

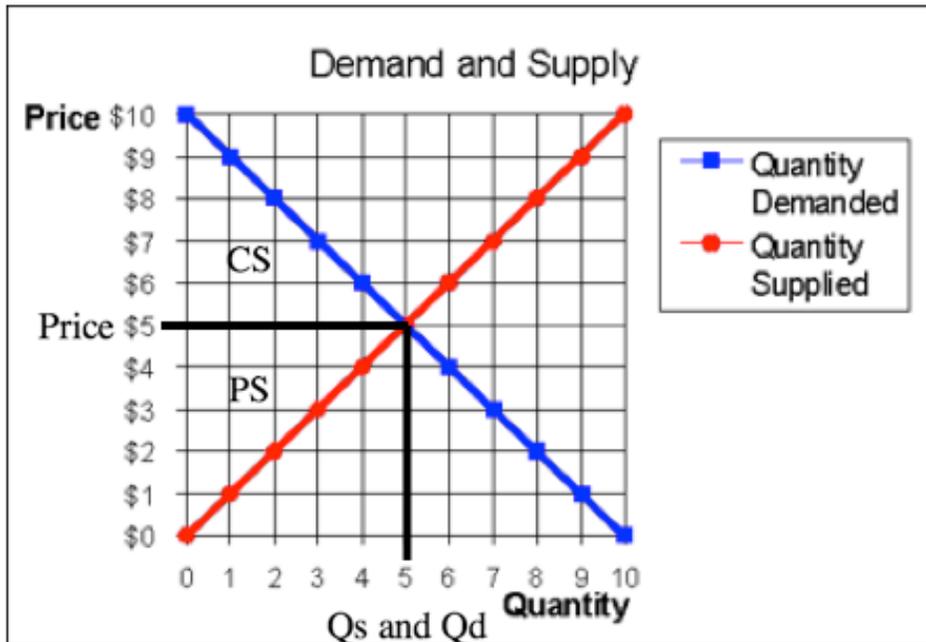


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ECON 102 Wooten – Exam 2 – Practice Exam Solutions

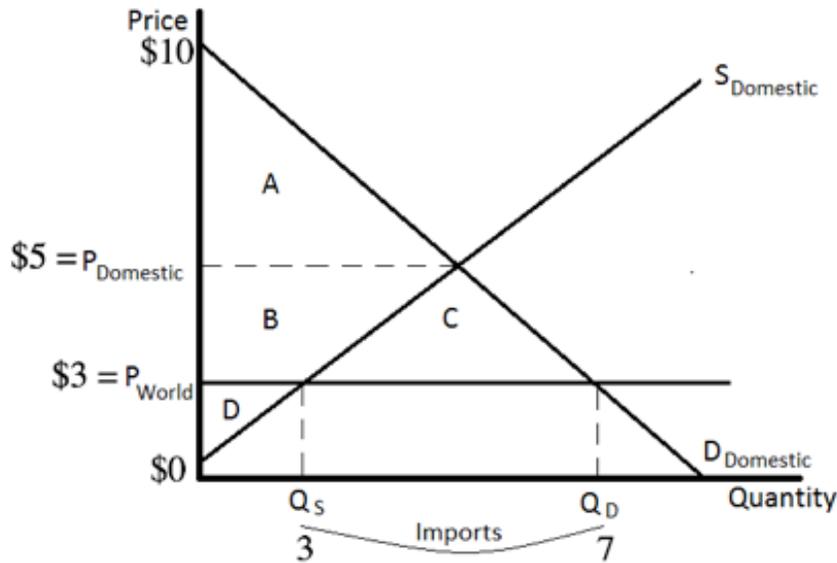
	<b>Autarky</b>	<b>Unrestricted Trade</b>	<b>Protected Trade</b>
<b>US Price per Pound</b>	#1) \$5	#10) \$3	#19) \$4
<b>Quantity Demanded</b>	#2) 5	#11) 7	#20) 6
<b>Quantity Supplied</b>	#3) 5	#12) 3	#21) 4
<b>Quantity Imported</b>	#4) 0	#13) 4	#22) 2
<b>Domestic Consumer Surplus</b>	#5) 12.5	#14) 24.5	#23) 18
<b>Domestic Producer Surplus</b>	#6) 12.5	#15) 4.5	#24) 8
<b>Deadweight Loss</b>	#7) 0	#16) 0	#25) 1
<b>Tariff Revenue</b>	#8) \$0	#17) \$0	#26) \$2
<b>Total Surplus</b>	#9) 25	#18) 29	#27) 28

## Autarky



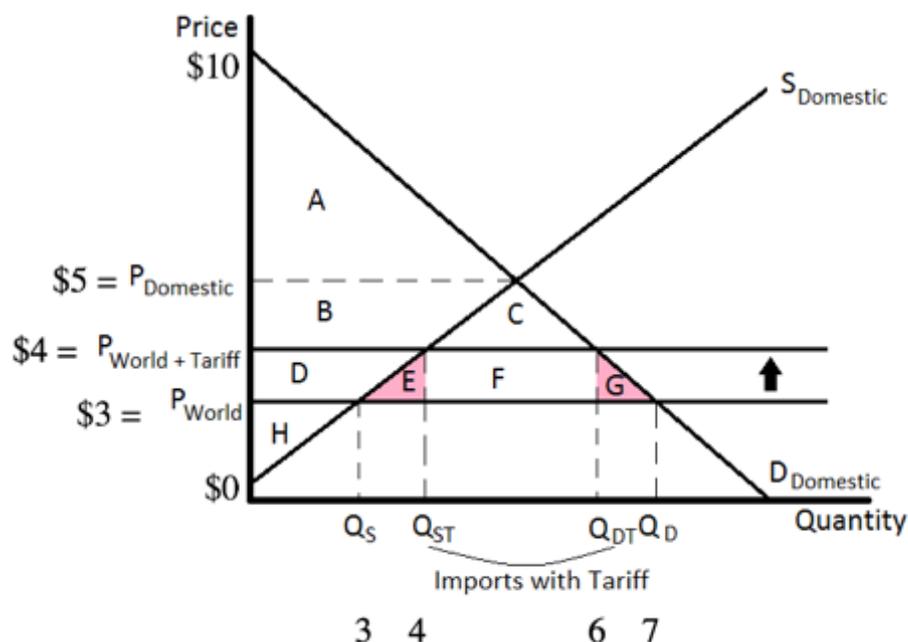
1. US price per pound = \$5
2.  $Q_d = Q_s = 5$  – The quantity supplied and demanded will be equal in autarky.
3.  $Q_d = Q_s = 5$  – The quantity supplied and demanded will be equal in autarky.
4. Quantity Imported = 0 – Autarky literally means there is no trade. Nothing is imported or exported in autarky.
5. Domestic Consumer Surplus =  $(1/2)(5)(\$10 - \$5) = 12.5$
6. Domestic Producer Surplus =  $(1/2)(5)(\$5 - \$0) = 12.5$
7. Deadweight Loss = 0 – We only have a DWL if a tariff is imposed.
8. Tariff Revenue = \$0 – We only have tariff revenue if a tariff is imposed.
9. Total Surplus = CS + PS + Revenue =  $12.5 + 12.5 + 0 = 25$

## Free Trade



10. US price per pound = \$3 – With free trade, the price paid in the domestic market (United States) will be equal to the world price.
11.  $Q_d = 7$  – In the original graph, we can see  $Q_d$  is 7 when price is \$3.
12.  $Q_s = 3$  – In the original graph, we can see  $Q_s$  is 3 when price is \$3.
13. Quantity Imported =  $Q_d - Q_s = 7 - 3 = 4$
14. Domestic Consumer Surplus =  $A + B + C = (1/2)(7)(\$10 - \$3) = 24.5$
15. Domestic Producer Surplus =  $D = (1/2)(3)(\$3 - \$0) = 4.5$
16. Deadweight Loss = 0 – We only have a DWL if a tariff is imposed.
17. Tariff Revenue = 0 – We only have tariff revenue if a tariff is imposed.
18. Total Surplus =  $CS + PS + Revenue = 24.5 + 4.5 + 0 = 29$  – Total surplus increased from autarky because there was no CS or PS in area C prior to trade. Area C became consumer surplus in the free trade model. Area B converted from PS to CS with free trade.

## Protected Trade



19. US price per pound = \$4 – The domestic market will pay the world price plus the amount of the tariff when there is protected trade.
20.  $Q_d$  with Tariff = 6
21.  $Q_s$  with Tariff = 4
22. Quantity Imported =  $6 - 4 = 2$
23. Domestic Consumer Surplus =  $A + B + C = (1/2)(6)(\$10 - \$4) = 18$
24. Domestic Producer Surplus =  $D + H = (1/2)(4)(\$4 - \$0) = 8$
25.  $DWL = E + G = (1/2)(4 - 3)(\$4 - \$3) + (1/2)(7 - 6)(\$4 - \$3) = 0.5 + 0.5 = 1$
26. Tariff Revenue =  $F$  (Rectangle, not triangle) = (Base)(Height) =  $(6 - 4)(\$4 - \$3) = \$2$
27. Total Surplus =  $CS + PS + Revenue = 18 + 8 + 2 = 28$  – Total surplus when changing from free trade to protected trade will decrease by the amount of the  $DWL$ .

28. You did not need to include the description of each; however, it is fair game for your professor to ask you to describe the policies as well.
1. **Environmental standards** – Rules intended to help protect the environment by specifying actions produce
  2. **Emissions tax** – A tax based on the amount of pollution a firm generates
  3. **Tradable emissions permits** – Licenses that allow companies to emit a certain amount of pollution
29. The first step is to determine which country has a comparative advantage in coal, and which country has a comparative advantage in silver. Comparative advantage is determined by finding which country has the lowest opportunity cost for producing that good.

China OC Coal =  $16 / 96 = 0.167$  silver

China OC Silver =  $96 / 16 = 6$  coal

India OC coal =  $48 / 48 = 1$  silver

India OC silver =  $48 / 48 = 1$  coal

China has the comparative advantage in coal, and India has the comparative advantage in silver.

**Production with trade**

China = 0 silver, 96 coal

India = 48 silver, 0 coal

**Consumption with trade**

China = 24 silver, 48 coal

India = 24 silver, 48 coal

**Gains from trade**

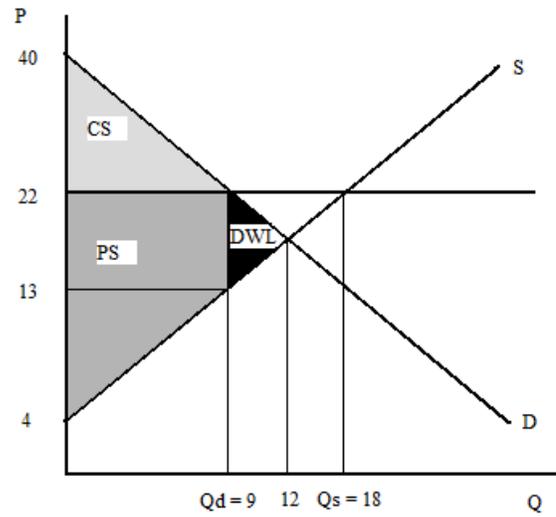
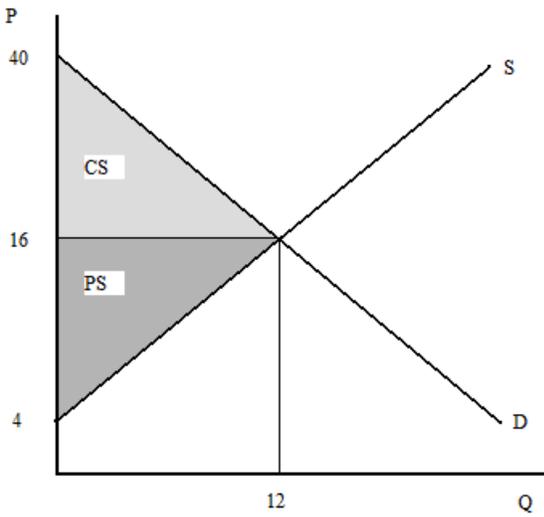
China = 16 silver, 0 coal

India = 16 silver, 8 coal

	China		India	
	Silver	Coal	Silver	Coal
<b>Consumption without trade</b>	8	48	8	40
<b>Production with trade</b>	0	96	48	0
<b>Consumption with trade</b>	24	48	24	48
<b>Gains from trade</b>	16	0	16	8

30. You did not need to include an example of each; however, it is fair game for your professor to ask you to give an example of each.
1. **Differences in climate and geography** – Oranges are easier to grow in FL and CA so those states can produce oranges for a lower opportunity cost than the rest of the country.
  2. **Difference in factor endowments** – Canada produces numerous timber products because they have lots of forests with trees.
  3. **Differences in technology** – A country with more advanced technology will have a comparative advantage in producing goods that require that advanced technology. The Swiss are known for making the best watches in the world.
31. Linear because opportunity cost is constant. At all levels of production, the opportunity cost of 20 beers is 10 pizzas.
32. Scarcity represents the concept that everyone has limited resources and unlimited wants. The key phrase is “limited resources and unlimited wants.”
33. Firms and Households – A market exists when you have consumers and producers transacting. Firms are the companies producing and selling goods. Households are the consumers buying the goods.

**Use the graphs below for the next 6 problems**



34.  $P = 16, Q = 12$

$$4 + Q = 40 - 2Q$$

$$3Q = 36$$

$$Q = 12$$

$$P = 4 + 12 = 16$$

$$P = 40 - 2(12) = 16$$

35.  $CS = 144, PS = 72$

$$CS = (1/2)(12)(40 - 16) = 144$$

$$PS = (1/2)(12)(16 - 4) = 72$$

36. CS = 81, PS = 121.5

Quantity demanded at a price of \$22

$$P = 40 - 2Q_d$$

$$\$22 = 40 - 2Q_d$$

$$Q_d = 9$$

Price suppliers would be willing accept at a quantity of 9 units

$$P = 4 + Q_s$$

$$P = 4 + 9$$

$$p = 13$$

$$CS = (1/2)(9)(40 - 22) = 81$$

$$PS = (1/2)(9)(13-4) + (9)(22 - 13) = 121.5$$

37. DWL = 13.5

$$DWL = (1/2)(22 - 13)(12 - 9) = 13.5$$

38. CS Decreased, PS increased

39. Excess supply of 9 units

Quantity demanded at a price of \$22:

$$P = 40 - 2Q_d$$

$$\$22 = 40 - 2Q_d$$

$$Q_d = 9$$

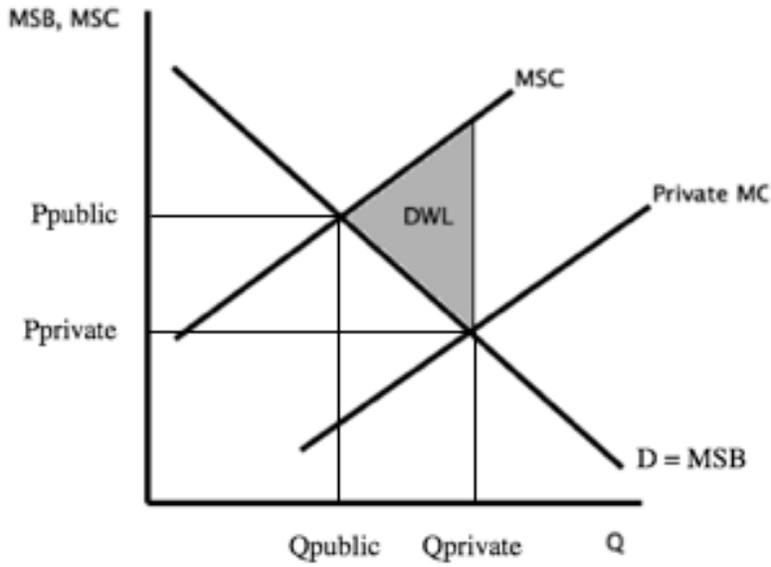
Quantity supplied at a price of \$22:

$$P = 4 + Q_s$$

$$\$22 = 4 + Q_s$$

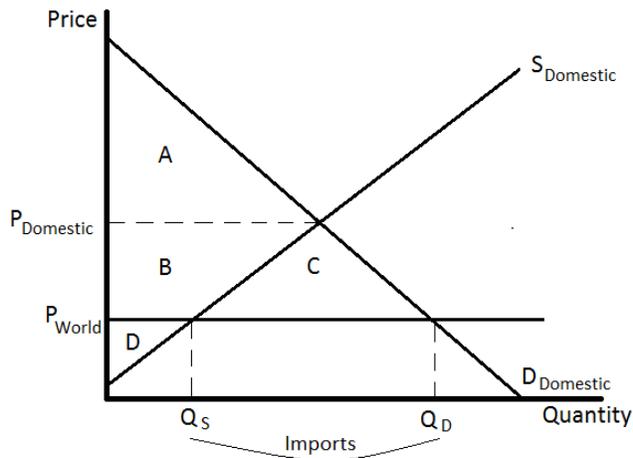
$$Q_s = 18$$

40.



41. More likely because the product becomes more useful as more people purchase it.  
Phones became dramatically more popular as more and more people got phones.

42.



Will this country import or export goods? **Import because world price is less than autarky (domestic) price**

What area represents consumer surplus before trade? **A**

What area represents consumer surplus after trade? **A + B + C**

What area represents producer surplus before trade? **B + D**

What area represents producer surplus after trade? **D**

What does area C in the graph represent? **The addition to consumer surplus after trade. Prior to trade area C was neither producer or consumer surplus.**

43. Import tariffs increase domestic producer surplus.

44. Tax amount =  $\$50 - \$30 = \$20$

45. Incidence of tax the consumer bears =  $(\$50 - \$35) / \$20 = 0.75 = 75\%$

46. Incidence of tax the producer bears =  $(\$35 - \$30) / \$20 = 0.25 = 25\%$

47. Tax revenue =  $(\$50 - \$30)(80) = \$1,600$

48. DWL =  $(1/2)(\$50 - \$30)(100 - 80) = 200$

49. CS before tax =  $(1/2)(100)(\$100 - \$35) = 3,250$

50. CS after tax =  $(1/2)(80)(\$100 - \$50) = 2,000$

51. PS before tax =  $(1/2)(100)(\$35) = 1,750$

52. PS after tax =  $(1/2)(80)(\$30) = 1,200$

53. California has a comparative advantage in pinot, and Oregon has a comparative advantage in marijuana.

CA OC pinot =  $12 / 4 = 3$  pounds marijuana

CA OC marijuana =  $4 / 12 = 0.33$  bottles pinot

OR OC pinot =  $20 / 5 = 4$  pounds marijuana

OR OC marijuana =  $5 / 20 = 0.25$  bottles pinot

CA should produce pinot, and OR should produce marijuana.

After the states specialize and trade, California gains by consuming the same amount of pinot and 2 additional pound(s) of marijuana. Oregon gains by consuming the same amount of pinot and 1 additional pound(s) of marijuana.

CA will produce 4 bottles of pinot. The problem says CA wants to keep its wine consumption the same so CA will only consume 1 bottle of pinot. CA can then trade the other 3 bottles for 11 pounds of marijuana. CA was previously consuming 9 pounds of marijuana so it will gain an additional 2 pounds ( $11 - 9 = 2$ ) of marijuana.

OR will produce 20 pounds of marijuana. OR wants to keep its pinot consumption the same so it will need to trade 11 pounds of marijuana for 3 bottles of wine. This leaves OR with 9 pounds of marijuana ( $20 - 11 = 9$ ). OR previously consumed 8 pounds of marijuana so it gains 1 pound of marijuana from the trade.

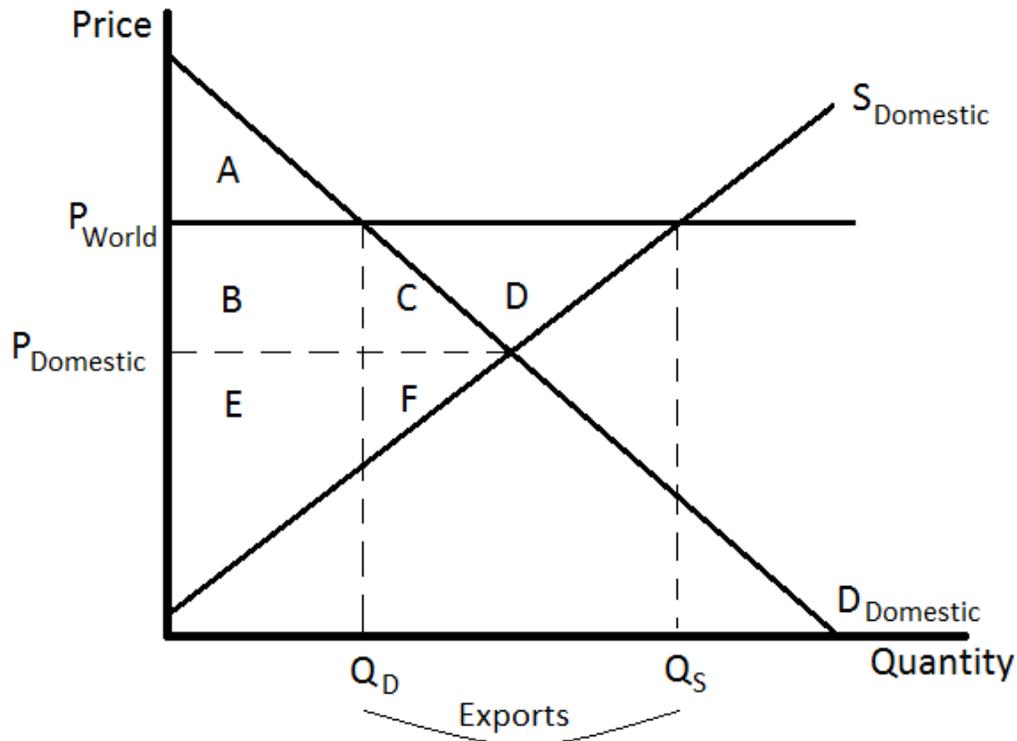
54. Reasons a government would restrict trade...

1. **National defense** – It is in the interest of national security to produce some goods domestically
2. **Job creation** – Trade restrictions can create jobs in the domestic market
3. **Infant industry** – The government is trying to protect a young industry that is not ready compete internationally

55. International trade agreements...

1. **North American Free Trade Agreement (NAFTA)** – Free trade agreement between US, Canada, and Mexico
2. **European Union (EU)** – Allows free trade and open borders within participating European countries
3. **World Trade Organization (WTO)** – Intergovernmental organization that regulates trade

56.



Will this country import or export goods? **Export because the world price is greater than the autarky (domestic price)**

What area represents consumer surplus before trade? **A + B + C**

What area represents consumer surplus after trade? **A**

What area represents producer surplus before trade? **E + F**

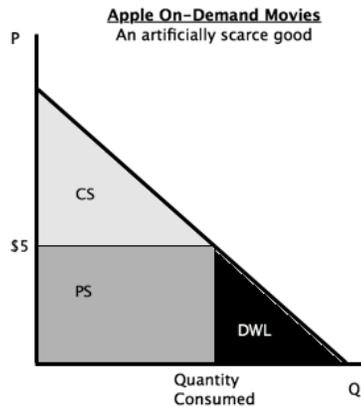
What area represents producer surplus after trade? **B + C + D + E + F**

What does area D in the graph represent? **Producer surplus gained from trade. Area D is particularly important because we did not have consumer or producer surplus in that area prior to trade.**

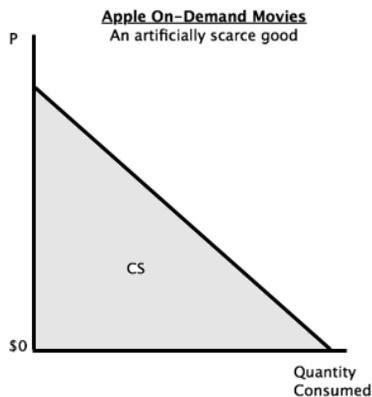
57.

	<b>Excludable</b>	<b>Non-excludable</b>
<b>Rival</b>	<u>Private goods:</u> Food, furniture	<u>Common pool goods:</u> Hunting
<b>Non-rival</b>	<u>Club goods:</u> Cable TV	<u>Public goods:</u> Light house, fireworks

58. \$0 because the economists only goal is to maximize consumer surplus.



- **Apple charges \$5 for an on-demand movie even though it is a club good** – The marginal cost of selling an additional on-demand movie is \$0 for Apple so price is set above marginal cost
- **The efficient thing would be for Apple to provide the movies for free** – This would be efficient because price would be equal to marginal cost, and there would be no deadweight loss
- **Apple will not provide the movies for free people it would lose all producer surplus** – Providing on-demand movies for free would be the most efficient thing for society; however, it also means Apple would earn zero producer surplus



- **Consumer surplus is maximized when price is \$0** – Consumer surplus is the area below the demand curve and above the equilibrium price
- **The deadweight loss is eliminated when price is \$0** – There is no deadweight loss because society will consume the optimal quantity when price is \$0

59. Helping Rhinos through the assignment of private property rights.

60. Opportunity cost of moving from point C to D = 80 sticks of butter

Make sure that you read this question carefully. We are moving from point C to point B. This means that we will need to give up 80 sticks of butter to produce 60 more guns. Since we are giving up 80 sticks of butter to move from point C to point B, the opportunity cost of the move is 80 sticks of butter.

Note that if the question had asked what the opportunity cost of moving from point B to point C was, the answer would have been 60 guns because you are giving up making 60 guns to move from B to C. It is important to pay attention to which way you are moving along the PPC.

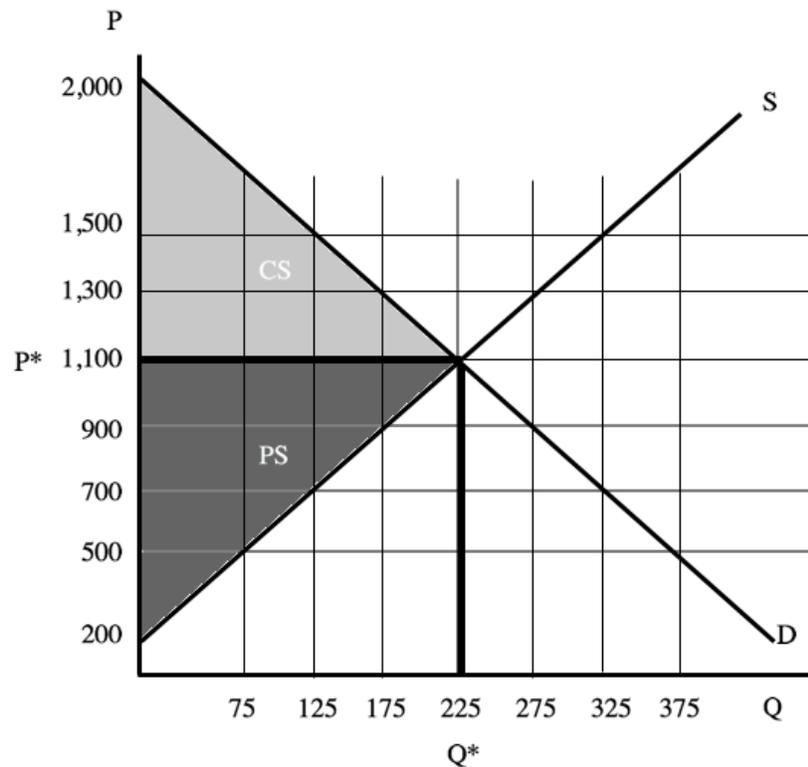
Inefficient point = Point E

Unattainable point = Point F

61. Reasons for rent control: Provides more affordable housing to lower income individuals, and it allows people to find affordable housing in the city so they don't have to commute.

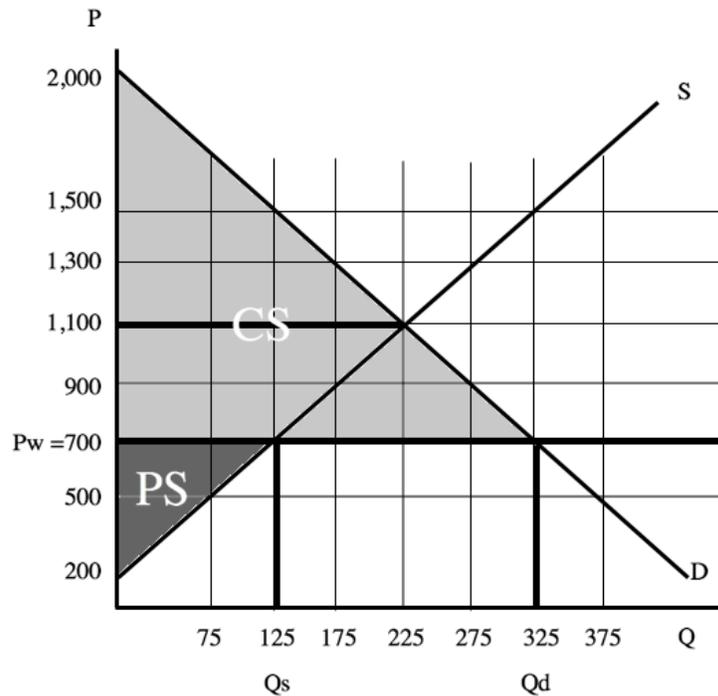
Reasons against rent control: Black markets often appear, apartments are not well maintained, there is a severe shortage of units available, there is no incentive to build new units over time due to low prices.

## Autarky



62. US price per pound = \$1,100
63.  $Q_d = Q_s = 225$  – The quantity supplied and demanded will be equal in autarky.
64.  $Q_d = Q_s = 225$  – The quantity supplied and demanded will be equal in autarky.
65. Quantity Imported = 0 – Autarky literally means there is no trade. Nothing is imported or exported in autarky.
66. Domestic Consumer Surplus =  $(1/2)(225)(\$2,000 - \$1,100) = 101,250$
67. Domestic Producer Surplus =  $(1/2)(225)(\$1,100 - \$200) = 101,250$
68. Deadweight Loss = 0 – We only have a DWL if a tariff is imposed.
69. Tariff Revenue = \$0 – We only have tariff revenue if a tariff is imposed.
70. Total Surplus =  $CS + PS + Revenue = 101,250 + 101,250 + 0 = 202,500$

## Unrestricted Trade



71. US price per pound = \$700 – With free trade, the price paid in the domestic market (United States) will be equal to the world price.

72.  $Q_d = 325$  – In the graph, we can see  $Q_d$  is 325 when price is \$700.

73.  $Q_s = 125$  – In the graph, we can see  $Q_s$  is 125 when price is \$700.

74. Quantity Imported =  $Q_d - Q_s = 325 - 125 = 200$

75. Domestic Consumer Surplus =  $(1/2)(325)(\$2,000 - \$700) = 211,250$

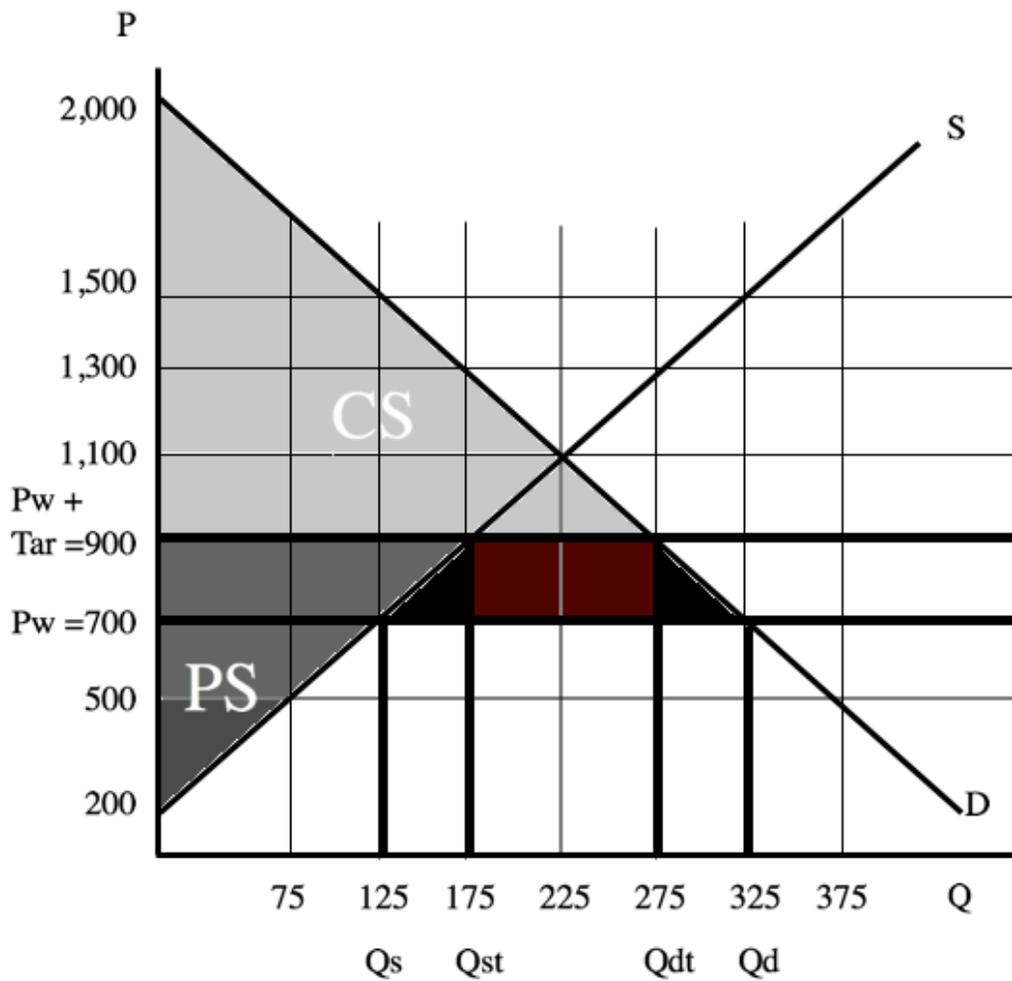
76. Domestic Producer Surplus =  $D = (1/2)(125)(\$700 - \$200) = 31,250$

77. Deadweight Loss = 0 – We only have a DWL if a tariff is imposed.

78. Tariff Revenue = 0 – We only have tariff revenue if a tariff is imposed.

79. Total Surplus =  $CS + PS + Revenue = 211,250 + 31,250 + 0 = 242,500$

## Protected Trade



80. US price per pound =  $\$700 + \$200 = \$900$  – The domestic market will pay the world price plus the amount of the tariff when there is protected trade.

81.  $Q_d$  with Tariff = 275

82.  $Q_s$  with Tariff = 175

83. Quantity Imported =  $275 - 175 = 100$

84. Domestic Consumer Surplus =  $(1/2)(275)(\$2,000 - \$900) = 151,250$

85. Domestic Producer Surplus =  $(1/2)(175)(\$900 - \$200) = 61,250$

86. DWL = Area of the two small black triangles

$$DWL = (1/2)(175 - 125)(\$900 - \$700) + (1/2)(325 - 275)(\$900 - \$700) = 10,000$$

87. Tariff Revenue = Area of red rectangle (not a triangle)

$$\text{Tariff Revenue} = (\text{Base})(\text{Height}) = (275 - 175)(\$900 - \$700) = \$20,000$$

88. Total Surplus = CS + PS + Revenue = 151,250 + 61,250 + 20,000 = 232,500 – Total surplus when changing from free trade to protected trade will decrease by the amount of the DWL. (242,500 – 10,000 = 232,500)