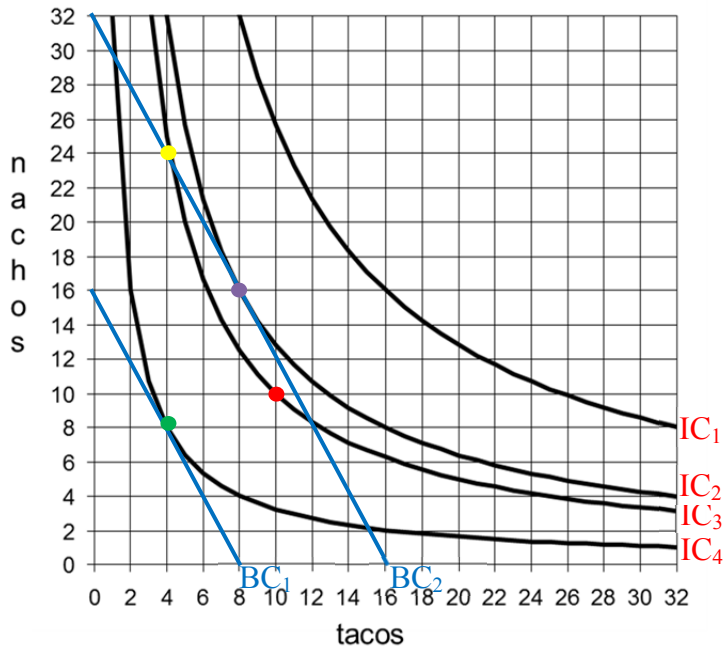
1) The answer to the first question is A. This is the solution guide for Form A.

The following graph will be referenced for the next set of questions:



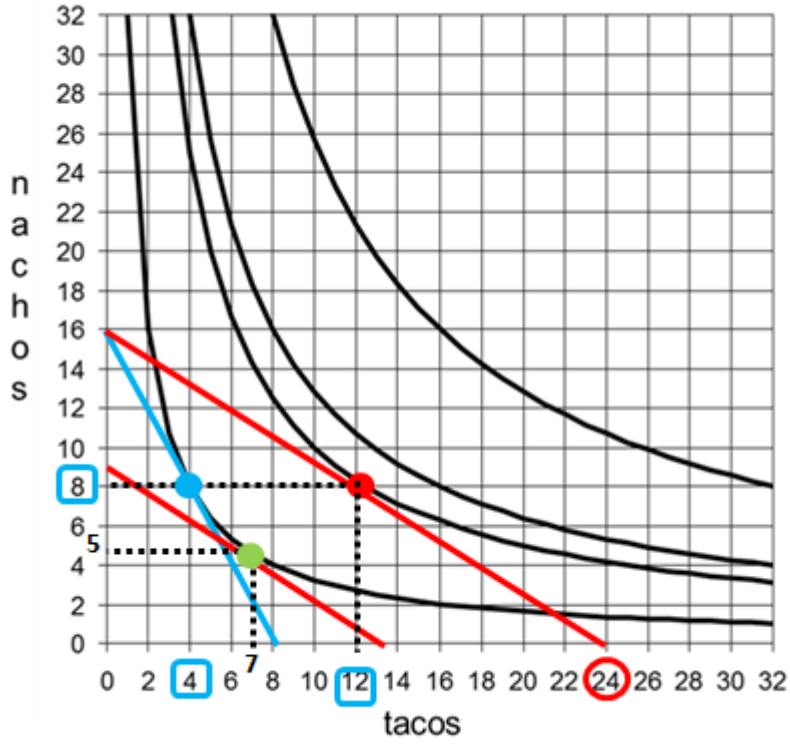
2) This question asks you to identify a consumption bundle that is on the same indifference curve as (10 tacos, 10 nachos). 10 tacos and 10 nachos is a point on indifference curve IC_2 in the above chart (the red dot). The only consumption bundle among the options that is on the same indifference curve is (4 tacos, 24 nachos), the yellow dot, which is answer E. The answer is E.

3) If Wildcat has an income of \$48, and P^{Nacho}=\$3, and P^{tacos}=\$6, then we have enough information to draw the budget constraint. If Wildcat spends all his income on Nachos, he can afford 16 (Income/ P^{Nacho}=48/3=16). Similarly if Wildcat spends all his income on Tacos, he can afford 8. By connecting those two points, we get the budget constraint, BC_1. The opportunity cost of one more taco in terms of nachos is equal to the slope of the budget constraint, which is 2. The answer is C.

4) Using the budget constraint from the previous question (BC_1), we can see that at this income and prices of tacos and nachos, the optimal consumption bundle for Wildcat is (4 tacos, 8 nachos). This is the green dot in the above chart. At this point, Wildcat is consuming on his budget constraint and at the point where the opportunity cost equals the marginal rate of substitution. The answer is A.

5) If Wildcat's income rises to \$96, we need to construct the new budget constraint. Here income has doubled, but prices have stayed the same. Now if Wildcat spends all his income on Nachos, he can afford 32 (Income/ P^{Nacho}=96/3=32). Similarly if Wildcat spends all his income on Tacos, he can afford 16. By connecting those two points, we get the new budget constraint, BC_2. We can see that the new optimal consumption bundle for Wildcat is (8 tacos, 16 nachos). This is the purple dot in the above chart. Wildcat's consumption of nachos has increased from 8 to 16, therefore the **change** in Wildcat's demand for nachos from the change in income equals 8. The answer is E.

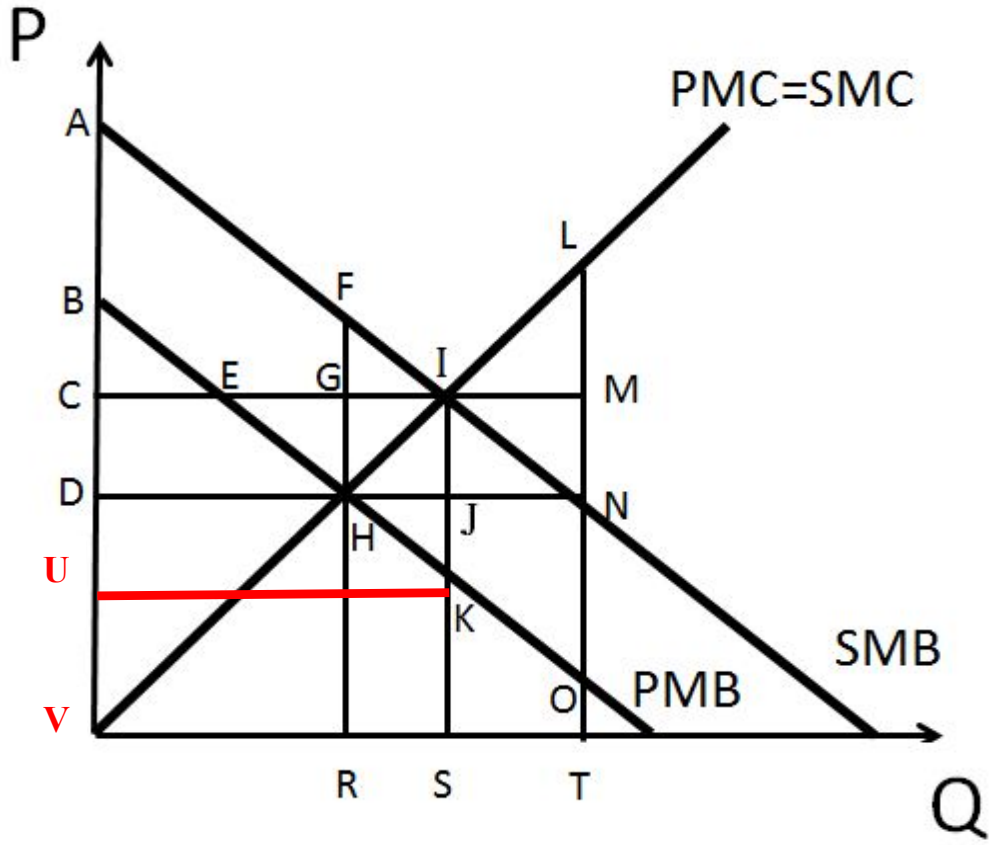
6)



Wildcat's budget constraint with an income of $48 and the initial prices P^{Nacho}=$3 and that P^{tacos}=$6, is shown as the blue line above. Equilibrium is at the blue point with 4 tacos and 8 nachos. When the price of tacos decreases from $6 to $2 Wildcat's budget constraint shifts up to the right from blue line to red line. In order to calculate the **substitution** effect of the price change, draw a parallel line to the new constraint in red. Notice that the intersection of the parallel line and utility curve is at the green point with 7 tacos and 5 nachos. See that the substitution effect of the price change increases the demand for tacos by 7-4=3 units. Thus the answer is C.

7) In the graph above, **income effect** is the difference between red point and green point. Since the question is asking for the income effect for nachos, it is 8-5=3. So the answer is C.

8) Substitution effect for nachos is the difference between green point and blue point, which is 5-8=-3 and income effect is the difference between red point and green point, which is 8-5=3. So they are in opposite direction. Thus the answer is B.



9) Since PMC=SMC, there is no external cost, thus no negative externalities. SMB curve is above PMB curve, so there is a per unit external benefit equals the vertical distance between the two curves. The answer is C.

10) Free market quantity is at R, where PMB crosses PMC. Social efficient quantity is S, where SMB crosses SMC. The policy that would increase quantity from R to S would be a subsidy of IK. The answer is A.

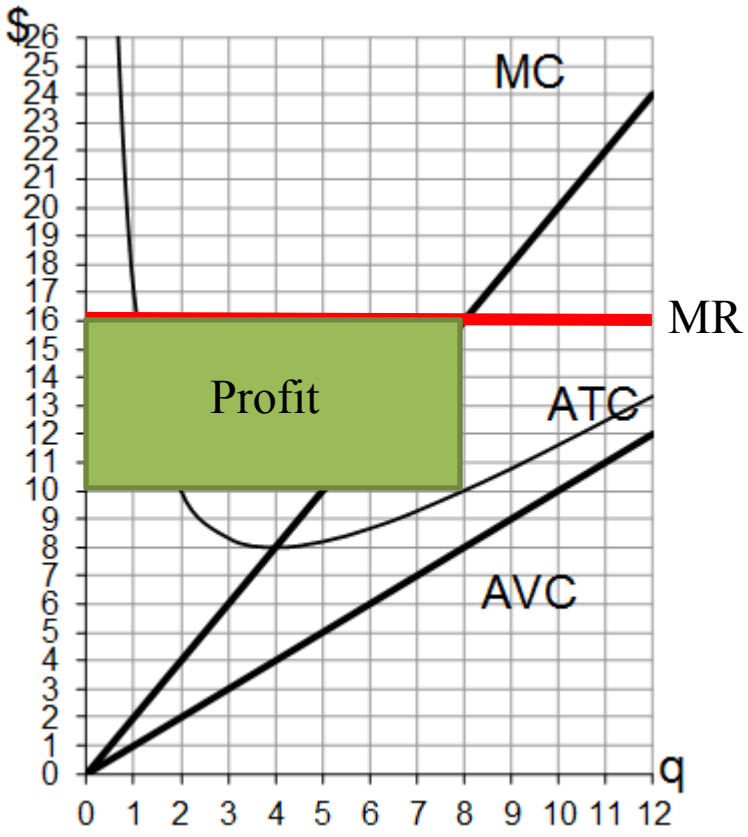
11) Under free market, CS is BDH, while under subsidy of IK, CS is BUK. The change in CS is thus +DHKU. Similarly, under free market, PS is DHV, while under subsidy, PS is CIV. The change in PS is thus +CIHD. Under free market, external benefit is AFHB (which is a per unit external benefit of AB times quantity R). Under subsidy, external benefit is AIKB (which is a per unit external benefit of AB times quantity S). The change in external benefit is thus +FIKH. Here government pays a per unit subsidy of IK for quantity S, thus government pays CIKU. The change in government surplus is –CIKU. Add them up, change in total surplus = +DHKU+CIHD+FIKH-CIKU = FHI. The answer is D.

12) Let's consider each statement individually:
(i) TRUE. This is to ensure that all firms have the same cost curves. (I.e., a firm is more costly when it has worse technology.) This is necessary because all firms will then have the same profit-maximizing price (the minimum ATC), which gives the price of the LR supply curve.
(ii) TRUE. There cannot be barriers to entry because in the LR, the industry's supply adjusts to changing demand by changing the number of firms, not changing the amount of production within each firm.
(iii) FALSE. The ATC does not need to be constant over the entire range of Q. An easy counterexample of this will be the U-shaped ATC curves that we use to represent average total cost. The U-shape curves

have a portion that is increasing returns to scale, a point that is constant return to scale, and a portion that is decreasing returns to scale. Therefore, it is not necessary that ATC be constant over the entire range of Q.
(iv) TRUE. This is similar to (i). This ensures that cost curves of firms do not change as the number of firms in the industry increases.
(v) FALSE. The shape of the demand curve has no effect on the shape of the supply curve.
Thus the answer is C.

13) To find fixed cost, we first choose a quantity where we can read the ATC and AVC. Remember that because Total Cost = Fixed Cost + Variable Cost, we also have Average Total Cost = Average Fixed Cost + Average Variable Cost. Since our goal is to find fixed cost, as long as we can get average fixed cost, we can use the fact that AFC=FC/Q. We can find average fixed cost by picking a quantity and finding the ATC and AVC at that quantity. As an example, let's pick Q=4. At Q=4, AVC=4 and ATC=8. This means that AFC=ATC-AVC=8-4=4. Knowing that AFC=4, we can plug that back into our formula: AFC=FC/Q. We get: 4=FC/4, or 4x4=FC=16. Therefore, fixed cost is equal to 16, and the answer is D.

14) We can find the firm's profit by looking at the graph for the individual firm. Given that the price is $16, we use the fact that P=MR for a competitive firm to plot the marginal revenue onto the graph.



Then, we use the fact that at the quantity that MC=MR, the firm is maximizing its profit. We see that MC=MR at a quantity of 8. To find profit, we need to find out what the cost is when Q=8. This is given by the ATC curve, which at Q=8, we have ATC=10. If it cost $10 to make each unit of this good, and the firm can sell it for $16, this means they are making a $6 profit per unit. To find the total profit, we simply multiply the profit per unit of $6 with the quantity that were made, Q=8. We get that $48 is the

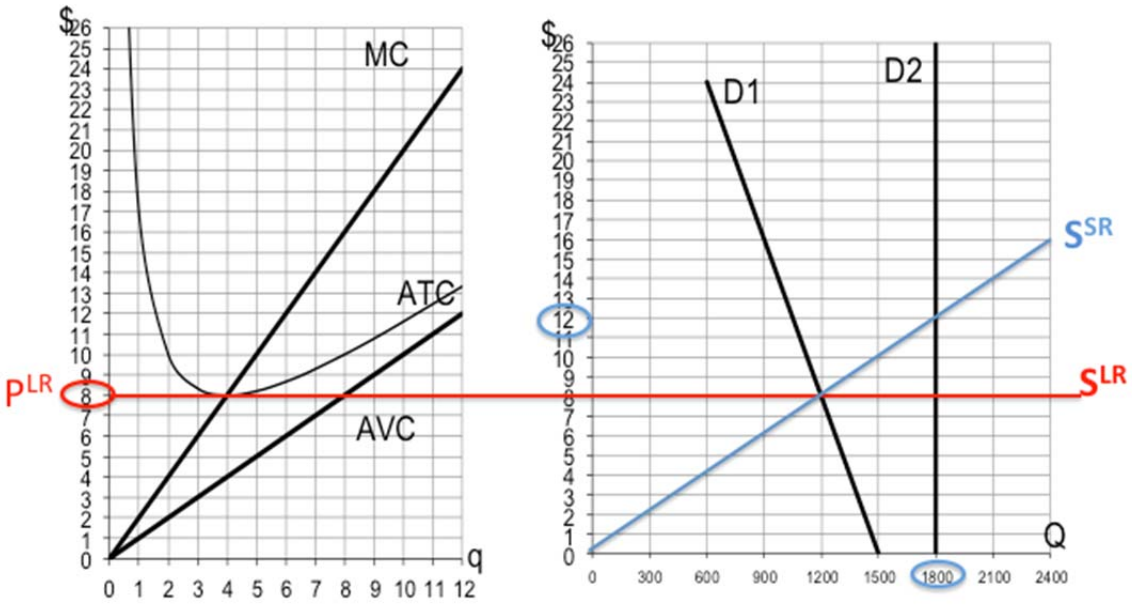
total profit, represented by the green area above. The answer is D.

15) In the long run equilibrium, P^{LR} = Min ATC. Remember that, Profits = q[P-ATC(q)]. If P > ATC(q), the firms have positive profits and it stimulates new firms into the market up to the point where profits equal zero. If P < ATC(q), firms have negative profits and some will leave the markets. Also, the firm chooses the level of production q such that P = MC(q). The unique long run equilibrium occurs when P = ATC(q) = MC(q); that is, P^{LR} = 8. The answer is B.

16) The long run equilibrium q is such that ATC(q) = 8 (= P^{LR}). Hence, q = 4. The answer is B.

17) In the long run, industry supply is perfectly elastic at P^{LR} = 8; that is, it is a straight line at P^{LR} = 8. Demand and industry supply equals at Q = 1200. The answer is C.

18) The total industry production is Q = 1200 and each firm produces the same level q = 4. So, it is necessary 300 (= 1200 ÷ 4) firms, each producing 4 units, to produce 1200. The answer is E.



19) In the short run the number of firms is fixed. We are starting in long-run equilibrium at D1, so from the previous question, we know that there are 300 firms. Each firm's short-run supply curve is the marginal cost curve above AVC (in this case the entire MC curve). From this we can see the quantity that each firm will supply (in the short run) for a given price. Since there are 300 firms (each with the same short-run supply) we can multiply the quantity supplied by each firm at a given price by 300 to get the short run industry supply curve, which is indicated (in blue) on the graph above. This short-run industry supply curve intersects D2 at a price of 12, so in the short-run the equilibrium price is 12. The answer is B.

20) The stadium will be social efficient to build only if the value of everyone in the economy exceeds the cost of the project. We add up the reservation value (=willingness to pay) of everyone in the economy (D1-D4), and get

that society has a whole values the road at $6. Therefore, if the stadium cost $6 or less, then it is socially efficient to build the road – as the value of the road exceeds that of the cost. The answer is D.

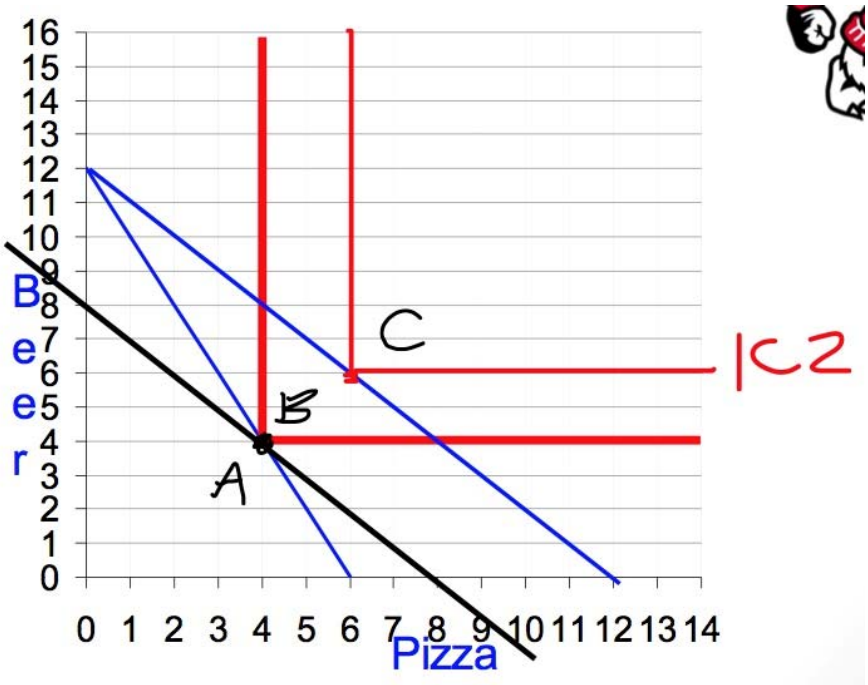
21) We can see that in one hour, Minnesota could make 10 times more Post-its than cheese whereas Wisconsin could only make 1.25. On the other hand, in an hour, Wisconsin could make 0.8 times more cheese than Post-its and Minnesota could only make 0.1. So Minnesota should focus on Post-its and Wisconsin on cheese. The answer is C.

22) First we can eliminate all the options that say indifference curve because we are not talking about consumers. The opportunity cost for Minnesota to make Post-its would be 100/1000 = 0.1 lbs of cheese, because in an hour, it can produce either 1000 Post-its or 100 lbs of cheese. That means that if Minnesota spends the hour making the Post-its, it is letting go 0.1 lbs of cheese for each Post-it it produces. The answer is D.

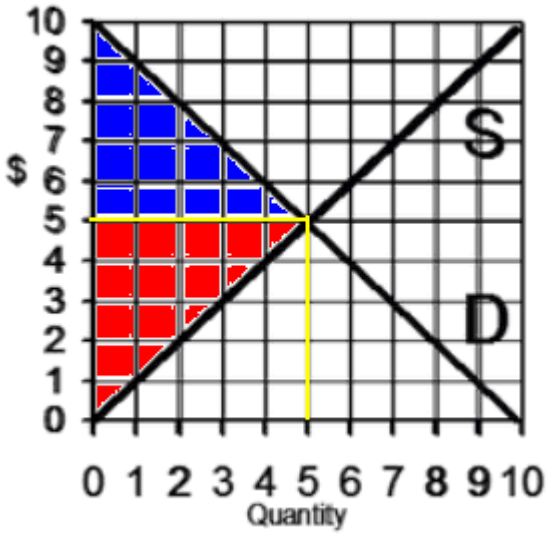
23) (i) is true because given one hour, Minnesota can produce more of both goods. So it has the absolute advantage in both. (ii) is false because we do not have information about the production of cost functions to determine whether or not there are increasing returns. We only have 2 sets of points, so we cannot say what happens when we increase production. (iii) is true because they have different opportunity costs, so they can benefit from having different comparative advantages. The answer is C.

24) Preferences where goods must be consumed in "sets" are called perfect complements. The idea is that you must always consume some amount of a good with some amount of another. Preferences between two goods that are of the perfect substitutes type means that some amount of a good can perfectly substitute for some amount of another good. Knowing that, we see that the answer is C.

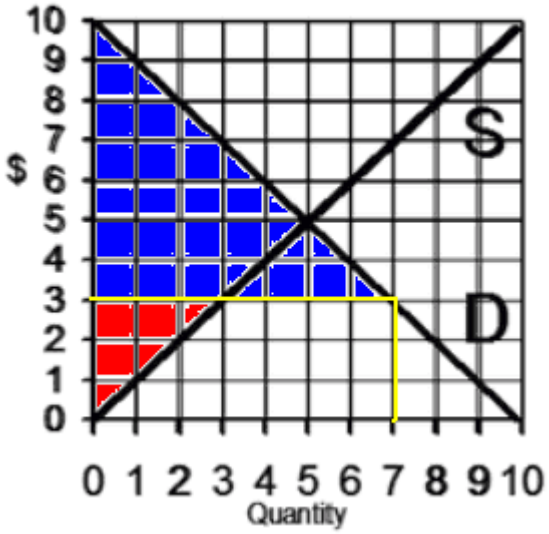
25) As we saw in class, perfect complement preferences has no substitution effect (note the fact that 2 slices of bacon and 1 egg makes a meal, changes nothing in this case). The answer is C.



Before trade:



After trade:

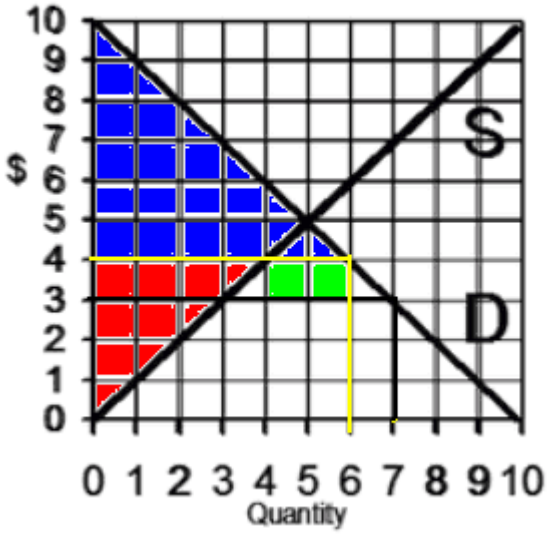


Before trade, we are in normal equilibrium with Q=P=5. After trade, firms must accept $3 for a widget, so P=3, but Q=7 from trade (though only 3 widgets are supplied by local firms). Blue is consumer surplus, red is producer surplus.

26) The blue and red areas make up the total surplus, and we can see from the graph they grow by that blue triangle, which has base 4 and height 2 so area 4*2/2 = 4. So total surplus grows by 4. The answer is C.

27) The red area is producer surplus. In the first graph, PS = 12.5. In the second, it is 4.5. So, the change is 4.5-12.5 = -8. The answer is D.

Tariff:



Same as before, but green is tariff revenue.

28) Two widgets will be imported, and the government will collect $1 per imported widget, making revenue from tariffs $2. The answer is C.

29) Two widgets are imported with the $1 tariff, so as along as Q is the same between two systems the prices and surpluses will end up the same, making a quota of 2 the same as a $1 tariff. The answer is B.

30.) Notice that adding the amount of the tariff to the world price gives a price of $5 per widget. At this price, domestic producers are will to supply everything to the domestic market, so econland will not import any widgets from abroad. (i.e. we are simply back at the competitive equilibrium allocation/autarky) Since nothing is being imported the government won't collect anything from the tariff. The answer is A.

31.) If the world price fell to $0, consumers would demand 10 widgets, and domestic producers would not be willing to supply any of them. As a result, producer surplus would be 0 and consumer surplus would be 50. This means consumer surplus would increase by 25.5 and producer surplus would decrease by only 4.5. the increase in consumer surplus is larger than the decrease in producer surplus. The answer is B.

32.) First, we are not told anything about Goldy's indifference curves, only that he consumes pizza and education. Because of this, we can't say for sure that he will increase consumption of pizza or education after the change in the university program. However, we can make a conclusion about whether or not Goldy is better off given that he changes his consumption bundle after the change in the program. The idea is that if after the constraint is lifted, goldy chooses a different consumption bundle then he is better off because he is allowed to spend his income the he chooses. The answer is C.

33) "Tragedy of the Commons" is associated with common resources, i.e. the goods which are rivalrous in consumption and non-excludable: One person's use of the common resource reduces other people's ability to use it. Hence the people tend to overuse the good, believing that others may do so as well. The fact that a clean shared kitchen is rivalrous and nonexcludable makes people sharing the kitchen not to use it optimally, as each thinks others will use up the clean pots and dishes. As a result we will end up with a dirty shared kitchen, just like the tragedy of the commons predicts. The answer is D.

34) (i) is true: Just as we used IRS to explain why Robinson and his twin trade (both with identical IRS technology), countries with similar technologies (like US and Canada) will trade based on IRS. (ii) is true: With IRS and large fixed costs it might only be profitable to produce if the quantity is higher than certain threshold (recall with IRS ATC are decreasing). If countries do not trade and produce only small amounts for domestic consumption the threshold might not be meet and it wont be profitable to produce. (iii) is false as trade between US and China can be better explained as a result of differences in comparative advantage (China with comparative advantage in low-skill labor). (i) and (ii) are true, (iii) is false and the Answer is B.

35) (i) wrong, cap and trade has tradable allowances.

(iv) United states adopted SO2 cap and trade policies.

Which of the following statements regarding "cap and trade" policies are true? (i) It works like a "command and control" style policy because it imposes a cap at each individual plant, rather than a cap of total emissions across plants. (ii) It has a similar economic impact similar to a tax on emissions, with the difference being that with a tax, the revenue goes to the government, but with "cap and trade," the equivalent of tax revenue goes to whomever is allocated emission allowances. (iii) It has been adopted in the European Union as part of the carbon emissions policy. (iv) It has been adopted in the United States as part of the carbon emissions policy. The answer is C.