period, it has to enter into negotiations with the complaining country (or countries) in order to determine mutually-acceptable compensation " for instance, tariff reductions in areas of particular interest to the complaining side.

I. If after 20 days, no satisfactory compensation is agreed, the complaining side may ask the Dispute Settlement Body for permission to impose limited trade sanctions ("suspend concessions or obligations") against the other side.

Trade Answer Key Jeopardy 20-1

1. What is the International Trade Commission?
2. What is a countervailing duty?
3. What is the US Congress?
4. What is the General Agreement on Tariffs and Trade (GATT)?
5. What is the US Trade Representative?
6. What is the Reciprocal Trade Agreements Act (RTTA)?
7. What is dumping?
8. What is the Smoot-Hawley trade act?
9. What is the US Trade Representative?
10. What is the US Secretary of Commerce?
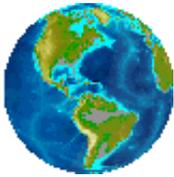
1a. The terms of trade represents the quantity of one good that exchanges for a quantity of another good in a market.

In this case the terms of trade is either 2/3 lbs. of peaches per lb. of cherries, or, 3/2 lbs. of cherries per lb. of peaches.

The terms of trade is equivalent to the ratio of the dollar prices of the goods, in reverse order. Thus, if P_c is the price of cherries, in dollars per lb. and if P_p is the price of peaches in dollars per lb., then P_c/P_p is equivalent to the terms of trade with units of lbs. of peaches per lb. of cherries. Each of the following answers will use the terms of trade given by P_c/P_p.

1b. 5 extra pounds of cherries would create an excess supply of cherries at the previous prices. A relative abundance of cherries should push the price of cherries down relative to peaches. This means that P_c/P_p falls to something less than 2/3 lbs. of peaches per lb. of cherries.

1c. The peach farmer's new skills may enable him to raise the positive impression of his peaches in the mind of the cherry farmer. If so, then the cherry farmer's demand for peaches may rise at every price. The increase in demand would raise the price of peaches relative to cherries. This implies that P_c/P_p falls to something less than 2/3 lbs. of peaches per lb. of cherries. In other words, the paech farmer will have to give up fewer peaches for each ound of cherries because his peaches are more desirable.

1d. The answer here depends a bit on one's interpretation. If the mold is on 40% of every peach, then the quality of the peaches is lower. As a result the demand for the peaches would fall which would reduce the price of peaches. This implies that P_c/P_p rises to something greater than 2/3 lbs. of peaches per lb. of cherries. On the other hand, we might imagine that 40% of the peaches are no good, having mold on them, while the remaining 60% are of normal quality. In this case one might throw away the bad peaches and come to the market with a reduced supply of high quality peaches. In this case the lower supply would raise the price of (the remaining) peaches implying P_c/P_p falls.

1e. A news report indicating that cherries may reduce the risk of cancer may change the preferences of both the cherry farmer and the peach farmer. Both may wish to consume more cherries now. The increase in demand should raise the price of cherries relative to peaches. This implies that P_c/P_p rises to something greater than 2/3 lbs. of peaches per lb. of cherries.
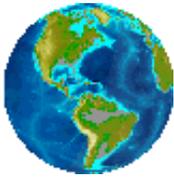
1A. Ecuador has the absolute advantage in bananas because $a_{LB}^E(4) < a_{LB}^{US}(8)$

B. Ecuador has the comparative advantage in bananas since $a_{LB}^E(4)/a_{LM}^E(4) < a_{LB}^{US}(8)/a_{LM}^{US}(2)$

C. In the US $(P_B/P_M)_{Aut} = a_{LB}^{US}(8)/a_{LM}^{US}(2) = 4$ machines/banana.

D. Each country would export their comparative advantage good. Thus Ecuador exports bananas and the US exports machines.

E. Ecuador would shift all of it's labor into banana production and would produce no machines. Using the production function, $Q_B = L_E(400)/a_{LB}^E(4) = 100$ units of bananas.

F. The free trade terms of trade would lie in between the two country's autarky terms of trade. In Ecuador $(P_B/P_M)_{Aut} = a_{LB}^E(4)/a_{LM}^E(4) = 1$ machine/banana. In the US $(P_B/P_M)_{Aut} = a_{LB}^{US}(8)/a_{LM}^{US}(2) = 4$ machines/banana. Therefore, any terms of trade such that $1 < ((p_B/P_M)_{FT} < 4$.
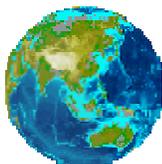
Trade Answer Key PS 40 1-2

1. Consider a Ricardian model with two countries, England and Portugal, producing two goods, wine and corn. Suppose the unit-labor requirements in wine production are: $a_{LW}^{Eng} = 1/3$ hour per liter, and $a_{LW}^{Port} = 1/2$ hour per liter, while the unit-labor requirements in corn are $a_{LC}^{Eng} = 1/4$ hour per kg, and $a_{LC}^{Port} = 1/2$ hour per kg.

    A. (4) Which country has the absolute advantage in wine? ... in corn? Explain why.

    England has the absolute advantage in wine because

$$a_{LW}^{E}(1/3) < a_{LW}^{P}(1/2)$$

    England also has the absolute advantage in corn because

$$a_{LC}^{E}(1/4) < a_{LC}^{P}(1/2)$$

   B. (4) Which country has the comparative advantage in wine? ... in corn? Explain why.

    England has the comparative advantage in corn since

$$a_{LC}^{E}(1/4)/a_{LW}^{E}(1/3) \ (=3/4) < \ a_{LC}^{P}(1/2)/a_{LW}^{P}(1/2) \ (=1) \ .$$

    Also, since England has the comp. adv. in corn, Portugal must have it in wine.

    C. (2) According to Ricardo, state how these two countries would take advantage of the potential benefits of trade?

    Ricardo said that a country should **specialize in the good in which it has a comparative advantage** and **export that good** in exchange for the other.
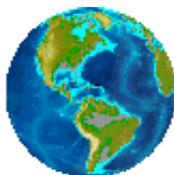
1A. A country has an absolute advantage in a good if its labor productivity is higher. Since labor productivity in beer production is higher in Italy than in Germany (6 > 5), **Italy has the absolute advantage in beer production**. Since labor productivity in pizza production is greater in Italy than in Germany (6 > 3), **Italy also has the absolute advantage in pizza production**. can produce

1B. If a country has an absolute advantage in the production of both goods, then its comparative advantage good will be the one in which its productivity advantage is the greatest. For Italy, it can produce beer six-fifths as efficiently as Germany (6/5) but, it can produce pizza twice as efficiently (6/3 = 2). Thus, Italy can produce pizza "most-best" and that is its comparative advantage good.

For a country that cannot produce either of the two goods as efficiently as the other (Germany in this case), its comparative advantage good will be the one in which its productivity disadvantage is least. Germany can produce beer five-sixths as efficiently as Italy (5/6) and can produce pizza one-half as efficiently as Italy (3/6 = 1/2). Thus, Germany is "least-worst" at producing beer and so that is its comparative advantage good.

1C. Zero profits imply that in autarky in Italy $\dfrac{P_B}{P_P} = \dfrac{a_{LB}}{a_{LP}} = \dfrac{1/a_{LP}}{1/a_{LB}} = \dfrac{6}{6} = 1.0$

pizzas per beer

In Germany, $\dfrac{P_B}{P_I} = \dfrac{a_{LB}}{a_{LI}} = \dfrac{1/a_{LI}}{1/a_{LB}} = \dfrac{3}{5} = 0.6$ pizzas per beer.

1D. The higher price of beer in Italy (in terms of pizzas) will, once free trade opens, lead German beer producers, seeking to maximize profit, to export their beer to the higher price market in Italy. Since Italian and German beer are homogeneous and since there are no transportation costs, the extra supply of beer will drive down the price of beer in Italy (also causing the price of pizza to rise) . The opposite effect (higher price of pizza in Germany) leads Italy to export pizzas and cause the price of pizza to fall in Germany (also causing the price of beer to rise). At the free trade price (the same in both countries) beer production in Germany will be profitable and pizza production unprofitable, leading to the expansion of beer production and contraction of pizza production. The reverse will occur in Italy.

1E. In free trade Germany will specialize in beer production, thus beer employment rises while pizza employment falls. Italy specializes in pizza production, so pizza employment

rises while beer employment falls. However, the model assumes that full employment is always maintained, therefor there is no increase in unemployment in either country.
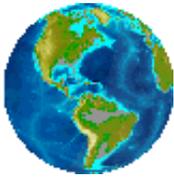
1a. Absolute Advantage:

US in timber since $a_{Lt}^{US}(3) < a_{Lt}^{Tai}(6)$

Taiwan in VCRs since $a_{Lv}^{Tai}(2) < a_{Lv}^{US}(8)$

Comparative advantage:

US in timber since $a_{Lt}^{US}(3)/a_{Lv}^{US}(8) < a_{Lt}^{Tai}(6)/a_{Lv}^{Tai}(2)$

Taiwan in VCRs since $a_{Lv}^{Tai}(2)/a_{Lt}^{Tai}(6) < a_{Lv}^{US}(8)/a_{Lt}^{US}(3)$

1b. The autarky price ratio is the opportunity cost of production.

In US $(P_t/P_v)_{Aut}$ = 3/8 VCRs/unit of timber

In Taiwan $(P_t/P_v)_{Aut}$ = 3 VCRs/unit of timber

In free trade the US would specialize in its comparative advantage good, timber, producing 16 million units, and would export some to Taiwan. (To get the production level - 16 million - take all of their workers - 48 million - and divide by a_{Lt}^{US} - 3).

Taiwan would specialize in VCRs, producing 24 million units, and would export some to the US. A plausible free trade price ratio must lie between the two autarky price ratios such as, $(P_t/P_v)_{FT}$ = (3/2) VCRs/unit of timber.

1c. Real wages in **autarky** in the **US** were:

$w/P_t = 1/a_{Lt} = 1/3$ unit of timber/hour

$w/P_v = 1/a_{Lv} = 1/8$ VCR/hour

Real wages in **free trade** in the **US** are:

$w/P_t = 1/a_{Lt} = 1/3$ unit of timber/hour

$w/P_v = (1/a_{Lt})(P_t/P_v) = (1/3)(3/2) = 1/2$ VCR/hour

Real wages in **autarky** in **Taiwan** were:

$w/P_t = 1/a_{Lt} = 1/6$ unit of timber/hour

$w/P_v = 1/a_{Lv} = 1/2$ VCR/hour

Real wages in **free trade** in **Taiwan** are:

$w/P_t = (1/a_{Lv})(P_v/P_t) = (1/2)(2/3) = 1/3$ unit of timber/hour

$w/P_v = 1/a_{Lv} = 1/2$ VCR/hour

Since real wages have risen with respect to at least one good in each country while the real wage of no good has fallen, everyone benefits from free trade.

1d. The technology improvement causes a change in the US opportunity cost of timber production and changes the quantity of timber the US can produce when it specializes. Because the US now supplies more timber to the world, the higher supply will bid the free trade price of timber down relative to the price of VCRs. Suppose the new equilibrium free trade price ratio becomes

$(P_t/P_v) = 4/3$.

Real wages in **free trade** in the **US** after the technology improvement are:

$w/P_t = 1/a_{Lt} = 1/2$ unit of timber/hour

$w/P_v = (1/a_{Lt})(P_t/P_v) = (1/2)(4/3) = 2/3$ VCR/hour

In the US real wages rise with respect to both goods.

Real wages in **free trade** in **Taiwan** after the improvement are:

$w/P_t = (1/a_{Lv})(P_v/P_t) = (1/2)(3/4) = 3/8$ unit of timber/hour

$w/P_v = 1/a_{Lv} = 1/2$ VCR/hour

In Taiwan the real wage in terms of VCRs stays the same while the real wage in terms of timber rises. Thus, everyone is better-off as a result of the technology improvement in this particular example.

However, it is conceivable that the US could be made worse-off from the technology improvement. Suppose that the world demand for timber is extremely inelastic. This implies that when the supply of timber rises, the world price of timber will fall considerably. Suppose, instead of falling to $(P_t/P_v) = 4/3$, the price falls to $(P_t/P_v) = 1/2$.

In this case,

Real wages in **free trade** in the **US** after the technology improvement are:

$w/P_t = 1/a_{Lt} = 1/2$ unit of timber/hour

$w/P_v = (1/a_{Lt})(P_t/P_v) = (1/2)(1/2) = 1/4$ VCR/hour

Now, although the real wage in terms of timber still rises, the real wage in terms of VCRS actually falls. If a consumer has a relatively high demand for VCRs relative to timber, he or she may be made worse-off as a result of the technology improvement. This case is known as "immiserizing growth".

Trade Answer Key Jeopardy 40-1

1. Who is Robert Torrens?
2. What is the unit-labor requirement in cloth production?
3. What is labor productivity in tomato production?
4. What is the opportunity cost of tomatoes in terms of potatoes?
5. When does France have a comparative advantage in wine production relative to Germany?
6. What is the real wage in terms of wine?
7. What is absolute and comparative advantages?
8. What is an improvement in productive efficiency?
9. What is full employment?
10. What is the production possibilities frontier?
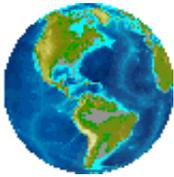
Trade Answer Key PS 60 2-1

|	in Malaysia	in Thailand
the price ratio P_{po}/P_r	+	-
output of palm oil	+	-
output of rice	-	+
exports of palm oil	+	- or 0 [1]
imports of rice	+	- or 0 [1]
real wage in terms of palm oil	-	+
real wage in terms of rice	-	+
real rental rate in terms of palm oil	+	-
real rental rate in terms of rice	+	-
capital-labor ratio in palm oil production	-	+
capital-labor ratio in rice production	–	+

Notes:
1. The answer to these depends on one's interpretation of the question. When moving to free trade, Thailand will import palm oil and export rice. If one asks, "How much palm oil does Thailand EXPORT in autarky?", the answer is zero. "How much do they EXPORT in free trade?", the answer is also zero. Thus, zero is a reasonable answer for both palm oil exports and rice imports. However, if you note that "imports" of palm oil really can be interpreted as "negative exports", and "exports" of rice are really "negative imports", then it is reasonable to answer both questions with a minus. Note also, that "ambiguous" is not a possible answer. The direction of change is definite. Thus (0, 0) or (-, -) are acceptable answers, but not (A, A).
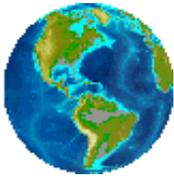
Trade Answer Key PS 60 2-2

1. At the WTO Ministerial meetings in Seattle last year, opponents of the WTO argued that freer trade causes harm to many people in the country. Supporters of the WTO, however, argued that freer trade generates benefits for many people in the country. As our trade models suggest both sides are probably right. Show why this result is suggested in a Heckscher-Ohlin model by evaluating the redistributive effects of the following types of trade policies. Assume there are two goods, clothing and steel, produced with two factors, labor and capital. Suppose the country is capital-abundant and steel production is capital-intensive. Write down the magnification effect for prices when the country implements each of the following policies. Also specify who wins and who loses as a result of the policy. (Let P_S and P_C be the price of steel and clothing; let w and r be the wage rate and rental rates). [Hint: If a policy affects an import price, for example, assume the export good price remains unchanged]

	Magnification Effect	Winners	Losers
A. an import tariff	$\hat{w} > \hat{P_C} > \hat{P_S} > \hat{r}$	workers	capital owners
B. an export tax	$\hat{w} > \hat{P_C} > \hat{P_S} > \hat{r}$	workers	capital owners
C. an export subsidy	$\hat{r} > \hat{P_S} > \hat{P_C} > \hat{w}$	capital owners	workers
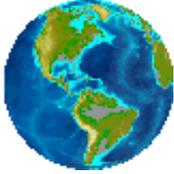
Trade Answer Key PS 60 2-3

1A. According to the H-O theorem, a labor abundant country will export the labor intensive good. Therefore the US exports cheese and imports wine.

B. According to the Rybczynski theorem, when the labor endowment rises, it will cause an increase in the output of the labor-intensive good and a reduction in the other good. Thus, cheese production is labor-intensive which implies that wine production is capital-intensive.

C. According to the Stolper-Samuelson theorem, a decrease in the price of a good will cause the price of the factor used intensively in that product to decrease as well. Thus, since the wage rate decreases when the cheese price falls, cheese production must be labor-intensive. This will hold true in both the US and France.

D. France will export the good that uses its abundant factor intensively. Since France is exporting the capital-intensive good, capital is its abundant factor. This implies that labor must be the abundant factor in the US and since a country's abundant factor benefits from free trade, workers gain from trade in the US.

E. Tariff increases will raise the price of the import good, cheese, in France. Since the increase in the cheese price benefits workers, cheese production is labor-intensive. Since France is importing the labor intensive good, France is exporting the capital intensive good, which implies that France is capital abundant. in France, labor must be France's scarce factor.

1A-B. Zero-Profits in Steel Constraint:
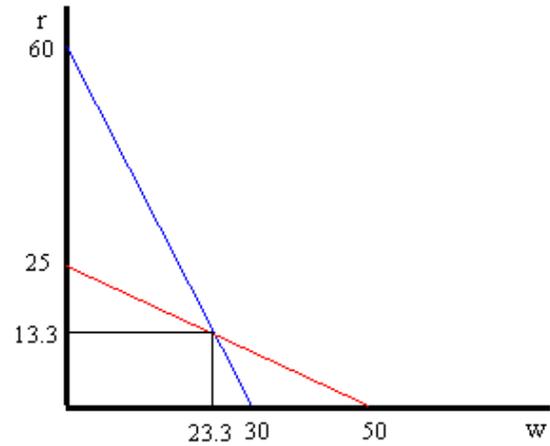
$a_{Ls} \, w + a_{Ts} \, r = P_s$

or $10 \, w + 5 \, r = 300$

Blue line: endpoints 60 and 30.

Zero-Profits in Wheat Constraint:

$a_{Lw} \, w + a_{Tw} \, r = P_w$

or $2 \, w + 4 \, r = 100$

Red line: endpoints 25 and 50.

To find the intersection point ,one must solve the two equations simultaneously.

1) $10 \, w + 5 \, r = 300$
2) $2w + 4r = 100$

Multiplying the 2nd equation by (-5) yields,

3) $-10w - 20r = -500$

Adding eqs. (1) and (3) together vertically yields,

4) $0w - 15r = -200$

Equation (4) implies that $r = (-200)/(-15) = 13.33$

Finally, plug in 13.33 into any of the above equations, say (1) to get,

10w + 5(13.33) = 300,

solving for w yields w = 70/3 = 23.33 The solution is plotted on the adjoining diagram.

C. When the price of steel rises to $350, the steel constraint becomes: 10 w + 5 r = 350. This represents an outward shift parallel to the original. To find the new solution solve the folowing two equations using the same procedure as above.
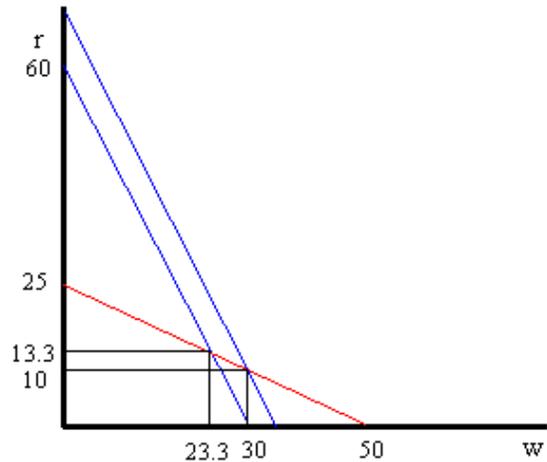
1) 10 w + 5 r = 350
2) 2w + 4r = 100

The new wage and rental rates are w = 30 and r = 10.

D. $\hat{w}$ = {[(30) - (23.33)] / (23.33)} x 100 = 28.5%

$\hat{r}$ = {[(10) - (13.33)] / (13.33)} x 100 = -25.0%

$\hat{P}_s$ = {[(350) - (300)] / (300)} x 100 = 16.67%

$\hat{P}_w$ = 0%

E. $\hat{w} > \hat{P}_s > \hat{P}_w > \hat{r}$

Thus when the price of steel rises while the price of wheat remains fixed, wages rise for labor, the factor used intensively in the steel industry, and rents for land-owners fall, the factor used intensively in the wheat industry.

2. Let P_a be the price of autos, P_w be the price of wheat

w be the wage rate paid to laborers and r be the rental rate on capital.

A tariff reduction causes P_a to fall so that $\hat{P}_a$ < 0%. Since the price of wheat remains fixed $\hat{P}_w$ = 0%.

Since the country exports wheat and imports autos we know that it must be relatively abundant in the factor used intensively in the wheat industry. However we don't know which factor that is, so there are two possible answers.

If the country is capital-abundant then wheat is the capital-intensive good and autos are labor-intensive. The appropriate magnification effect is,

$$\hat{w} > \hat{P}_a > \hat{P}_w > \hat{r}$$

This implies that $\dfrac{w}{P_a}$ and $\dfrac{w}{P_w}$ both rise implying that workers are absolutely better-off from trade liberalization.

Also $\dfrac{r}{P_a}$ and $\dfrac{r}{P_w}$ both fall implying that capitalists are absolutely worse-off from trade liberalization.

If the U.S. is labor-abundant then wheat is labor-intensive and autos are capital-intensive. The appropriate magnification effect in this case is,

$$\hat{r} > \hat{P}_a > \hat{P}_w > \hat{w}$$

and the effects described above are reversed.

2B. The effects on factor returns are long-run results because the H-O model assumes that factors are freely and costlessly mobile across industries. In the short-run we would expect some factors to be difficult, if not impossible, to transfer across industries.
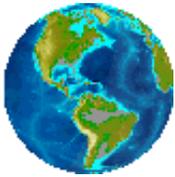
Trade Answer Key Jeopardy 60-1

1. What is Swedish?
2. What is land-abundant?
3. What is energy-intensive?
4. What is the unit-factor requirement?
5. What is factor-intensity and factor-abundancy?
6. What is variable factor proportions?
7. What is the capital-labor ratio?
8. What is full employment?
9. What is the opportunity cost of production?
10. What is the Stolper-Samuelson theorem?

Trade Answer Key PS 70 2-1

	in Brazil	in Argentina
P_c/P_w	+	-
Output of wheat	0	0
Output of chicken	0	0
exports of wheat	0	+
imports of wheat	+	0
real wage of chicken workers in terms of chicken	0	0
real wage of chicken workers in terms of wheat	+	-
real wage of wheat workers in terms of chicken	-	+
real wage of wheat workers in terms of wheat	0	0

Trade Answer Key PS 70 2-2

1. Imagine that Argentina produces beef and corn using labor as the only input. Suppose Argentina liberalizes trade with the rest of the world and the price of beef in terms of corn rises. In the following table indicate the effect of free trade on the variables listed in the first column under the two alternative assumptions. In the first case assume Argentina is described by a standard Ricardian model. In the second case assume Argentina is described by an immobile factor model. You do not need to show your work. Use the following notation:

+   the variable increases

-    the variable decreases

0   the variable does not change

A   the variable change is ambiguous (i.e. it may rise, it may fall)

|	Standard Ricardian	Immobile Factor
P_B/P_C	+	+
Output of beef	+	0
Output of corn	-	0
exports of beef	+	+
imports of corn	+	+
real wage of corn workers in terms of corn	+	0
real wage of corn workers in terms of beef	0	-
real wage of beef workers in terms of corn	+	+
real wage of beef workers in terms of beef	0	0
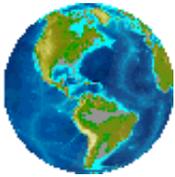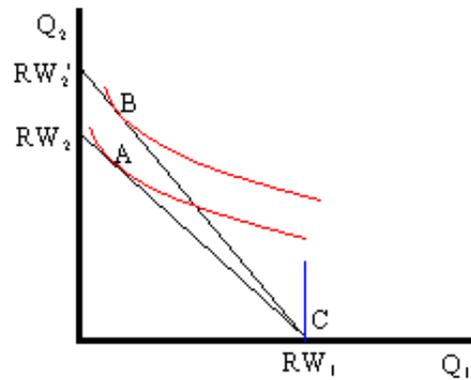
A. In all but one circumstance the individual's utility will rise. The one circumstance is if the individual gets no utility from the consumption of the good for which the real wage has risen. In this case the individual would be equally well-off after the wage changes as before. The cases are shown in the adjoining diagram. Suppose there are two goods 1 and 2. Let the real wage wrt. good 1 remain fixed at RW_1 while the real wage wrt. good 2 rises from RW_2 to RW_2'. The straight lines between these wages correspond to the individual's budget constraint for one unit of work. If the individual's indifference curves are shaped like the red curves passing through points A and B, then the individual will experience an increase in utility when one real wage rises. However, if the individual has indifference curves shaped like the vertical blue line passing through point C, then this person would get no utility from consumption of good 2 and the person's utility would remain the same when the real wage wrt. good 2 rises. (Note: this type of vertical indifference curve means that an individual has "lexicographical prefferences." This in turn means that a person's utility rises only with increases in one good, regardless of how much of the other good is available.)
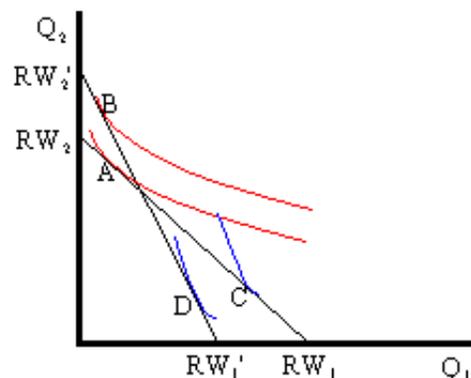
B. Whether the individual's utility rises or falls depends upon their preferences. If the person has a relatively strong demand for the good wrt. which their real wage has risen then they would likely be better-off. If, however, the person has a relatively strong demand for the good wrt. which their real wage falls then they may be worse-off. . The cases are shown in the adjoining diagram. Suppose there are two goods 1 and 2. Let the real wage wrt. good 1 fall from RW_1 to $RW1'$ while the real wage wrt. good 2 rises from RW_2 to RW_2'. The straight lines between these wages correspond to the individual's budget constraint for one unit of work. If the individual's indifference curves are shaped like the red curves passing through points A and B, then the individual will experience an increase in utility when real wages change. In this case the person has a relatively stronger demand for good 2. However, if the individual's indifference curves are shaped like the blue curves passing through points C and D, then this person would become worse-off when the real

wages change. In this case the person has a relatively stronger demand for good 1.

C. Price differences means that the price of a good is higher in one country than it is in another. Whenever a price difference exists and when trade is free and transportation costs are zero, profit-seeking firms will export goods from the lower price market to the higher price market. By selling their product at a higher price, the export firm's profit will rise, albeit only temporarily. Thus, price differences stimulate trade.

D. For a short period after trade liberalization, factors of production will likely face high adjustment costs. This will render them virtually immobile between industries. The immobile factor model suggests that export industries, their owners and workers, would benefit from trade liberalization.

E. Once again, for a short period after trade liberalization factors of production will likely face high adjustment costs which will render them immobile between industries. The immobile factor model suggests that import-competing industries, their owners and workers, would lose from trade liberalization.
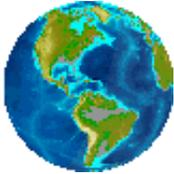
Trade Answer Key Jeopardy 70-1

1. What are factors or resources?
2. What is free and costless factor mobility?
3. What is full employment?
4. What is a cargo truck?
5. What is an accountant?
6. What are young workers?
7. What is depreciation and re-investment?
8. What is the short-run?
9. What is the degree of labor mobility between industries? In the IFM there is no mobility allowed, whereas in the Ricardian mobility is free and costless.
10. What is rectangular?

Trade Answer Key Jeopardy 80-1

Set A:
1. What is intra-industry trade?
2. What are differentiated goods?
3. What is average cost?
4. What is increasing returns to scale?
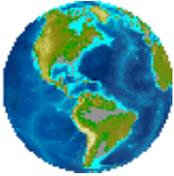5. What is world productive efficiency?

Set B:
6. What is monopolistic competition?
7. What is the love of variety demand approach?
8. What is the ideal variety demand approach?
9. What is elastic demand?
10. What is marginal revenue?
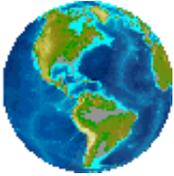
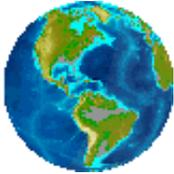|	I Import Tariff by a Large Country - initial tariff is zero	II Import Tariff Reduction by a Small Country
Domestic Market Price	+	-
Domestic Industry Employment	+	-
Domestic Consumer Welfare	-	+
Domestic Producer Welfare	+	-
Domestic Government Revenue	+	A
Domestic National Welfare	A	+
Foreign Price	-	0
Foreign Consumer Welfare	+	0
Foreign Producer Welfare	-	0
Foreign National Welfare	-	0

	I An Import Quota by a Large Country initially in free trade	II Import Tariff Reduction by a Large Country
Domestic Market Price	+	-
Domestic Industry Employment	+	-
Domestic Consumer Welfare	-	+
Domestic Producer Welfare	+	-
Domestic Government Revenue	A	A
Domestic National Welfare	A	A
Foreign Price	-	+
Foreign Consumer Welfare	+	-
Foreign Producer Welfare	-	+
Foreign National Welfare	-	+
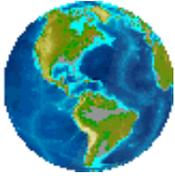
	I Export Subsidy by a Large Country	II Export Tax by a Small Country initially in Free trade
Domestic Market Price	+	-
Domestic Industry Employment	+	-
Domestic Consumer Welfare	-	+
Domestic Producer Welfare	+	-
Domestic Government Revenue	-	+
Domestic National Welfare	-	-
Foreign Price	-	0
Foreign Consumer Welfare	+	0
Foreign Producer Welfare	-	0
Foreign National Welfare	+	0

Trade Answer Key 90 2-4

	I VER by a Large Exporting Country initially in free trade	II VER by a Small Exporting Country initially in Free Trade
Domestic Market Price	-	-
Domestic Industry Employment	-	-
Domestic Consumer Welfare	+	+
Domestic Producer Welfare	A	-
Domestic Government Revenue	A	A
Domestic National Welfare	A	-
Foreign Price	+	0
Foreign Consumer Welfare	-	0
Foreign Producer Welfare	+	0
Foreign National Welfare	-	0

Comments: In each case the VER will lower the price in the home market for good that is also exported. In the large country case the foreign price is increased, in the small country case there would be no effect upon the foreign price. Since there is no foreign price effect in the small country case, there is also no impact on foreign producers, consumers or the nation as a whole.

The effect of the VER on government revenue is ambiguous since we do not know what is being done with the quota rents. If the quota rights are being allocated to the domestic producers, then the government receives no revenue. If the government auctions, or sells,

the quota rights then their revenue increases.

The effect on producers is ambiguous in the large country case since they may receive sufficient quota rents to compensate for the loss in producer surplus, but this can only occur if the government gives them the quota rights and if the terms of trade effect is large enough. In the small country case there is no terms of trade effect (i.e., the foreign price does not rise) hence, the quota rents must be small than the loss in producer surplus. This means that even if the small country producers receive the quota rights from the government, they will still lose overall.

Domestic National welfare may rise in the large country case if a relatively small export restriction is applied. However, if it is set too restrictively, national welfare will fall. Hence the answer for national welfare is ambiguous. In the small country case, in contrast, any VER will be welfare reducing for the nation.
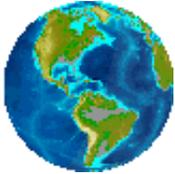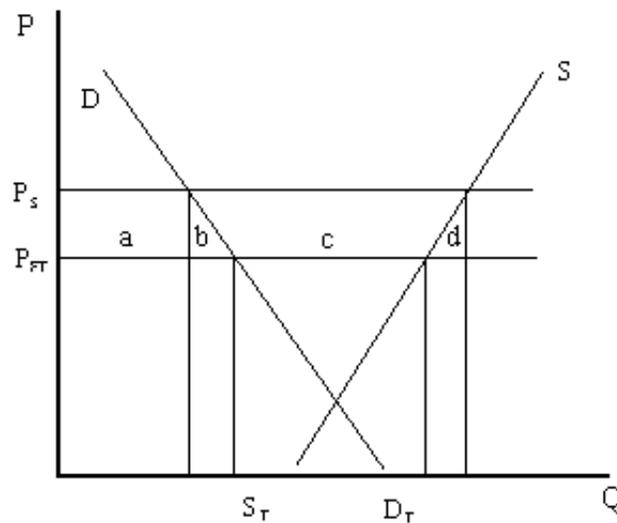
1. If the liberalization of agricultural markets proceeds in the future many countries may eliminate export subsidies to farm products. Use a partial equilibrium (supply and demand) diagram to depict the price and welfare effects of an export subsidy elimination for corn. Assume that the country is small in international markets.

Draw Graph Here:

Identify where on the graph the following appear.

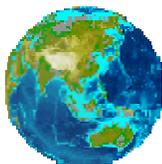ORIGINAL DOMESTIC PRICE: P_S

FINAL DOMESTIC PRICE: P_{FT}

INITIAL PER UNIT SUBSIDY:

$P_S - P_{FT}$

CHANGE IN C.S.: + (a + b)

CHANGE IN P.S.: - (a + b + c)

CHANGE IN GOVT. REVENUE: + (b + c + d)

CHANGE IN NATIONAL WELFARE: +(b + d)

Trade Answer Key PS 90 2-6

1. Consider the following partial equilibrium diagram depicting the market for radios in Portugal, a small importing country. Suppose P$_{FT}$ is the free trade price, P$_T$ is the price in the Portugal when a tariff is in place. Answer the following questions by referring to the diagram. Assume the letters, A, B, C, D, E, refer to areas on the graph. The letters v, w, x and y refer to lengths.   (be sure to include the direction of changes by indicating "+" or "-")
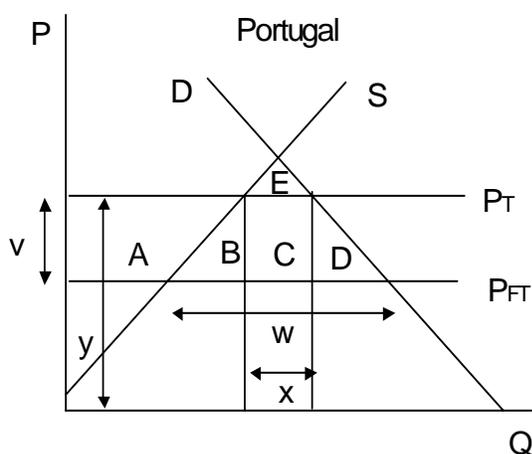
A. Where on the graph is the level of imports in free trade?	w
B. Where on the graph is the size of the tariff depicted?	v
C. Where on the graph is the level of imports after the tariff depicted?	x
D. Where on the graph is the tariff revenue collected by the importing government depicted?	+ C
E. Where on the graph is the change in producer surplus from the tariff depicted?	+ A

F. Where on the graph are the deadweight losses that arise with the tariff?	- (B + D)
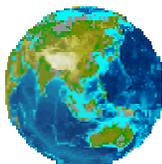
Trade Answer Key PS 90 2-7

1. Suppose there are only two countries, the US and China producing and consuming clothing. Suppose in free trade China exports clothing to the US.

    A. At the free trade price, in which country is the supply of clothing greater than demand?

            China

    B. At the free trade price how does world supply compare with world demand for clothing? (i.e., greater, less, or equal)

            Equal

    C. If the US and China were in autarky rather than free trade, in which country would the price of clothing be higher?

            US

    D. Based on our class presentation, in moving from autarky to free trade would the price of clothing rise, fall or stay the same in the US?

            Fall

    E. Based on our class presentation, in moving from autarky to free trade would the price of clothing rise, fall or stay the same in China?

            Rise

    F. Starting from free trade, if the US places a tariff on imports of clothing, how would the price of clothing change in the US?

            Rise

G. Based on our class presentation, starting from free trade, if the US places a tariff on imports of clothing, how would the price of clothing change in China?

Fall

H. How would a tariff on US imports of clothing affect the amount of clothing produced in the US?

Rise

I. How would a tariff on US imports of clothing affect the amount of clothing demanded in the US?

Fall

J. Suppose a specific US tariff (set at T) is implemented and a new equilibrium is reached. Let Pc be the price in China, Pus the price in the US, M is the quantity of US clothing imports and X is the quantity of Chinese clothing exports. How does the US price compare with the Chinese price?

$$Pus = Pc + T$$
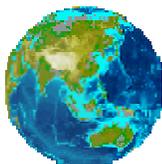
Trade Answer Key PS 90 2-8

1. When trade policies are implemented it is common to refer to it as "protectionism." Why? Explain briefly.

> When a tariff, quota or export subsidy are implemented, the domestic producers of that product benefit from higher prices and producer surplus (profits). It is the domestic industry that receives "protection" from foreign competition, hence the name.

2. Does trade theory suggest that trade liberalization by a small importing country will make everyone in the country better-off? Why or why not? Explain briefly.

> Although national welfare will rise with trade liberalization by a small country, import-competing producers suffer losses while domestic consumers enjoy larger gains. Thus, not everyone is likely to benefit from trade liberalization.

3. If a country implements an import quota with identical price effects, instead of a tariff, what can the government do to assure that the distribution of the gains and losses remains exactly the same? Explain briefly.

> An import quota is completely identical to its equivalent tariff when the government sells quota tickets (or rights) for the maximum price possible. The revenues earned on these sales will then match the tariff revenue.
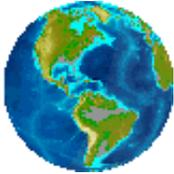
**1a.** Plug in the free trade price of $50 into the supply and demand functions respectively to get,

S(50) = 10(50) - 300 = 200

D(50) = 3000 - 20(50) = 2000

Thus, imports = D(50) - S(50) = 1800.

B. A tariff will raise the domestic price by the full amount of the tariff in a small country case. Hence the price would rise to $60. Using the supply and demand functions, the higher domestic price would raise domestic supply to 300 pairs of shoes and lower domestic demand to 1800 pairs. See the graph.
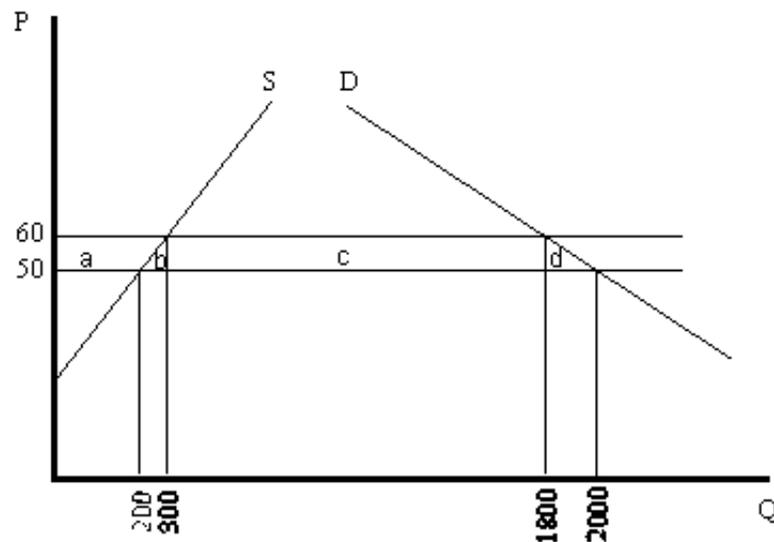
C. Changes in consumer surplus, C.S., producer surplus, P.S., and government revenue are calculated using the areas defined by a, b, c, and d on the diagram above.

Change in C.S. = -[(a + b + c) + d] = - [(1800x10) + .5x200x10] = - $19,000

Change in P.S. = (a + b) - b = (300x10) - .5x100x10 = + $2,500

Tariff Revenue = c = 1500(10) = + $15,000

Change in National Welfare = Changes in (C.S. + P.S. + tariff revenue) = -$19000 + $2500 + $15000 = - $1,500.

D. Imports fall to 1500 with the tariff so Quota = 1500 works. If quota tickets are auctioned then domestic govt. receives quota rents equivalent to the tariff revenue and the effects are identical to the tariff. If quota tickets are given away, then whoever receives tickets receives the quota rents. National welfare effects are the same as with tariff but which individuals gain may differ.

E. With the VER, domestic welfare effects include only the changes in consumer and producer surplus above since the quota rents accrue to someone in the foreign country. Thus the national welfare effect is -$19,000 + $2,500 which sums to -$16,500 - a national welfare loss. The $15000 of quota rents are received by either the foreign govt. or foreign exporters rather than the domestic govt. (w/ tariff or auctioned quota) or the domestic firms (quota tix given away).

F. Here are four posible reasons.

   1) A VER may relieve domestic protectionist pressure to raise tariffs or implement quotas.

   2) A VER does not look as protectionist for the importing country government (afterall they did it, not us!).

   3) A VER may transfer income directly to the foreign groups adversely affected by protection.

   4) a VER is easier to administer from the domestic government's perspective.

2A. In U.S. $XS = S_w - D_w = -40 + 40P_w$ (see Figure 1 below)

In Mexico $MD = D_w - S_w = 90 - 30P_w$
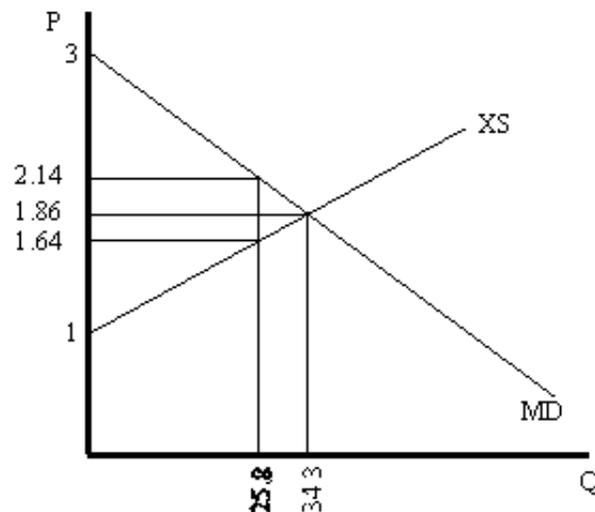
B. These can be found by setting the original supply and demand curves equal to each

other and solving for P, or by setting XS = 0 and MD = 0 above and solving.

Price in Mexico = $3.00

Price in U.S. = $1.00

C. Simply find the price which equalizes export supply from the U.S. and import demand from Mexico. That is, set XS = MD using the equations shown in part (a) and solve for P_w. Then substitute your answer for P_w into the XS or MD equation and solve for XS or MD which is the quantity traded. Answer P_w = $(13/7) = $1.86, XS = MD = (240/7) = 34.3.

D. Let P_t^{US} be the post-tariff price in the U.S. and P_t^* be the post-tariff price in Mexico.

(We don't yet know what the values for these prices will be). We do know that with a specific tariff of $0.50 the following two conditions must be satisfied,

     1) $P_t^{US} + .50 = P_t^*$.

and

     2) $XS(P_t^{US}) = MD(P_t^*)$

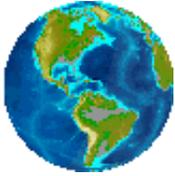Using the equations in (a) and the relationships above we get,

XS = -40 + 40P_t^{US}

and

MD = 90 - 30(P_t^{US} + .50).

Setting these two equal to each other we can solve for P_t^{US} to get P_t^{US} = $(115/70) = $1.64. Plugging this value into either XS or MD above yields P_t^* = $2.14.

Trade Answer Key 90 3-2

1A. When an export subsidy is implemented the domestic price of the good rises above the price in the rest of the world. This is true in both the small and large country cases. The price differential, or wedge, should inspire fully-informed profit seeking entrepreneurs in the rest of the world to export the product into the exporting country. To prevent this kind of circular trade, an import tariff needs to be set to restrict the backflow of the subsidized good.

1B. A backflow will arise as long as a price wedge continues with the price in the original export country higher. To make imports unprofitable, the tariff must be set equal or greater than the price wedge caused by the export subsidy.

1C. A quota would be ineffective in this case unless it is set to zero. Because the quota will not directly affect the prices, the backflow could occur until either the prices are equalized again or until the quota level is reached. Only a zero quota would prevent entrepreneurs from taking advantage of the price wedge.
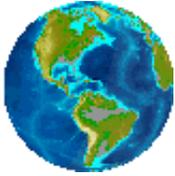
Trade Answer Key Jeopardy 90-1

1. What is the equilibrium autarky price?
2. What is a "non-binding" quota?
3. What is consumer surplus?
4. What is tariff revenue?
5. What is a "large" country?
6. What is "monopoly" power in trade?
7. What is rises?
8. What is falls?
9. What is rises?
10. What is rises?

	I	II
	Production subsidy to an import industry by a small country	Consumption tax on an import good by a small country
Domestic Market Price	0	+
Domestic Industry Employment	+	0
Domestic Consumer Welfare	0	-
Domestic Producer Welfare	+	0
Domestic Government Revenue	-	+
Domestic National Welfare	-	-
Foreign Price	0	0
Foreign Consumer Welfare	0	0
Foreign Producer Welfare	0	0
Foreign National Welfare	0	0

Comments: First note that a production subsidy will raise the producers' price but will not affect the consumers' price. A consumption tax will raise the consumers's price but will not affect the producers' price. The domestic market price refers to the price at the store counter in the market. In other words, this is the same as the consumers' price. This is why domestic market price is unaffected by the production subsidy and rises with the consumption tax.

Domestic industry employment rises whenever there is an increase in output or supply. This is because expanded production will need more inputs, including labor, to achieve the increase.

Consumer welfare refers to changes in consumer surplus which falls with an increase in the consumers' price.

Producer welfare refers to changes in producer surplu which rises with an increase in the producers' price.

Government Revenue refers to changes in the government budget. Although one could argue that a production subsidy raises government expenditures and does not reduce revenue, we count this as a reduction in revenue since it changes the government budget in the same direction.

Domestic National Welfare will always fall when a small perfectly competitive country introduces any kind of domestic policy.

Finally, small countries, by definition, have no effect through their policies, upon the price in foreign countries. Since foreign prices do not change, neither can consumer, producer or national welfare.
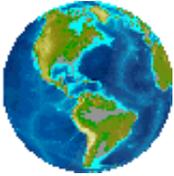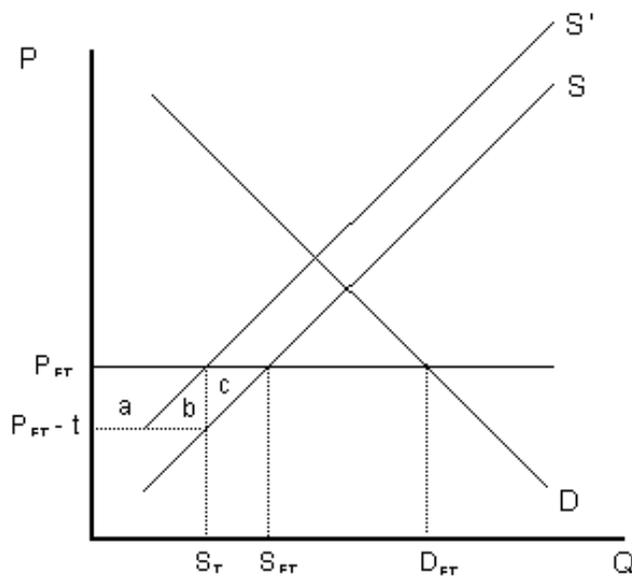
Trade Answer Key PS 95 3-1

1. Consider a small importing country as depicted in the adjacent diagram. At the initial free trade price, P_{FT}, domestic producers supply S_{FT} to the market while domestic consumers demand D_{FT}. The difference, $D_{FT} - S_{FT}$, represents the free trade level of imports.
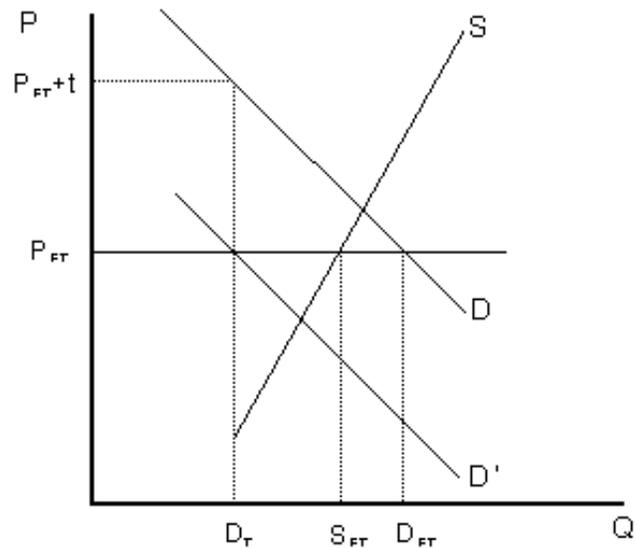
When a consumption tax is implemented it will raise the consumers' price by the amount of the tax, to $P_{FT} + t$, but will leave the producers' price unaffected. At the new consumer price, consumption falls to D_T, determined by the point where $PFT + t$ intersects the original demand curve. Since the price producers receive remains at the free trade price, the level of domestic production also remains at S_{FT}. Since supply now exceeds demand, the country becomes an exporter in the amount $S_{FT} - D_T$.

Intuitively, a sufficiently large domestic consumption tax chokes off domestic demand without affecting domestic supply such that excess supply results. The excess is then exported to the world market. This shows how domestic government policies can affect trade flows even to the extent of reversing them.

2. Consider a small importing country as depicted in the adjacent diagram. At the initial free trade price, P_{FT}, domestic producers supply S_{FT} to the market while domestic consumers demand D_{FT}.

The difference, $D_{FT} - S_{FT}$ represents the free trade level of imports.

A domestic production tax, t, will reduce the price received by producers to PFT - t , but will leave the consumer's price unaffecred. Essentially this represents an increase in the marginal cost of production to the firms in the industry. The new level of supply is found where the new producer price intersects the original supply curve at S_T. Since the consumers' price and hence demand remains unaffected, imports increase to $D_{FT} - S_T$.

The welfare effects are summarized below.

Change in:	
Consumer Surplus	0
Producer Surplus	- (a + b + c)
Govt. Revenue	+ (a + b)
National Welfare	- c

Consumers are unaffected by the production tax since open competition with the rest of the world prevents the domestic firms from raising the price. Producers lose producer surplus, or profit, due to the tax. The government collects tax revenue which can be used to spend more on social programs. The net national welfare effect is negative and equal to a production efficiency loss given by area "c".

3. Consider a small exporting country as depicted in the adjacent diagram. At the initial free trade price, P_{FT}, domestic producers supply S_{FT} to the market while domestic consumers demand D_{FT}. The difference, $S_{FT} - D_{FT}$ represents the free trade level of exports.
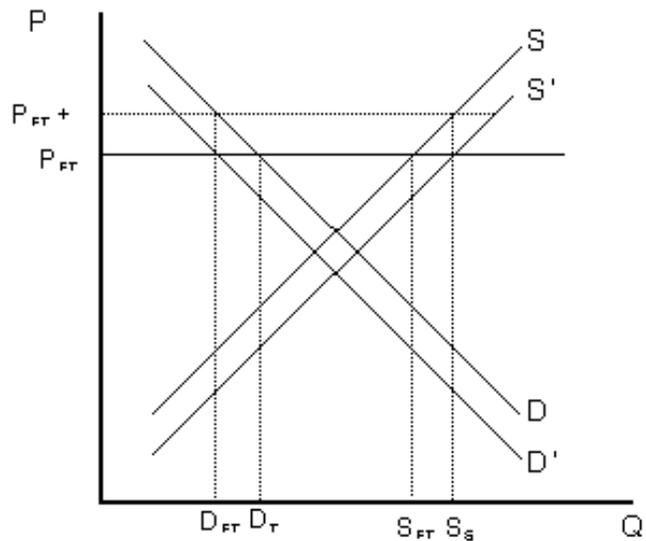
If a domestic production subsidy, s, the producers' price will rise by the amount of the subsidy to $P_{FT} + s$, depicted as $P_{FT} +$ in the diagram. The new level of supply is found where the price, $P_{FT} +$, intersects the original supply curve at S_S.

If a domestic consumption tax is implemented and set equal to the production subsidy such that $t = s$, then the consumers' price will rise by the amount of the tax to $P_{FT} + t$, which since $P_{FT} + s = P_{FT} + t$ is also given by $P_{FT} +$ in the diagram. The new level of demand is found where the new consumer price, $P_{FT} +$, intersects the original demand curve at D_T.

As a result of both policies, the producer and consumers' prices both rise by the same amount, while exports are expanded to $S_S - D_T$. This is exactly the same effects as an export subsidy.

An export subsidy will encourage exports and cause a shift of supply to the rest of the world. Since the country is assumed to be a small exporter, the increased supply in the world market will not affect the world price which remains at P_{FT}. However the reduced supply domestically will raise the domestic price faced by both producers and consumers. Hence, a production subsidy and consumption tax, set at the same levels, is equivalent to an export subsidy set at that same level.

Note: In the previous diagrams, the extra demand and supply curves, D' and S', are not used in the analyses. They are leftovers from a previous version of these answers.
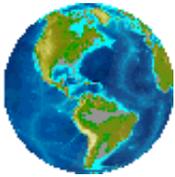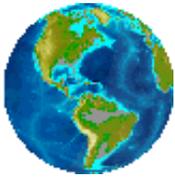
Trade Answer Key PS 95 3-2

|	I Production subsidy to an import industry by a large country	II Consumption tax increase on an exported good by a small country
Domestic Market Price	-	+
Domestic Industry Employment	+	0
Domestic Consumer Welfare	+	-
Domestic Producer Welfare	+	0
Domestic Government Revenue	-	A
Domestic National Welfare	A	-
Foreign Price	-	0
Foreign Consumer Welfare	+	0
Foreign Producer Welfare	-	0
Foreign National Welfare	-	0

Trade Answer Key Jeopardy 95-1

1. What is a specific production subsidy?
2. What is a specific consumption tax?
3. What is a consumption subsidy?
4. What are exports?
5. What are exports?
6. What are exports?
7. What is no change?
8. What is an increase?
9. What is no change?
10. What an import tariff or an import quota?
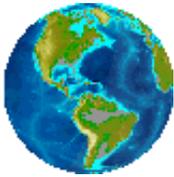
Trade Answer Key PS 100 2-1

| 1.	**Trade Policy**	**Domestic Policy**
A. A large country that imports steel.	import tariff, import quota	production subsidy, consumption tax.
B. A small country in which the import-competing industry generates a positive externality	import tariff, import quota	production subsidy.
C. Unemployment in a small import-competing industry suffering from a surge of imports.	import tariff, import quota	production subsidy.
D. A small country in which the export industry generates a negative externality.	export tax, VER	production tax.
E. A small country in which an export decline causes unemployment.	export subsidy	production subsidy.

Trade Answer Key PS 100 2-2

1. Consider each of the following imperfect market situations. From the following list of policy options. First, **LIST** the trade policy that can raise national welfare, then LIST the policy most likely to be the first best policy. Policy choices may be used more than once.

Policy Options: An import tariff, an import ban, an export tax, an export ban, an export subsidy, a production tax, a production subsidy, a consumption tax, a consumption subsidy.

|	Trade Policy	1st Best Policy
A. A small country where production by an export industry causes pollution.	Export tax	production tax
B. A small country in which the import-competing industry develops innovative cost-saving production techniques that spillover for use in other domestic industries	Import tariff	production subsidy
C. A country with monopsony power in trade	Import tariff	Import tariff
D. A small country that exports red wine, consumption of which (in small quantities) causes positive health effects.	Export tax	consumption subsidy

E. A small country for which foreign consumption of a domestically produced product threatens national security.	Export ban	Export ban
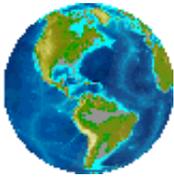
1A. A monopolist maximizes profits by setting MR = MC. Since MR = 500 - Q and MC = 200, then 500 - Q = 200 or Q = 300. To find what price the monopolist can charge in order to sell 300 VCRs simply substitute 300 for the quantity demanded in the demand function. That is, since

D = 1000 - 2P then 300 = 1000 - 2P and by rearranging, P = $350. See diagram.
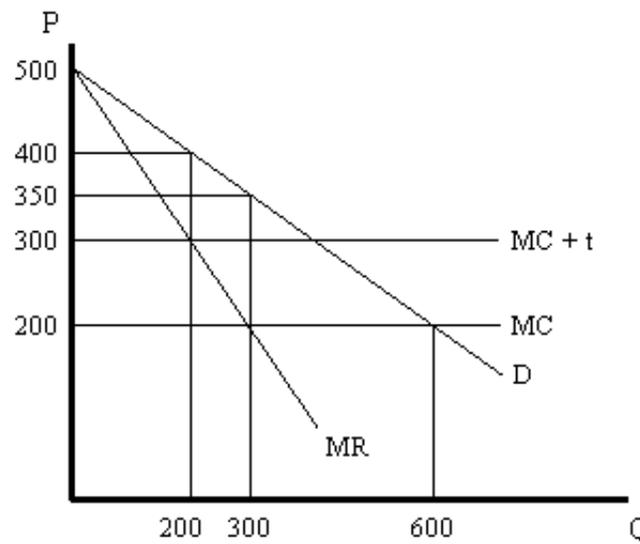
B. Consumer surplus is the area between the demand curve and the price of $350. Or C.S. = .5(150)(300) = $22,500.

C. The tariff raises marginal cost to MC + t = 200 + 100 = $300.

Setting the new marginal cost equal to MR yields, 300 = 500 - Q and Q = 200. Plugging 200 into the demand curve yields,

200 = 1000 - 2P and rearranging we get P = $400.

D. The new level of consumer surplus is given by the area between the demand curve and the new price of $400. Or .5(100)(200) = $10,000. Therefore the change in C.S. is 10,000 - 22,500 = - $12,500. The tariff revenue is the tariff times the new quantity of imports or 100(200) = $20,000.

E. The change in national welfare is simply the sum of the changes in consumer surplus and tariff revenue. (Note: There is no change in producer surplus since there are no domestic producers) Thus the change in N.W. = - $12,500 + $20,000 = $7,500. This demonstrates that a tariff placed against a foreign monopolist can raise national welfare by shifting profits from foreigners to the domestic economy.

F. The 1st-best policy is a price ceiling set equal to the monopolist's marginal cost, i.e., at $200. Plugging this price into the demand curve yields, D = 1000 - 2P = 1000 - 2(200) = 600. Thus, 600 VCRs will be imported.

G. With the price ceiling the only change is to consumers since there are no government revenue implications. Consumer surplus rises to the area bounded by the $200 price line, the demand curve and the vertical axis. Hence CS = (1/2)(600)(300) = $90,000. Since the original surplus level was $22,500, the change in consumer surplus, and hence national

welfare, is $90,000 - $22,500 = $67,500. This is much larger than the $7,500 increase in national welfare that arises with the tariff.

H. 1st-Best policies are generally those which target the market imperfection or distortion most directly. In this case the imperfection is the presence of a monopolist in a market. The 1st-Best policy is one that forces the monopoly to act as if it were perfectly competitive, that is, it forces the monopoly to set its price equal to marginal cost. A price ceiling set equal to marginal cost achieves this outcome.
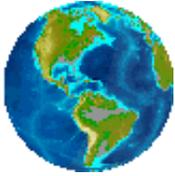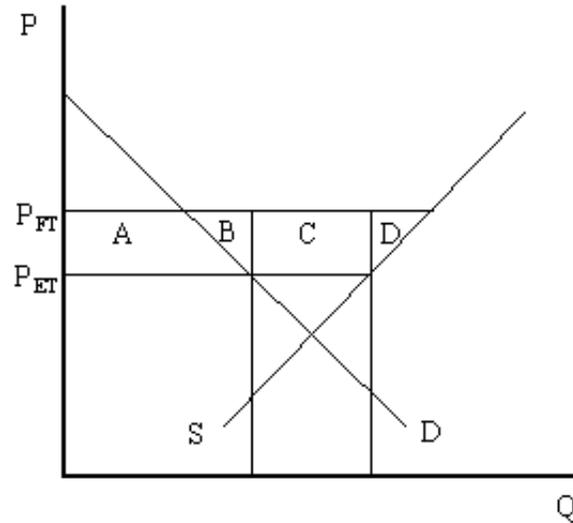

1A. The objective is to reduce domestic production of steel which causes pollution. An export tax would accomplish this goal. The export tax would reduce the incentive to export, raise supply to the domestic market and lower the domestic price from P_{FT} to

P_{ET}. The lower price would reduce domestic steel production and generate the positive

social benefits R. The price effect and the changes in welfare can be read from the adjoining graph and are summarized below.

Consumer surplus = +A
Producer surplus = - (A + B + C + D)
Govt. revenue = + C
Social benefits = + R
National welfare = R - (B + D)

As long as the social benefits from reduced pollution, R, exceed the deadweight losses from the export tax (B + D), national welfare would rise.
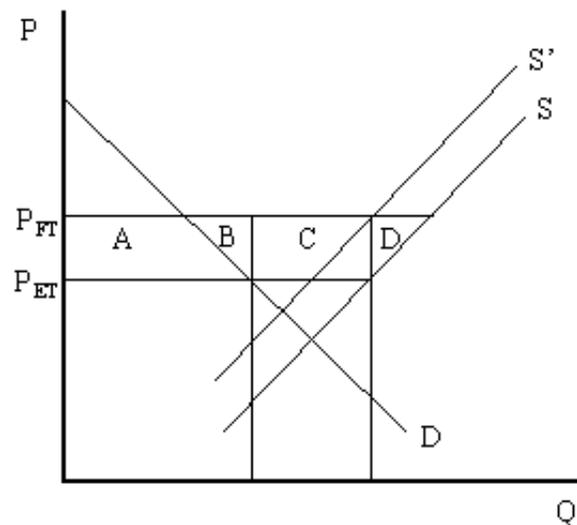
1B. A production tax would achieve the same objective of reducing domestic steel production. A production tax would raise the marginal cost of production and shift upward the effective supply curve, as to S' in the adjoining diagram. The domestic price would remain at P_{FT}. The welfare effects can be read from the adjoining grapha and are summarized below.

> Consumer surplus = 0
> Producer surplus = - (A + B + C + D)
> Govt. revenue = + (A + B + C)
> Social Benefits = + R
> National welfare = R - D

As long as the social benefits from reduced pollution, R, exceeds the production efficiency loss from the production tax, D, national welfare would rise.

1C. Assuming that the export tax and the production tax are set at the same rate, they would both reduce steel production to the same level and generate the same social benefits from reduced pollution, R. Since the production tax achieves these same benefits at a lower cost (D) than the export tax (B + D), the domestic policy is 1st-best, while the trade policy is 2nd-best. The production tax attacks the distortion more directly than the export tax.

Trade Answer Key Jeopardy 100-1

1. What is a positive production externality?
2. What is a negative consumption externality?
3. What are non-excludability and non-rivalry?
4. What are policy imposed distortions?
5. What is a second-best equilibrium?
6. What is a first-best policy ?
7. What is an infant industry?
8. What is "dynamic" comparative advantage?
9. What is a production subsidy?
10. What a price ceiling?
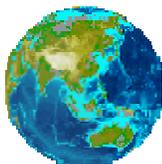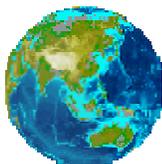
Trade Answer Key PS 105 2-1

1. When trade policies are implemented, the benefits that accrue in the economy are often concentrated in the hands of a relatively small number of citizens, while the losses that accrue are widely dispersed. For each of the trade policies below, indicate which domestic groups benefit and which lose AND whether the effects for each group are relatively concentrated or dispersed.

    A.   an import tariff on chicken

Name of Group	**Winners** or **Losers**	**Concentrated** or **Dispersed**
Chicken producers	Winners	Concentrated
Chicken consumers	Losers	Dispersed
Taxpayers or recipients of government benefits	Winners	Dispersed

B. an export subsidy on soybeans

Name of Group	**Winners** or **Losers**	**Concentrated** or **Dispersed**
Soybean producers	Winners	Concentrated
Soybean consumers	Losers	Dispersed
Taxpayers or recipients of government benefits	Losers	Dispersed

1. Consider the following trade policy game between two small country governments, Kenya and Ethiopia. The policy choices for each government are to choose either free trade on all imports or to place a 15% tariff on all imports. The national welfare payoffs for each country when both choose free trade are given as (100, 100). The first 100 is Kenya's national welfare, the second is Ethiopia's.

		Ethiopia	
(Kenya, Ethiopia)		Free Trade	15% Tariff
Kenya Free Trade		(100,100)	(100, 80)
15% Tariff		**(80, 100)**	**(80, 80)**

a. (2) Based on the tariff analysis for a small importing country and assuming symmetry between the two countries, complete the empty two cells in the table above.

The original numbers in the Table reflect the results from a small country case so that a 15% tariff by Ethiopia will reduce its own national welfare (100 to 80) but will not affect its trading partner, Kenya (100 to 100).

Assuming symmetry, when Kenya puts 15% tariffs in place independently, its welfare falls (100 to 80) while Ethiopia's remains constant (100 to 100). This gives us the southwest box.

Finally if Ethiopia put its own 15% tariffs on top of Kenya's 15% tariffs, then Ethiopia's welfare will fall (100 to 80) but Kenya's would remain the same (80 to 80). This gives the southeast box.

b. (1) Based on the numbers you provided in (a), identify which cell corresponds to the Nash (or non-cooperative) equilibrium.

The non-cooperative, or Nash, equilibrium is found with the following

procedure.

1) Suppose Ethiopia chose 15% tariffs, what is Kenya's best response?
Answer: Free trade, since $100 > 80$

2) Now suppose Kenya chose free trade, what is Ethiopia's best response?
Answer: Free trade since $100 > 80$.

3) Finally, suppose Ethiopia chose free trade, what is Kenya's best response?
Answer: free trade, again since $100 > 80$.

4) If Kenya chooses free trade, Ethiopia chooses free trade, AND if Ethiopia chooses free trade, Kenya chooses free trade. Thus, (free trade, free trade) is the Nash Equilibrium

c. (1) Which cell corresponds to the cooperative equilibrium?

The cooperative equilibrium is the one that maximizes the sum of the welfare for the two players. This occurs at (free trade, free trade) or (100, 100) with the sum of welfare at 200.

d. Yes or No? Does this game help justify a trade liberalization organization like the WTO?

NO. If countries played this game there is no need for an organization like the WTO to promote cooperation since the cooperative outcome is the same as the non-cooperative outcome.
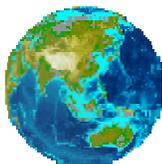
Trade Answer Key PS 110 2-2

1. Suppose the US and Costa Rica (CR) are two countries among many others in the world.   The US is a **large** country and thus its import tariffs will lower the price of CR's exports. Costa Rica, however is a small country, so its tariffs do not affect prices in the US. Assume the US government can choose either free trade, optimal tariffs or 20% tariffs. Costa Rica can choose either free trade, 10% tariffs or 20% tariffs on all imports. The national welfare payoffs for each country in five cases are given. The first term is the US national welfare, the second is the CR's.

	(US, CR)	Costa Rica		
		Free Trade	10% tariffs	20% tariffs
US	Free Trade	(100, 20)	(100, 19)	(100, 18)
	Optimal Tariffs	(101, 18)	**(101, 17)**	**(101, 16)**
	20% tariffs (> optimal)	(100, 17)	**(100, 16)**	**(100, 15)**

    a. Use the info provided in the table to complete the four empty cells above.

    b. Among the nine outcomes, which would Costa Rica most prefer?

        (free trade, free trade) or (100, 20)

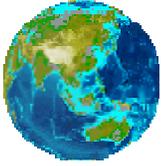   c. Among the nine outcomes, which would the US most prefer?

        Anything on the Optimal tariff row (101, 18) (101, 17) or (101, 16)

d. Identify which cell(s) correspond(s) to a Nash (or non-cooperative)
    equilibrium.

> (Optimal tariffs, Free trade) or (101, 18)

e. (1) Which cell corresponds to the cooperative equilibrium?

> (free trade, free trade) or (100, 20)

Trade Answer Key PS 110 2-3

1. Consider a market for computers in two large countries. Suppose the exporting country imposes a specific export subsidy equal to $P_H - P_L$. Afterwards the importing country retaliates with a countervailing duty also set equal to $P_H - P_L$. Use the diagram below to answer the following questions.
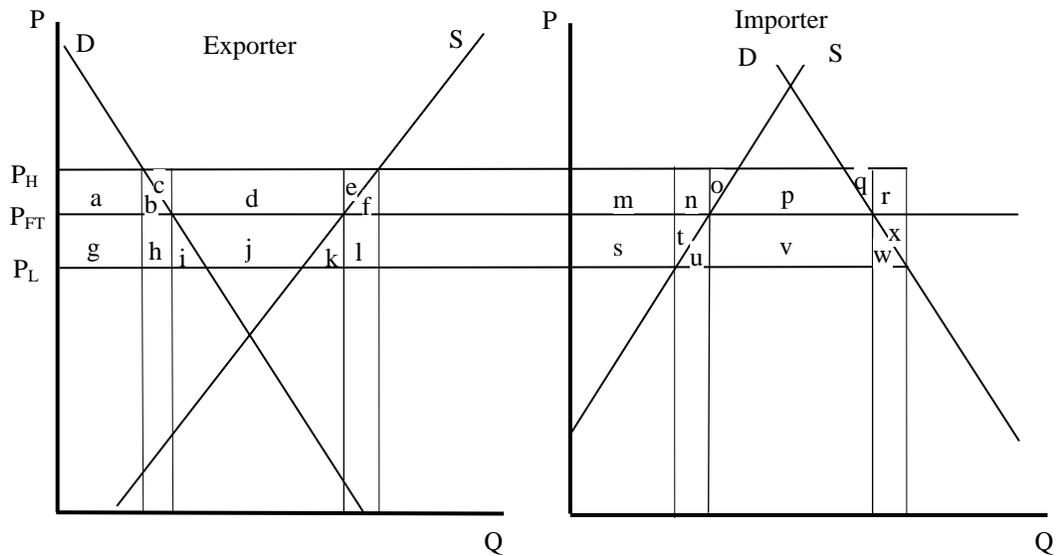
A. What is the change in consumer surplus in the exporting country when the export subsidy is imposed?	- (a + b)
B. What is the change in producer surplus in the exporting country when the export subsidy is imposed?	+ (a + b + c + d + e)
C. What are government subsidy payments in the exporting country when the export subsidy is imposed?	- (b + c + d + e + f + h + i + j + k + l)
D. What is the net national welfare effect in the exporting country when the export subsidy is imposed ?	- (b + f + h + i + j + k + l)

|	
E. What is the net national welfare effect in the importing country when the subsidy is imposed ?	+ (u + v + w)
F. What is the change in consumer surplus in the importing country (relative to subsidy in place) with the CVD?	- (s + t + u + v + w)
G. What is the change in producer surplus in the importing country (relative to subsidy in place) with the CVD?	+ (s + t)
H. What is the change in govt. revenue in the importing country (relative to subsidy in place) with the CVD?	+ (o + p + q + v)
I. What is the change in govt. revenue in the exporting country (relative to subsidy in place) with the CVD?	+ (b + c + e + f + h + l)
J. What condition must hold for the CVD to be welfare improving for the importing country (rel. to subsidy)?	(o + p + q − u − w) > 0

Trade Answer Key Jeopardy 110-1

1. What is an optimal tariff?
2. What is retaliation?
3. What are strategies?
4. What is a Nash Equilibrium?
5. What is the Cooperative solution?
6. What is a Free Trade Area?
7. What is trade diversion?
8. What is trade creation?
9. What is a countervailing duty?
10. What is the International Trade Administration in the US Department of Commerce?
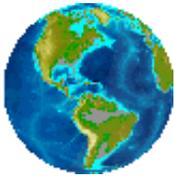
Trade Answer Key Jeopardy 120-1

1. What is an improvement in national welfare?
2. What is production efficiency?
3. What is the compensation principle?
4. What are market imperfections or market distortions?
5. What is a 2nd-Best equilibrium?
6. What is retaliation?
7. What is a 1st-Best policy?
8. What are information deficiencies?
9. What is lobbying?
10. What is the controversy between free trade and protectionism?