

1. Cite three important reasons why nations trade.

Ans: First, specialization and trade among nations is advantageous because the world's resources are not evenly distributed. To obtain resources or products that a nation does not have but that are desired by society requires trade with other nations. Second, the efficient production of different commodities necessitates different methods and combinations of resources. These different methods and combinations can be obtained through trade. Third, products vary in quality and in other ways. People prefer this variety, which often can only be obtained through imports.

Page: 386-387

Learning Objective: 17.1

2. "The international flow of goods helps compensate for the international immobility of resources." Analyze and explain.

Ans: If resources were as mobile as goods, they would flow across borders until cost conditions were equalized throughout the world and there would be no need for specialization and trade. However, it is clear that this is impossible. Even human resources are somewhat immobile and natural resources are not equally endowed in each nation. Therefore, cost conditions differ from nation to nation, and some nations can produce some things relatively more cheaply than others. This leads to specialization and exchange according to the principle of comparative advantage. It is the goods that are bought and sold across borders rather than the resources, and this enables countries to be compensated for the differences in the cost of production.

Page: 386-387

Learning Objective: 17.1

3. Suppose that by devoting all of its resources to the production of X, nation L can produce 40X. By devoting all of its resources to Y it can produce 20Y. Comparable figures for nation M are 15X and 15Y. According to the principle of comparative advantage, which nation will specialize in which product? What are the limits to the terms of trade?

Ans: In nation L, the cost of producing 1Y is 2X [$20Y = 40X$] given the stated cost conditions. In nation M, the cost of producing 1Y is only 1X. Thus, in terms of opportunity costs or the amount of X that must be given up to get each Y, nation M can produce units of Y more cheaply. Therefore, nation M should produce Y's and nation L should produce units of X, and M should trade away some of its Y to nation L for some of the units of X produced in nation L.

The limits to the terms of trade are set by the cost ratio in each country. In other words, it is to nation L's advantage to trade away units of X for as many units of Y as it can get above the lower limit of 0.5 Y which is what each X costs in nation L. However, nation M will not be willing to trade more than one Y for each X since any more than that could be gotten more cheaply by producing them at home. Therefore the limits to the terms of trade will be between 0.5Y and 1Y for each X. And country M will be able to get between 1X and 2X for each Y.

Page: 387-393

Learning Objective: 17.1

4. Answer the next three questions on the basis of the following production possibilities data for Francia and Galacia. All data are in tonnes.

Francia production possibilities:

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
Soup	60	45	30	15	0
Nuts	0	15	30	45	60

Galacia production possibilities:

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
Soup	20	15	10	5	0
Nuts	0	15	30	45	60

- (a) If trade occurs between Francia and Galacia, which nation should export what product? Why?
- (b) What are the limits of the terms of trade between Francia and Galacia?
- (c) Assume that prior to specialization and trade, Francia and Galacia chose production possibility "C." Now each specializes according to comparative advantage. What will be the resulting gains from trade? Explain your answer.

Ans: (a) Francia should export soup and Galacia should export nuts. Francia is the low cost producer of soup. The opportunity cost of 1 tonne of soup is 1 tonne of nuts. For Galacia the opportunity cost of 1 tonne of soup is 3 tonnes of nuts. Galacia is the low cost producer of nuts. The opportunity cost for Galacia to produce nuts is 1/3 of a tonne of soup. The opportunity cost of nuts for Francia is 1 tonne of soup.

(b) The limits are from 1 tonne of soup for 1 tonne of nuts *up to* 1 tonne of soup for 3 tonnes of nuts.

(c) Before specialization, Francia produced 30 tonnes and Galacia 10 tonnes of soup for a total of 40 tonnes. After specialization and trade, Francia produces 60 tonnes of soup for a gain of 20 tonnes of output. Before specialization, Francia produced 30 tonnes and Galacia 30 tonnes of nuts. After specialization and trade, Galacia will produce 60 tonnes of nuts. Total output of this product did not change.

Page: 387-393

Learning Objective: 17.1

5. Given the data in the graph below, which nation should specialize in steel production and which nation in wheat production? Why?



Ans: The opportunity cost for 1 unit of wheat is 1 unit of steel in nation Y. The opportunity cost of 1 unit of wheat is $\frac{1}{2}$ unit of steel in nation X. Nation X is the lower cost producer of wheat.

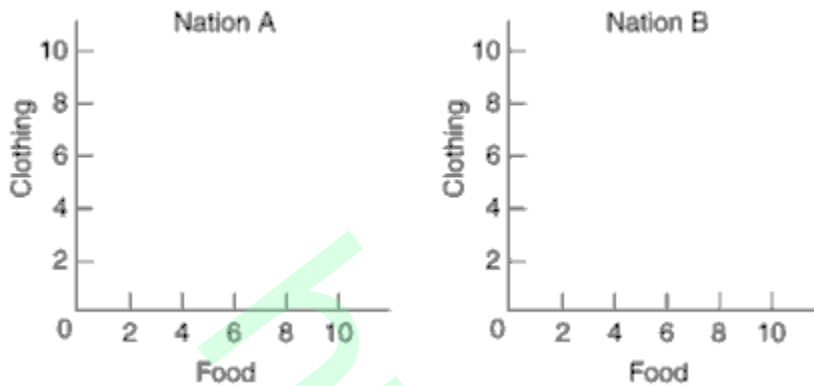
Nation Y should specialize in the production of steel where it has the comparative cost advantage. For nation Y, 1 steel = 1 wheat. For nation X 1 steel = 2 wheat.

Page: 392

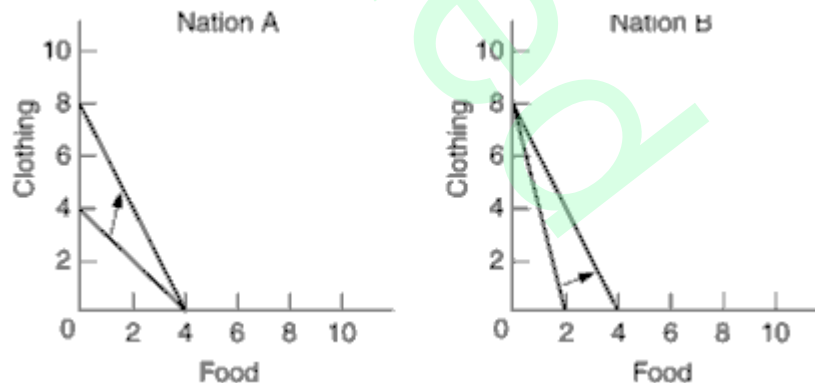
Learning Objective: 17.1

6. The table below shows the maximum amounts of food and clothing that two nations, A and B, can produce. Draw the production possibilities curve for A and B using the below graphs. Assume constant costs.

<u>Nation</u>	<u>Food</u>	<u>Clothing</u>
A	4	4
B	2	8



- (a) What is the cost ratio for the two products?
- (b) If each nation specializes according to comparative advantage, who should produce and trade each product? Why?
- (c) What will be the range for the terms of trade? If the terms are set at 1 food = 2 clothing, show how the trading possibilities lines will change in the graph. Explain.



Ans:

- (a) The cost of 1 unit of food for nation A is 1 unit of clothing but the cost of food for nation B is 4 units of clothing. The cost of 1 unit of clothing for nation A is 1 unit of food. The cost of 1 unit of clothing for nation B is 1/4 unit of food.
- (b) Nation A should trade food for clothing with nation B. Nation A is the low cost producer of clothing and nation B is the low cost producer of food.

(c) The terms of trade will be set between 1 food = 1 clothing (nation A's cost condition) and 1 food = 4 clothing (nation B's cost condition). If the terms are set at 1 food = 2 clothing, then nations A and B can shift their trading possibilities lines outward as shown in the graph. The end points for nation A's graph will now be 4 food and 8 clothing. The end points for nation B's graph will be 4 food and 8 clothing.

Page: 387-393

Learning Objective: 17.1

Unauthorized
Reproduction
Prohibited

7. Answer the next three questions on the basis of the following production possibilities data for Narnia and Somosa. All figures are in thousands of units.

Narnia production possibilities:

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
Computer chips	80	60	40	20	0
Fuel injectors	0	20	40	60	80

Somosa production possibilities:

	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>
Computer chips	40	30	20	10	0
Fuel injectors	0	20	40	60	80

- (a) If trade occurs between Narnia and Somosa, which nation should export what product? Why?
- (b) What are the limits of the terms of trade between Narnia and Somosa?
- (c) Assume that prior to specialization and trade, Narnia and Somosa chose production possibility "C." Now each specializes according to comparative advantage. What will be the resulting gains from trade? Explain your answer.

Ans: (a) Narnia should export computer chips and Somosa should export fuel injectors. Narnia is the low-cost producer of computer chips. The opportunity cost of 1 computer chip is 1 fuel injector. For Somosa the opportunity cost of 1 computer chip is 2 fuel injectors. Somosa is the low-cost producer of fuel injectors. The opportunity cost for Somosa to produce each fuel injector is 1/2 of a computer chip. The opportunity cost for Narnia to produce each fuel injector is 1 computer chip.

(b) The limits are from 1 computer chip for 1 fuel injector *up to* 1 computer chip for 2 fuel injectors.

(c) Before specialization, Narnia produced 40 thousand computer chips and Somosa 20 thousand units for a total of 60 thousand units. After specialization and trade, Narnia produces 80 thousand computer chips for a gain of 20 thousand units. Before specialization, Narnia produced 40 thousand fuel injectors and Somosa 40 thousand units. After specialization and trade, Somosa will produce 80 thousand fuel injectors. Total output did not change with this product.

Page: 387-393

Learning Objective: 17.1

8. How does relaxing the assumption of constant costs affect the comparative advantage argument for trade?

Ans: In the simplified analysis of comparative advantage, opportunity costs are assumed to be constant. In other words, the production possibilities curves of nations are linear. The more realistic representation is nations with increasing costs and concave-to-the-origin production possibilities curves. This change, however, does not affect the general conclusion of comparative advantage. To improve efficiency in the allocation of resources, nations must still specialize in the areas of their comparative advantage. The specialization, however, is not complete. While nations increase their production of goods in which they have a comparative advantage, they do not completely eliminate production of other products.

Page: 393-394

Learning Objective: 17.1

9. What are the economic benefits of free trade?

Ans: The benefits of free trade include more efficient allocation of resources as nations specialize in their comparative advantage. This leads to increased production and increased standards of living. Free trade also increases competition which leads to lower costs of production and to increased efficiency. Jobs in exporting industries increase and consumers benefit from improved choice and quality and lower prices when imports compete with domestic products.

Page: 394

Learning Objective: 17.1

10. How can supply and demand analysis be used to explain the equilibrium price and quantity of exports and imports for aluminum when there is trade between two nations (e.g., the United States and Canada)?

Ans: For the United States, there will be domestic supply and demand and export supply and import demand for aluminum. The price and quantity of aluminum are determined by the intersection of the *domestic* demand and supply curves in a world without trade. In a world with trade, the *export supply* curve for the United States shows the amount of aluminum that American producers will export at each world price above the domestic equilibrium price. American exports will increase when the world price rises relative to the domestic price. The *import demand* curve for the United States shows the amount of aluminum that Americans will import at each world price below the domestic equilibrium price. American imports will increase when world prices fall relative to the domestic price.

For Canada, there will be domestic supply and demand and export supply and import demand for aluminum. The description of these supply and demand curves is similar for those of the United States. The price and quantity of aluminum are determined by the intersection of the *domestic* demand and supply curves in a world without trade. In a world with trade, the *export supply* curve for Canada shows the amount of aluminum that the Canadian producers will export at each world price above the domestic equilibrium price. Canadian exports will increase when the world price rises relative to the domestic price. The *import demand* curve for Canada shows the amount of aluminum that Canadians will import at each world price below the domestic equilibrium price. Canadian imports will increase when world prices fall relative to the domestic price.

The equilibrium world price and equilibrium world levels of exports and imports of aluminum can be determined with further supply and demand analysis. The export supply curves of the United States and Canada can be plotted on one graph. The import demand curves of both nations can be plotted on the same graph. In this two-nation model, equilibrium will be achieved where one country's import demand curve for aluminum intersects the other country's export supply curve.

Page: 395-398

Learning Objective: 17.2

11. The following table shows the domestic quantity demanded (Q_D) and quantity supplied (Q_S) of soybeans in Canada and Brazil at various prices (in Canadian dollars).

Price per bushel (C\$)	Q_D Canada	Q_S Canada	Exports/Imports Canada	Q_D Brazil	Q_S Brazil	Exports/Imports Brazil
\$6.00	1,000	9,000		3,000	7,000	
\$5.75	2,000	8,000		4,000	6,000	
\$5.50	3,000	7,000		5,000	5,000	
\$5.25	4,000	6,000		6,000	4,000	
\$5.00	5,000	5,000		7,000	3,000	
\$4.75	6,000	4,000		8,000	2,000	
\$4.50	7,000	3,000		9,000	1,000	

- (a) Complete the above table by indicating the size of exports or imports for each country at each price.
- (b) Suppose Canada and Brazil are closed economies. What is the domestic price of soybeans in Canada? What is the domestic price of soybeans in Brazil?
- (c) Suppose Canada and Brazil are the only countries in a two-nation world. What is the world price of soybeans? Is Canada an exporter or an importer at the world price? Is Brazil an exporter or an importer at the world price?

Ans:

Price per bushel (C\$)	Q_D Canada	Q_S Canada	Exports/Imports Canada	Q_D Brazil	Q_S Brazil	Exports/Imports Brazil
\$6.00	1,000	9,000	Exports = 8,000	3,000	7,000	Exports = 4,000
\$5.75	2,000	8,000	Exports = 6,000	4,000	6,000	Exports = 2,000
\$5.50	3,000	7,000	Exports = 4,000	5,000	5,000	None
\$5.25	4,000	6,000	Exports = 2,000	6,000	4,000	Imports = 2,000
\$5.00	5,000	5,000	None	7,000	3,000	Imports = 4,000
\$4.75	6,000	4,000	Imports = 2,000	8,000	2,000	Imports = 6,000
\$4.50	7,000	3,000	Imports = 4,000	9,000	1,000	Imports = 8,000

- (a) See table above.
- (b) The domestic price in Canada is \$5.00 (where domestic demand intersects domestic supply). The domestic price in Brazil is \$5.50.
- (c) The world price is \$5.25 (where Canada's export supply intersects Brazil's import demand). Canada is an exporter of soybeans and Brazil is an importer.

Page: 395-398

Learning Objective: 17.2

12. The following table shows the domestic quantity demanded (Q_D) and quantity supplied (Q_S) of soybeans in Canada and Brazil at various prices (in Canadian dollars).

Price per bushel (C\$)	Q_D Canada	Q_S Canada	Exports/Imports Canada	Q_D Brazil	Q_S Brazil	Exports/Imports Brazil
\$6.25	100	900		400	800	
\$6.00	200	800		500	700	
\$5.75	300	700		600	600	
\$5.50	400	600		700	500	
\$5.25	500	500		800	400	
\$5.00	600	400		900	300	
\$4.75	700	300		1,000	200	

- (a) Complete the above table by indicating the size of exports or imports for each country at each price.
- (b) Suppose Canada and Brazil are closed economies. What is the domestic price of soybeans in Canada? What is the domestic price of soybeans in Brazil?
- (c) Suppose Canada and Brazil are the only countries in a two-nation world. What is the world price of soybeans? Is Canada an exporter or an importer at the world price? Is Brazil an exporter or an importer at the world price?

Ans:

Price per bushel (C\$)	Q_D Canada	Q_S Canada	Exports/Imports Canada	Q_D Brazil	Q_S Brazil	Exports/Imports Brazil
\$6.25	100	900	Exports = 800	400	800	Exports = 400
\$6.00	200	800	Exports = 600	500	700	Exports = 200
\$5.75	300	700	Exports = 400	600	600	None
\$5.50	400	600	Exports = 200	700	500	Imports = 200
\$5.25	500	500	None	800	400	Imports = 400
\$5.00	600	400	Imports = 200	900	300	Imports = 600
\$4.75	700	300	Imports = 400	1,000	200	Imports = 800

- (a) See table above.
- (b) The domestic price in Canada is \$5.25 (where domestic demand intersects domestic supply). The domestic price in Brazil is \$5.75.
- (c) The world price is \$5.50 (where Canada's export supply intersects Brazil's import demand). Canada is an exporter of soybeans and Brazil is an importer.

Page: 395-398

Learning Objective: 17.2

13. Define the four basic types of trade barriers.

Ans: The four types of trade barriers are tariffs, nontariff barriers, import quotas, and voluntary export restraints (VERs). Tariffs are excise taxes on imports. Governments may use them to generate revenue or to protect domestic producers from foreign competition. Import quotas specify the maximum amounts of imports allowed into a nation over a period of time. Nontariff barriers include licensing requirements, unreasonable standards, and bureaucratic red tape in customs procedures that restrict trade. VERs are agreements with foreign firms to “voluntarily” limit their exports to another nation.

Page: 399

Learning Objective: 17.3

14. Which is more effective in blocking imports, a tariff or a quota?

Ans: Generally, an import quota, especially if it is set low, is more effective in blocking the entry imports into a nation. The reason is that once the import quota has been met, no more goods can be imported into the nation. With a tariff, it is still possible to import goods into a nation, so long as people are willing to pay the tariff on the imported good. Of course the precise answer depends on how low the quota is and how high the tariff is on the product.

Page: 399-400

Learning Objective: 17.3

15. What are the similarities and differences in the economic effects of tariffs and quotas?

Ans: Tariffs and quotas have essentially the same economic effects. They both cause a decline in consumption because of the higher price that results. They both increase domestic production. They both reduce the quantity of imports. They also both have the same indirect effects of promoting the expansion of inefficient industries that do not have a comparative advantage. The major difference between a tariff and a quota is that a tariff raises revenue for the government while a quota transfers revenue to foreign producers.

Page: 399-400

Learning Objective: 17.3

16. The next three questions refer to the information in the following table.

Quantity demanded Domestically	Price	Quantity supplied domestically
700	\$6	1,100
800	5	1,000
900	4	900
1,000	3	800
1,100	2	700
1,200	1	600

(a) What would price and quantity be if the market were closed to international trade? What would the domestic and foreign quantity supplied be if it were open to international trade and the world price was \$2?

(b) If the world price was \$2 and a tariff of \$1 were placed on the product, what would be the total revenues going to domestic producers, foreign producers (after-tax), and the government? Explain.

(c) Given a world price of \$2, what would be the difference in the total revenue received by foreign producers with a \$1 per unit tariff compared with a quota of 200 units?

Ans: (a) The price would be \$4 and 900 units would be produced in a closed economy. In an open economy with a \$2 world price, the market price would be \$2 and 1,100 units would be demanded. There would be 1,100 units supplied. (700 domestic and 400 foreign.)

(b) Domestic producers would receive \$2,400 [$\3×800]. Foreign producers would receive \$400 [$(\$3 \times 200) - (\$1 \times 200)$]. The government would receive \$200 [$\1×200].

(c) Foreign producers would receive \$200 more in revenue with a quota than a tariff because there are no tariff revenues for the government to collect.

Page: 399-401

Learning Objective: 17.3

17. The next three questions refer to the information in the following table.

Quantity demanded domestically	Price	Quantity supplied domestically
60,000	\$10	80,000
70,000	8	70,000
80,000	6	60,000
90,000	4	50,000

(a) What would price and quantity be if the market were closed to international trade? What would the domestic and foreign quantity supplied be if it were open to international trade and the world price was \$4?

(b) If the world price was \$4 and a tariff of \$2 were placed on the product, what would be the total revenues going to domestic producers, foreign producers (after-tax), and the government? Explain.

(c) Given a world price of \$4, what would be the difference in the total revenue received by foreign producers with a \$2 per unit tariff compared with a quota of 20,000 units?

Ans: (a) The price would be \$8 and 70,000 units would be produced in a closed economy. In an open economy with a \$4 world price, the market price would be \$4 and 90,000 units would be demanded. There would be 90,000 units supplied. (50,000 domestic and 40,000 foreign)

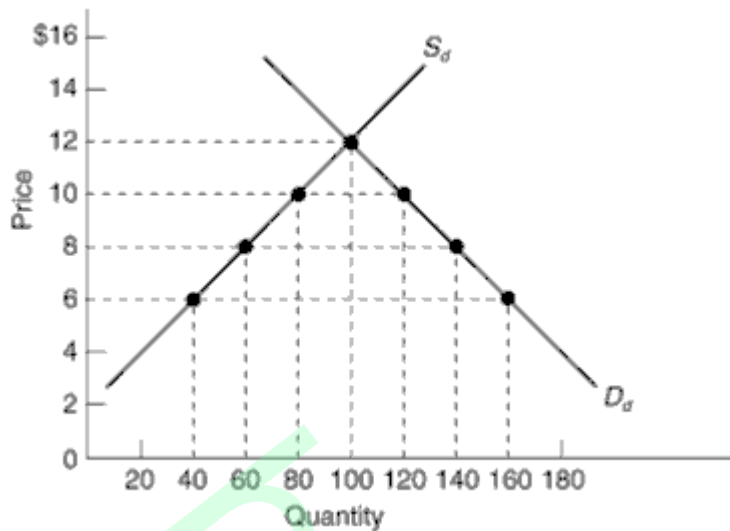
(b) Domestic producers would receive \$360,000 [$\$6 \times 60,000$]. Foreign producers would receive \$80,000 [$(\$6 \times 20,000) - (\$2 \times 20,000)$]. The government would receive \$40,000 [$\$2 \times 20,000$].

(c) Foreign producers would receive \$40,000 more in revenue with a quota than a tariff because there are no tariff revenues for the government to collect.

Page: 399-401

Learning Objective: 17.3

18. The next three questions refer to the below graph, where S_d and D_d are the domestic supply and demand for a product. The world price of the product is \$6.



- (a) How much total revenue would go to domestic producers if the market were closed to international trade compared to a market open to international trade? Explain.
- (b) If the economy is open to trade, but a \$2 per unit tariff were applied, what would be the total revenue going to domestic producers, foreign producers (after-tax revenue), and to the government? Explain.
- (c) What would be the difference in revenue with a tariff of \$2 per unit versus a quota of 80 units?

Ans: (a) In a closed market, \$1,200 in total revenue would go to domestic producers [$\$12 \times 100$]. In a market open to world trade, only \$240 in total revenue would go to domestic producers [$\$6 \times 40$].

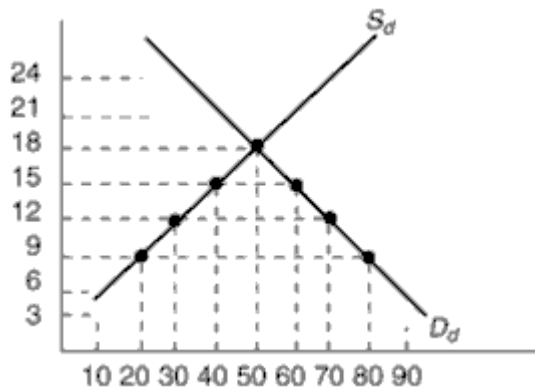
(b) The \$2 per unit tariff would make the market price \$8 [$\6 world price + \$2 tariff]. At \$8, there were 140 units sold, so total revenue is \$1,120. Of this amount domestic producers would get \$480 [$\8×60], foreign producers would get \$480 [$(\$8 \times 80) - (\$2 \times 80)$], and the government would collect \$160 [$\2×80].

(c) A tariff produces \$160 in revenue for government, but with a quota that revenue goes to foreign producers who now earn \$640 instead of \$480.

Page: 399-401

Learning Objective: 17.3

19. The next three questions refer to the below graph, where S_d and D_d are the domestic supply and demand for a product. The world price of the product is \$12.



- (a) How much total revenue would go to domestic producers if the market were closed to international trade compared to a market open to international trade? Explain.
- (b) If the economy is open to trade, but a \$3 per unit tariff were applied, what would be the total revenue going to domestic producers, foreign producers (after-tax revenue), and to the government? Explain.
- (c) What would be the difference in revenue with a tariff of \$3 per unit versus a quota of 20 units?
- Ans: (a) In a closed market, \$900 in total revenue would go to domestic producers (\$18 x 50). In a market open to world trade, only \$360 in total revenue would go to domestic producers [\$12 x 30].
- (b) The \$3 per unit tariff would make the market price \$15 [\$12 world price + \$3 tariff]. At \$15, there were 60 units sold, so total revenue is \$900. Of this amount domestic producers would get \$600 [\$15 x 40], foreign producers would get \$240 [(\$15 x 20) - (\$3 x 20)], and the government would collect \$60 [\$3 x 20].
- (c) A tariff produces \$60 in revenue for government, but with a quota that revenue goes to foreign producers who now earn \$300 instead of \$240.

Page: 399-401

Learning Objective: 17.3

20. Who gains and who loses from a protective tariff? Explain.

Ans: A tariff increases the price of the imported product. First, consumers are hurt. Some consumers will not be able to purchase the product at the higher price and the consumers who do purchase the good will pay the higher price. Second, a tariff helps domestic producers because they receive more revenue than they would without the tariff. Third, workers in the tariff-protected industry may benefit because it may protect jobs and maintain higher wages than would be the case without the tariff. Fourth, business and workers in industries that import or service the import product are hurt. Fifth, foreign producers of the imported product receive less revenue than would be the case with free trade. Sixth, the federal government gains from a tariff because it receives the amount of the tariff times the number of the products that are imported. Overall, the nation loses because the gains for the industry protected by a tariff and workers in that industry are significantly offset by the losses to consumers and economic inefficiency that comes from an industry that cannot compete on world markets.

Page: 400-402

Learning Objective: 17.3

21. How do protectionist policies affect consumers, workers, producers, and the government? Explain.

Ans: Protectionism in the form of tariffs or quotas reduces the total supply (domestic plus foreign) of the good. As a consequence, the price will rise. This change has a number of profound effects on all groups. Some consumers will not be able to purchase the product at the higher price. Those consumers that still purchase the good will pay a higher price. So consumers are hurt by protectionist legislation. Domestic producers will receive more revenue and workers in those industries may benefit from the improved revenue for business because it may mean fewer layoffs or higher wages. Thus, domestic producers and workers in protected industries benefit, which explains why their organizations often lobby hard for trade barriers. Tariffs and quotas hurt businesses and workers in industries that import or service foreign products. Foreign producers receive less revenue than would be the case with free trade. The government will benefit from a tariff, but will receive no revenue from a quota. Overall, the gains for protected industries and workers come at the expense of the whole economy.

Page: 400-402

Learning Objective: 17.3

22. What are the net costs of tariffs and quotas on consumption and income distribution?

Ans: The cost to society is that protectionism raises product prices by raising the imported price of the product. Higher priced imports cause some consumers to switch to higher priced domestic products, thus increasing the price of domestic products. Any benefits for government, businesses, and workers from tariffs and quotas are outweighed by the costs to Canadian society. Efforts to obtain trade protection are also a form of rent seeking that causes a misallocation of resources for society. There is also an effect on the distribution of incomes because import restrictions are more costly for low-income families than high-income families.

Page: 402

Learning Objective: 17.3

23. What is the motivating idea behind fair trade products? What alternative policy might also be used to help low-income nations?

Ans: Fair-trade is an attempt to redistribute the gains from trade that a low-income country receives from selling its exports more toward the primary producers instead of the larger corporations. Farmers growing coffee beans for certified fair-trade coffee producers would earn a higher salary (and might realize better working conditions) as compared to their peers producing for non-fair-trade coffee producers.

Some economists argue that reducing agricultural subsidies in high-income countries might be a more-effective policy. Subsidies lead to over-production of crops and livestock in high-income countries thereby reducing world prices. These low prices mean lower earnings for food exporters (and the entire food exporting supply chain) in low-income countries.

Page: 402-403

Learning Objective: Last Word