



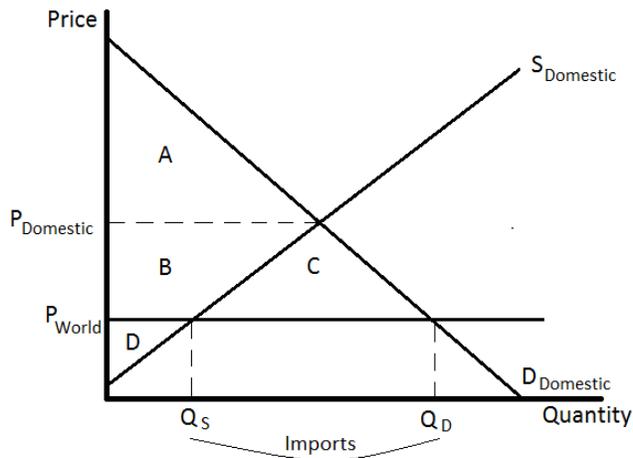
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ECON 102 Wooten – Exam 2 – Practice Exam Solutions

1.

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

2.



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**

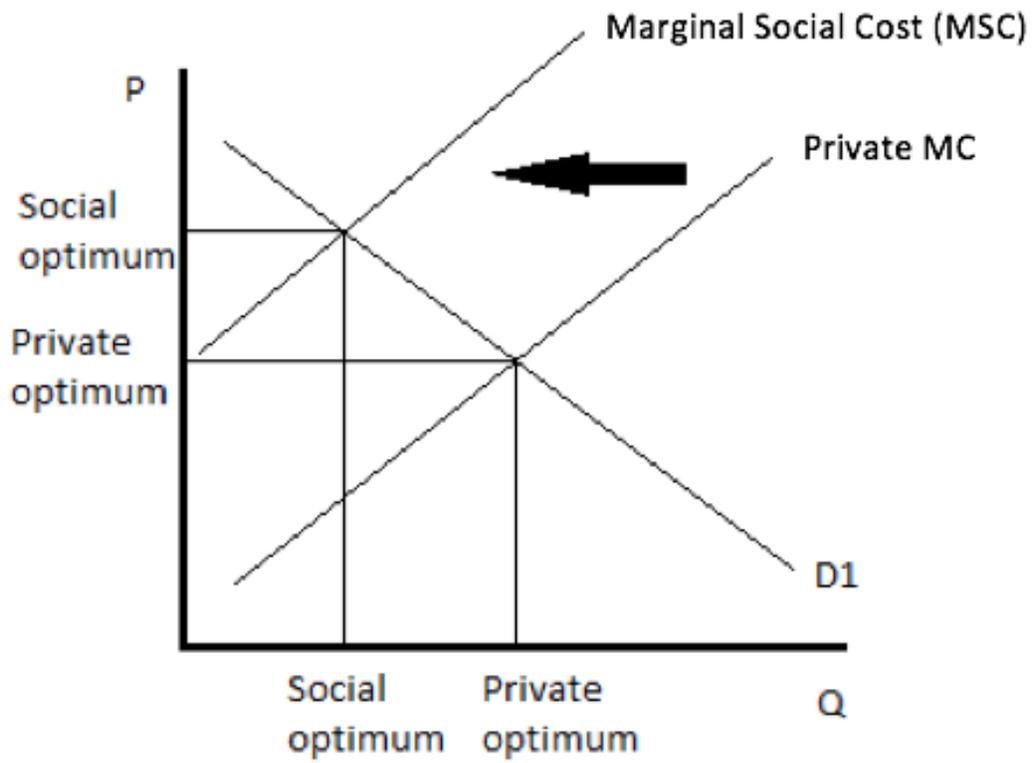
What area represents consumer surplus after trade? **A + B + C**

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.**

3. When the company has to internalize the externality, its supply curve will shift inward to the left. This will cause the quantity produced to decrease and the price of the good to increase.



4. 3 Gatorade and 2 Ice Cream

The first decision that you need to make is if you want your first purchase to be Gatorade or ice cream. You can use the equal marginal principle equation to determine which will give you more utility per dollar spent.

$$1^{\text{st}} \text{ Gatorade} = 40 / \$2 = 20$$

$$1^{\text{st}} \text{ ice cream} = 66 / \$3 = 22$$

Your first purchase will be ice cream because ice cream gives you 22 utility points per dollar spent and Gatorade only gives you 20 utility points per dollar spent. You have a total budget of \$12 and you just spent \$3 on ice cream so you still have \$9 to spend.

The next step of the problem is the spot where people most commonly make mistakes. You can now either buy your 1st Gatorade or your 2nd ice cream. Often people will jump to comparing the 2nd Gatorade to the 2nd ice cream; however, you have not purchased your 1st Gatorade yet so you need to decide if you want to purchase your 1st Gatorade or your second ice cream.

$$1^{\text{st}} \text{ Gatorade} = 40 / \$2 = 20$$

$$2^{\text{nd}} \text{ ice cream} = 42 / 3 = 14$$

You will purchase your 1st Gatorade because your 1st Gatorade gives you 20 utility points per dollar and your second ice cream only gives you 14 utility points per dollar. You just spent \$2 on Gatorade so you have \$7 left to spend ($\$9 - \$2 = \7).

$$2^{\text{nd}} \text{ Gatorade} = 32 / \$2 = 16$$

$$2^{\text{nd}} \text{ ice cream} = 42 / 3 = 14$$

In this step you are comparing purchasing your 2nd Gatorade to purchasing your 2nd ice cream because you have purchased 1 Gatorade and 1 ice cream at this point. Your 2nd Gatorade gives you more utility per dollar spent so you will purchase a 2nd Gatorade for \$2 so you have \$5 left to spend ($\$7 - \$2 = \$5$).

$$3^{\text{rd}} \text{ Gatorade} = 24 / \$2 = 12$$

$$2^{\text{nd}} \text{ ice cream} = 42 / 3 = 14$$

You purchased a 2nd ice cream because your second ice cream gave you more utility per dollar than your 3rd Gatorade. You just spent \$3 on ice cream so you have \$2 left to spend ($\$5 - \$3 = \2).

$$3^{\text{rd}} \text{ Gatorade} = 24 / \$2 = 12$$

$$3^{\text{rd}} \text{ ice cream} = 24 / \$3 = 8$$

You will use your last \$2 to purchase your 3rd Gatorade. Your third Gatorade gives you more utility per dollar than your 3rd ice cream. Additionally, you knew your last purchase would have to be on Gatorade because you only had \$2 left so you couldn't afford to purchase a 3rd ice cream anyways. You spent your last \$2 on your third Gatorade so you have now spent your entire budget.

You will purchase 3 Gatorade and 2 ice creams with your budget of \$12.

5. 56

$$MPL_4 = Q_4 - Q_3$$

$$MPL_4 = 156 - 100$$

$$MPL_4 = 56$$

6. The 6th worker

To solve this problem, we need to find the MPL for each worker. Then we look for the point where MPL begins to decline.

Units of Labor	Output	MPL
0	0	-
1	20	20
2	52	32
3	100	48
4	156	56
5	220	64
6	264	44
7	292	28
8	304	12

7. You will be optimizing consumption when the marginal utility per dollar for the last dollar spent on each good you purchase is equal.

$$\frac{(MU \text{ of good } A)}{(Price \text{ of good } A)} = \frac{(MU \text{ of good } B)}{(Price \text{ of good } B)} = \frac{(MU \text{ of good } C)}{(Price \text{ of good } C)}$$

8. We can see the world price is greater than the autarky (domestic) price, so we know this country will export the good. It is not possible to determine the exact quantity this country will export; however, we know the amount will be between points G and I.

9. 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.

$$\text{China OC Coal} = 16 / 96 = 0.167 \text{ silver}$$

$$\text{China OC Silver} = 96 / 16 = 6 \text{ coal}$$

$$\text{India OC coal} = 48 / 48 = 1 \text{ silver}$$

$$\text{India OC silver} = 48 / 48 = 1 \text{ coal}$$

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
Consumption without trade	8	48	8	40
Production with trade	0	96	48	0
Consumption with trade	24	48	24	48
Gains from trade	16	0	16	8

10. More firms will enter the market until economic profit falls to zero.

11. All of the following are examples of irrational consumer behavior

- **Misperceptions of opportunity costs** – It is important that opportunity costs are correctly accounted for
 - **People tend to ignore** – Non-monetary opportunity costs
 - **People tend mistakenly include** – Sunk costs
- **Overconfidence** – Individuals often overestimate their abilities
 - Ex: Non-professional investors who engage in speculative investing have dramatically worse rates of return than professional investors. Often, non-professional investors are exposed to significantly more risk than they realize.
- **Unrealistic expectations about future behavior** – People are overconfident about the future
 - Tends to lead to procrastination
 - Ex: Getting an annual gym membership in January that you only use a couple times.
- **Counting dollars unequally** – Individuals use “mental accounting” that leads them to value some dollars more than others even though all dollars have equal value
 - **Mental accounting** – Assigning dollars to different accounts so that some dollars are worth more than others
 - Ex: People tend to spend more money at the bar on payday
- **Loss aversion** – When individuals are overly sensitive to losing money
 - People who can’t move on from a loss
 - Ex: Making poor decisions because you are too afraid of losing what you have
- **Status quo bias** – A tendency to avoid making decisions
 - People tend to continue doing what they are doing
 - Ex: Sticking with a job you hate for decades
- **Taking sunk costs into account** – Sunk costs are irrelevant to future decision making
 - Always ignore sunk costs when making decisions about future actions

12. B

13. D

14. C

15. A

16. 4 utils

Ice Cream			
Quantity	Total Utility	Marginal Utility	Marginal Utility per Dollar
0	0	-	
1	120	120	
2	200	80	
3	260	60	
4	280	20	
5	284	4	
6	284	0	

Gatorade			
Quantity	Total Utility	Marginal Utility	Marginal Utility per Dollar
0	0	-	
1	400	400	
2	800	400	
3	1,000	200	
4	1,100	100	
5	1,150	50	
6	1,160	10	

17. 200 utils

18. 3 Gatorade and 3 ice cream

Ice Cream			
Quantity	Total Utility	Marginal Utility	Marginal Utility per Dollar
0	0	-	
1	120	120	30
2	200	80	20
3	260	60	15
4	280	20	5
5	284	4	1
6	284	0	0

Gatorade			
Quantity	Total Utility	Marginal Utility	Marginal Utility per Dollar
0	0	-	
1	400	400	40
2	800	400	40
3	1,000	200	20
4	1,100	100	10
5	1,150	50	5
6	1,160	10	1

19. 6 Gatorade and 5 ice cream

Ice Cream			
Quantity	Total Utility	Marginal Utility	Marginal Utility per Dollar
0	0	-	
1	120	120	30
2	200	80	20
3	260	60	15
4	280	20	5
5	284	4	1
6	284	0	0

Gatorade			
Quantity	Total Utility	Marginal Utility	Marginal Utility per Dollar
0	0	-	
1	400	400	40
2	800	400	40
3	1,000	200	20
4	1,100	100	10
5	1,150	50	5
6	1,160	10	1

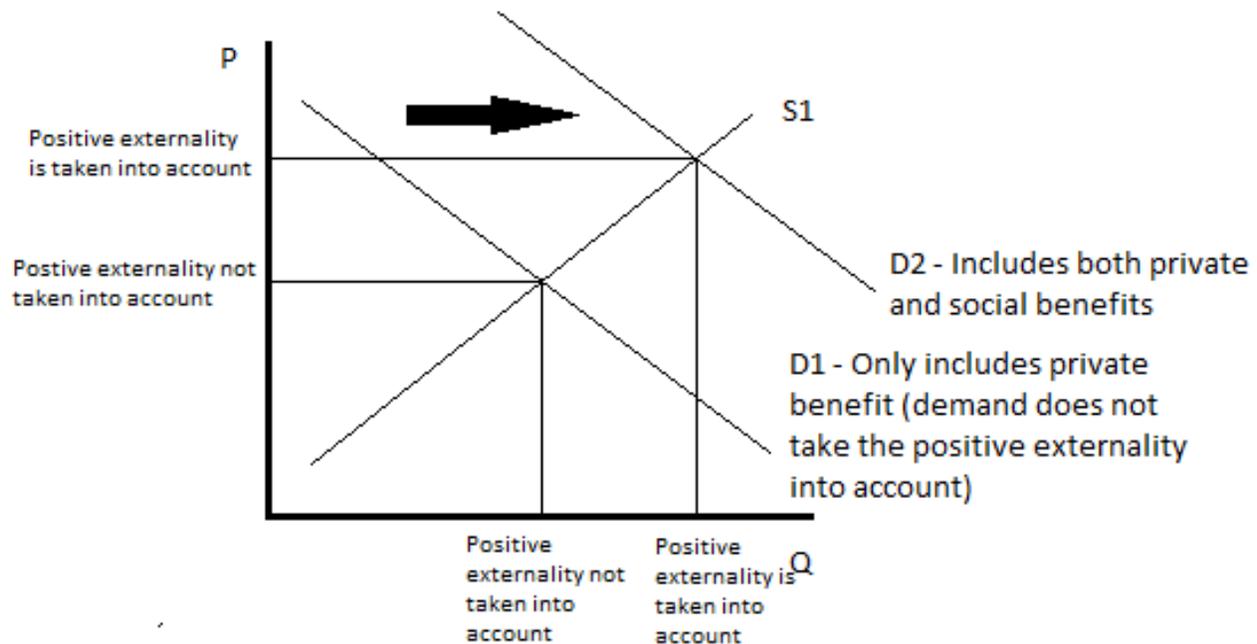
20. We no longer know the price of Gatorade and ice cream; however, we do know the marginal utility of four units for each.

MU 4th ice cream = 20

MU 4th Gatorade = 100

Gatorade must cost 5 times as much as ice cream. If the price of Gatorade is 5 times more than the price of ice cream, the MU per dollar will be equal for Gatorade and ice cream.

21.



22. D – It is the MC curve at and above the intersection with the average variable cost curve

23. C – Increase output because $MR > MC$. Remember that $P = MR$ in perfect competition.

24. D – Shutdown because $P < AVC$. When $P < AVC$, the firm should stop all production.

25. More likely because the product is more useful

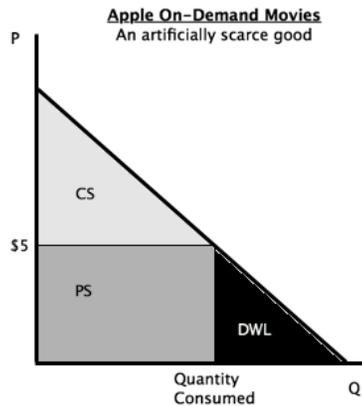
26. 0.33 washed pool decks

OC of cleaning pools = Loss in washed decks / Gain in cleaned pools

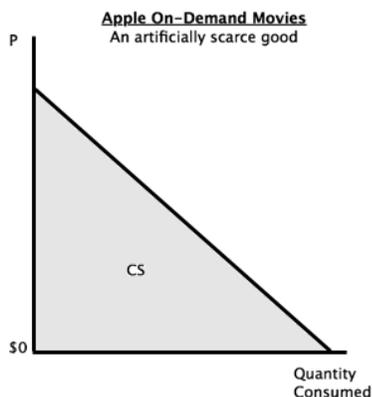
OC of cleaning pools = $2 / 6 = 0.33$ washed pool decks

27. B – Mexico has an absolute advantage in producing one ton of corn. An absolute advantage means you have the lowest resource cost. We don't have enough information to determine comparative advantage.

28. \$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

29. A – Review the section on international trade in the review packet for a detailed explanation of this graph.

30. B + D + H

31. A + B + D + H

32. A + B + C + D + E + F + G + H

33. C + E + F + G

34. F

35. E + G

36. \$54,000

$$\text{Explicit costs} = \$33,000 + \$6,000 + \$57,000 = \$96,000$$

$$\text{Accounting profit} = \$150,000 - \$96,000 = \$54,000$$

37. \$47,000

$$\text{Implicit costs} = \$5,000 + \$2,000 = \$7,000$$

$$\text{Economic profit} = \$150,000 - \$103,000 = \$47,000$$

38. \$7 – In perfect competition $MR = P$. The firm will produce where $MR = MC$. A firm will be earning zero profit when the ATC is tangent to the demand curve at the point where the demand curve intersects MC because this is the point where $P = ATC$.

39. When price is less than \$7 because ATC will be greater than price at any level of output if price is less than \$7.

40. We can see the world price is less than the autarky (domestic) price, so we know the country will import the good. We cannot determine the exact quantity that will be imported; however, know it will be between points L and N.

41. \$560

$$\text{MC 4}^{\text{th}} \text{ unit} = \$800 - \$240 = \$560$$

42. \$80

$$\text{ATC 3}^{\text{rd}} \text{ units} = \$240 / 3 = \$80$$

43.

Q	TC	TVC	TFC	ATC	AVC	AFC	MC
0	100	0	100	-	-	-	-
1	110	10	100	110	10	100	10
2	130	30	100	65	15	50	20
3	160	60	100	53.3	20	33.3	30
4	220	120	100	55	30	25	60
5	300	200	100	60	40	20	80

When Q=2:

$$TVC = TC - TFC = 130 - 100 = 30$$

$$TFC = 100$$

*TFC will be 100 in all rows because fixed costs stay constant by definition

$$ATC = TC / Q = 130 / 2 = 65$$

$$AVC = TVC / Q = 30 / 2 = 15$$

$$AFC = TFC / Q = 100 / 2 = 50$$

$$MC = \text{Change in TC} = 130 - 110 = 20$$

When Q=3:

$$TC = TVC + TFC = 60 + 100 = 160$$

$$TFC = 100$$

$$ATC = TC / Q = 160 / 3 = 53.3$$

$$AVC = TVC / Q = 60 / 3 = 20$$

$$AFC = TFC / Q = 100 / 3 = 33.3$$

$$MC = \text{Change in TC} = 160 - 130 = 30$$

When Q=4:

$$\text{TVC} = \text{MC when } Q=4 + \text{TVC when } Q=3 = 60 + 60 = 120$$

$$\text{TC} = \text{TVC} + \text{TFC} = 120 + 100 = 220$$

$$\text{TFC} = 100$$

$$\text{ATC} = \text{TC} / Q = 220 / 4 = 55$$

$$\text{AVC} = \text{TVC} / Q = 120 / 4 = 30$$

$$\text{AFC} = \text{TFC} / Q = 100 / 4 = 25$$

When Q=5:

$$\text{TVC} = \text{AVC} \times Q = 40 \times 5 = 200$$

$$\text{TC} = \text{TVC} + \text{TFC} = 200 + 100 = 300$$

$$\text{TFC} = 100$$

$$\text{ATC} = \text{TC} / Q = 300 / 5 = 60$$

$$\text{AFC} = \text{TFC} / Q = 100 / 5 = 20$$

$$\text{MC} = \text{Change in TC} = 300 - 220 = 80$$

44. 10

$$\text{Marginal utility 6}^{\text{th}} \text{ beat} = 110 - 100 = 10$$

45. 15

For this problem you need to use the equation the following equation to solve for the marginal utility of ice cream.

$$\frac{(MU \text{ of good A})}{(\text{Price of good A})} = \frac{(MU \text{ of good B})}{(\text{Price of good B})}$$

$$\frac{10}{\$2} = \frac{MU \text{ ice cream}}{\$3}$$

MU ice cream = 15

46. Less X, More Y

We are not currently optimizing consumption because the bang for the buck for X and Y are not equal. We should buy less of good X and more of good Y until the marginal utility per dollar is equal for the two goods.

Bang for the buck X = $10 / \$5 = 2$ utils per dollar

Band for the buck Y = $8 / \$2 = 4$ utils per dollar

47. More X, Less Y

We are not currently optimizing consumption because the bang for the buck for X and Y are not equal. We should buy more of good X and less of good Y until the marginal utility per dollar is equal for the two goods.

Bang for the buck X = $4 / \$10 = 0.4$ utils per dollar spent

Bang for the buck Y = $5 / \$25 = 0.2$ utils per dollar spent

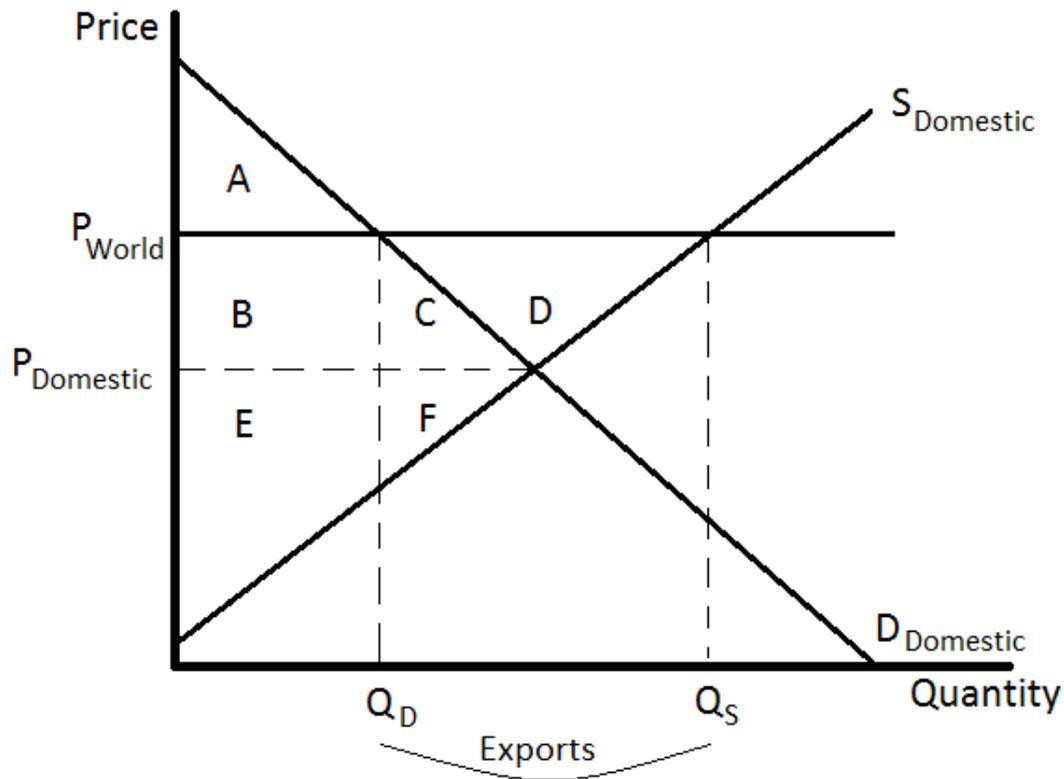
48. No change in consumption

We are currently optimizing consumption because the bang for the buck for X and Y are equal.

Bang for the buck X = $150 / \$75 = 2$ utils per dollar

Bang for the buck Y = $250 / \$125 = 2$ utils per dollar

49.



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.**

50. B – Germany will export this good to foreign countries

51. The endowment effect because he is placing a greater value on the car simply because he owns it.

52. The increased price of football tickets will cause us to consume fewer football tickets. However, it is ambiguous if we will consume more or less tacos.

Income effect – Since the price of football tickets has increased, it is as if your income decreased. The increased price of football tickets has made you poorer so you will consume less of both tacos and football tickets.

Income effect = Less tacos and Less football tickets

Substitution effect – The increased price of the football tickets has caused tacos to become relatively cheaper than football tickets. This means you will consume more tacos and less football tickets.

Substitution effect = More tacos and Less football tickets

We can see that the increased price of football tickets will cause us to consume fewer football tickets. However, it is ambiguous if we will consume more or less tacos.

53. C – When diminishing marginal product begins

54. A – Perfectly elastic. Make sure to pay close attention to whether you are asked about an individual firm or the entire industry.

55. Import tariffs increase domestic producer surplus

56. Sunk costs should always be ignored.

57. 1) Price must be greater than AVC. If price is less than AVC, the firm will shutdown and produce 0 units. The minimum point of the AVC curve is referred to as the shutdown price for a firm.

2) The marginal cost curve needs to be at the point where it is increasing.

58. D – The diminishing product of labor

59. A – Price

60. The first step is to make a complete table where you find the values for TC, MC, and AVC using the information provided in the problem. You can also find ATC and AFC, but you don't actually need ATC and AFC to solve the problem.

Output	VC	FC	TC	MC	AVC	ATC	AFC
0	\$0	\$90	\$90	-	-	-	-
1	\$210	\$90	\$300	\$210	\$210	\$300	\$90
2	\$360	\$90	\$450	\$150	\$180	\$225	\$45
3	\$450	\$90	\$540	\$90	\$150	\$180	\$30
4	\$630	\$90	\$720	\$180	\$158	\$180	\$23
5	\$840	\$90	\$930	\$210	\$168	\$186	\$18
6	\$1,170	\$90	\$1,260	\$330	\$195	\$210	\$15

We are dealing with a perfectly competitive firm so we know that the market price is also the marginal revenue for the firm. The firm wants to produce at the point where $MR = MC$. If we don't have a point where $MR = MC$, we want to produce as many units as possible without letting MR fall below MC .

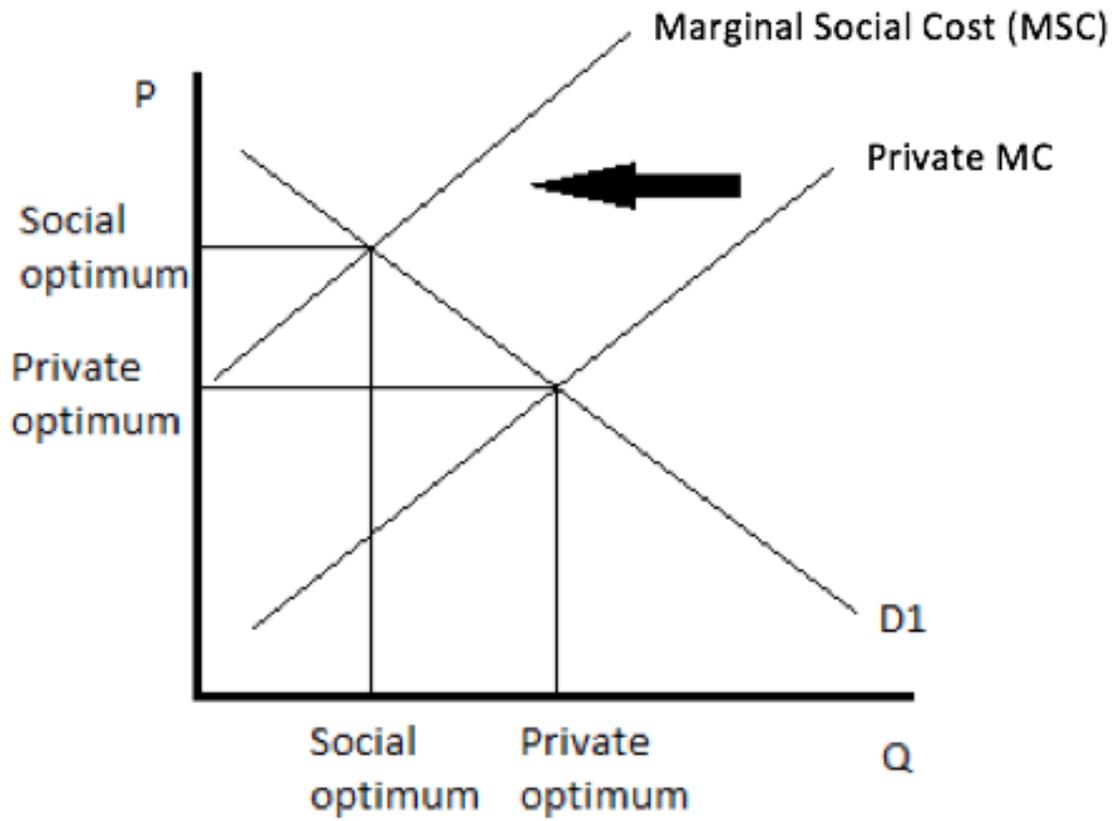
The first step is to determine the profit maximizing level of output for each price. Then we need to make sure the price is greater than AVC at that level of output. If AVC is greater than the price at the profit maximizing level of output, the firm should shut down and produce 0 units.

At a price of \$95, the profit maximizing level of output would be 3 units. However, AVC for producing 3 units is \$150, which is greater than the price of \$95. So, the firm should produce 0 units, and its total cost will be equal to its fixed costs. A firm's losses will never be less than total fixed costs because the firm can always shut down and only incur the fixed costs.

At each of the other price points, price will be greater than AVC at the profit maximizing level of output. In this case, we find total revenue by multiplying price by the number of units produced. We then take the difference between total revenue and total cost to find profit.

Market Price	Profit maximizing level of output	Total Revenue	Total Cost	Profit
\$95	0	\$0	\$90	-\$90
\$168	3	\$504	\$540	-\$36
\$186	4	\$744	\$720	\$24
\$225	5	\$1,125	\$930	\$195
\$255	5	\$1,275	\$930	\$345

61. The socially optimal quantity is less than the market quantity; however, the socially optimal price is greater than the market price.



62. C – The demand curve for the entire industry is downward sloping. Make sure to pay close attention to whether you are asked about an individual firm or the entire industry.

63. 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.