These are solutions to Fall 2013's Econ 1101 Midterm 1. No guarantees are made that this guide is error free, so please consult your TA or instructor if anything looks wrong.

1) If the price of sweeteners, a complementary good to coffee, decreases. This causes a shift in the demand curve (since the price of a related good changes). Demand will shift up and to the right, while the supply curve is unchanged. This results in an increase in the equilibrium price and quantity of coffee. The answer is A.

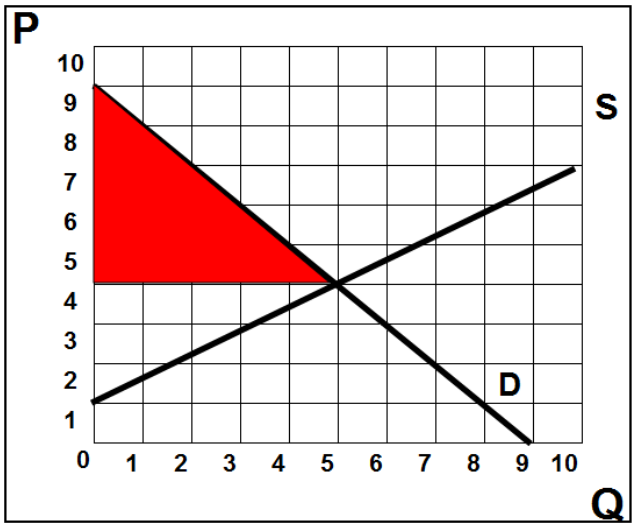
2) Incomes decrease. Income is a determinate of demand, so this causes the demand curve to shift. We are told to assume that coffee is an inferior good, so this means that a decrease in income will cause the demand curve to shift up and to the right (the supply curve is again unchanged). This results in an increase in the equilibrium price and quantity of coffee. The answer is A.

3) Two things happen, (i) technology improves the efficiency of harvesting coffee and (ii) temperature falls and more people buy coffee. The first event (technological improvement) causes the supply curve to shift. Improved technology means that it is cheaper to produce coffee which will result in the supply curve shifting out to the right. The second event (temperature falls and more people buy coffee) is a seasonal change in consumer tastes that causes the demand curve to shift up and to the left. Both the first and second events result in the equilibrium quantity of coffee increasing. However, the supply shift will put downward pressure on price and the demand shift will result in upward pressure on price. Therefore the net effect on price is ambiguous. The answer is C.

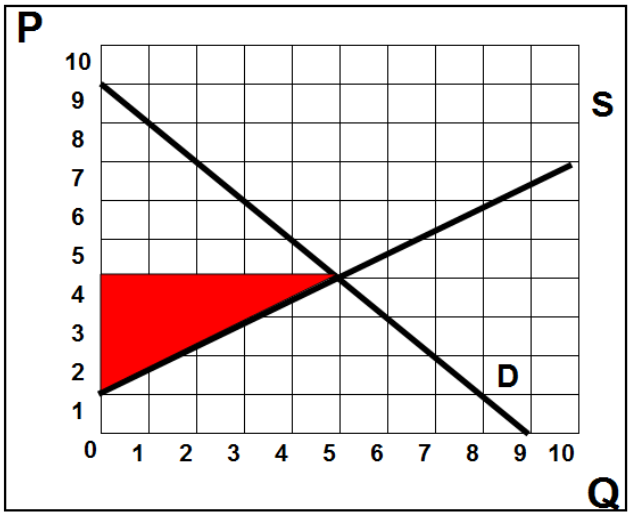
4) Income increases by 31% and the quantity demanded of spam increases by 32%. This tells us nothing about the price elasticity of spam, so we can rule out answers a-c. For a normal good, if income increases quantity demanded increases, which is what we are observing here with spam. Therefore spam is a normal good. The answer is D.

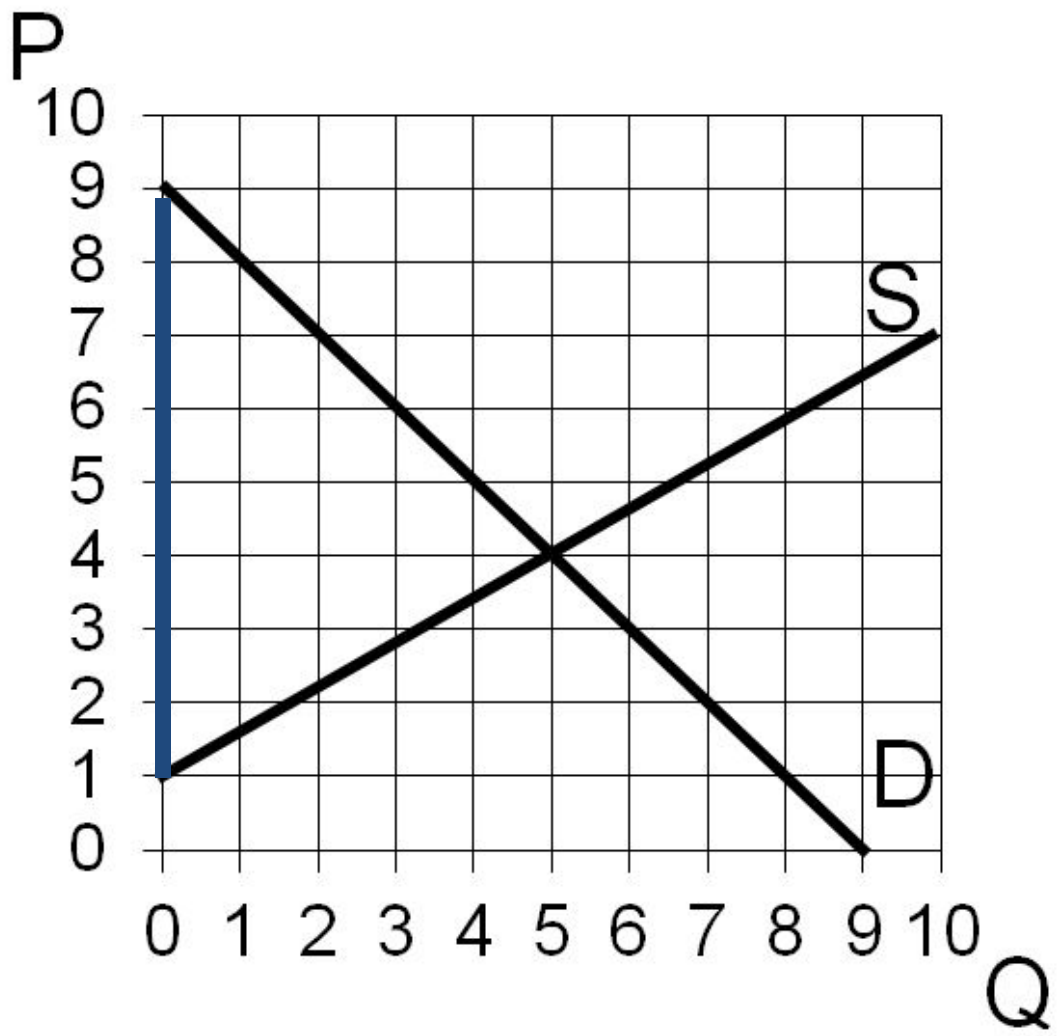
5) Since quantity demanded of widgets stayed the same, one of the curves will be perfectly inelastic. It cannot be the demand curve that is perfectly inelastic, however, since income increases and will cause the demand curve to shift to the right. This means that the supply is perfectly inelastic. The demand, therefore, just needs to be something that is not perfectly inelastic, and so the demand being unit elastic is a possible case. The answer is A.

6) Consumer surplus is the red area in the following graph. It is 0.5*5*5=12.5. The answer is C.



7) Producer surplus is the red area in the following graph. It is 0.5*3*5=7.5. The answer is A.



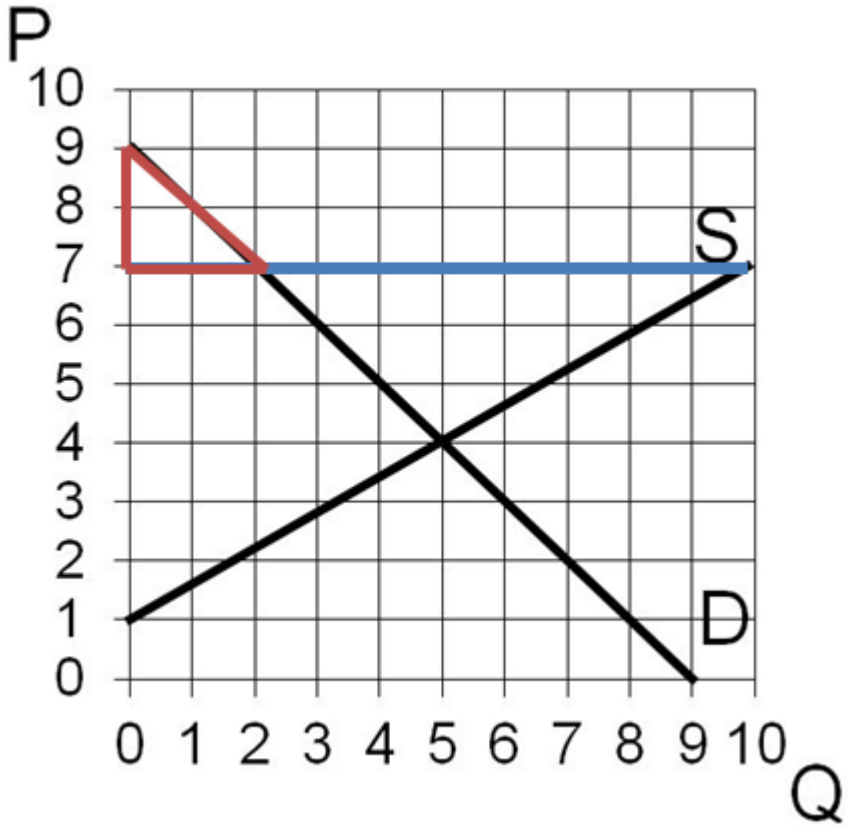


8) For an $8 tax, we can draw a tax wedge like in the graph above. Here quantity will be zero. No one produces and no one consumes. Therefore consumer surplus is zero. The answer is A.

9) Since no one produces, nothing can be taxed on. Government receives zero tax revenue. The answer is A.

10) An $8 tax gives zero CS and zero PS, so TS=0. Compare to the free market allocation, the DWL is the entire triangle on the left. Area of this triangle is

(1/2)*(9-1)*5=20. Or you could add up your answers in Question 6 and 7 to get the TS in free market. The answer is D.



11) When there is a price floor that is above the equilibrium price (such as in this case), we see that we will have a binding price floor. A binding price floor will cause the quantity supplied to be higher than the quantity demanded in this market. In other words, there are more suppliers (10 of them) that want to sell than there are buyers (2 of them) who want to buy. We know that the quantity in the market will be 2, since at a price of $7, only 2 people would want to buy. Those two people will be the two that values a widget at the highest – and they will be D1 and D2. Because of this, we know that the consumer surplus will be based on the consumer surplus of these two consumers. The area of their consumer surplus is the red triangle in the diagram above. The area of this triangle is 2 (base is 2, height is 2, so ½ x base x height = 2). The answer is B.

12) As mentioned above, there are 10 producers who want to sell but only 2 consumers who want to buy. Because of this, only 2 out of the 10 producers will get to sell the widget. Because no rule for rationing is given, we don't know which two of the ten suppliers will be selling widgets in this market. Because of that, we do not have enough information to know what producer surplus is. The answer is E.

13) From the $8 tax, we saw that the quantity was brought to zero, and so deadweight loss was equal to the entire area of the free market total surplus (since, the market with a tax has a total surplus of 0). We see that while the price floor is inefficient, it is not so inefficient such that the total surplus will be zero. At the very least, we will have some area for consumer surplus and some minimal area for producer surplus. Therefore, this price floor is more efficient (since it has higher total surplus) than a tax of $8. The answer is A

14) The First Welfare Theorem states that under competitive markets without externalities, market allocation is Pareto efficient; that is, market allocation maximizes the total surplus (the social pie). Remember that the Pareto efficient concept is not related with equity of an allocation. The answer is E.

15) A good is defined luxury good if it is income elastic; that is, if the percentage increase in the quantity demanded is higher than the percentage increase in income. This implies that the share of income you spend on cheesecake increases. The answer is E.

16) To calculate the price elasticity of demand we need a change in the price of the corn while all the other forces affecting supply and/or demand remains constant. So, it is necessary to have a change in the price of corn. The answer is C.

17) A price ceiling is a maximum price allowed for sale in a market. Remember that a price ceiling is only binding, that is it actually affects the equilibrium of the market, when the free market equilibrium price is higher than the price ceiling.

In the market for flowers, the equilibrium price is $12. The price ceiling of $6 would be binding here because the ceiling prevents the market from reaching the price it wants of $12. At the equilibrium price of $12, it would have been that supply = demand. At any lower price than $12, it should be that quantity demanded is greater than quantity supplied. So when the price ceiling forces the price to $6 in the market for flowers, there is excess demand and therefore shortage of supply of flowers.

In the market for cookies, the equilibrium price is $3. The price ceiling of $6 is not binding here since the free market equilibrium price is lower. Therefore, since the cookie market can reach its equilibrium unhindered, supply = demand; there is no shortage or surplus. The answer is C.

18) The answers to this question can be found in Reading 2: Fuel Consumption in the US and Europe.

B correct, gas prices in Norway are higher than in the US (from the reading, in 2007 average price per gallon in dollars was 7.0 for Norway vs. 2.8 for US). By the law of demand, (holding everything else constant) the higher the price the lower the demand. Thus demand should be lower in Norway.

A is correct, as Norway does in fact have better public transportation than the US, having a lower price for a substitute good, which given the higher prices of Gas contribute to a lower demand in Norway.

C is incorrect, because Norway's per capita income is higher than the US.

The answer is E: both a and b are true.

19) First, let's eliminate the wrong answers. A) is not the solution because if D1 gives his widget to D7, then D1 is worse off. C) cannot be right because starting from D6, consumers value the good less than the cost of producing it. D) is wrong because D6 values the widget more than D7, so D6 should consume before. E) is not the answer because 5 widgets are being produced, the problem is in the consumption allocation. B) is the correct answer because D6 values the widget at $4, whereas D4 values it at 6. So if D4 pays 5 to D6, both are better off. The answer is B.

20) The logic is pretty much the same as in 19). Keep in mind that in order to show that a particular allocation is not Pareto efficient, we only need to find one that is better in the Pareto sense. S7 has a cost of 7 and D7 only values it at 3. So if S7 pays 5 instead of producing it, both are better off and nobody is worse off. The answer is A.

21) This is the Form version question. We, the instructors of Econ 1101, all hope you got this question right. For Form A, the answer is A.

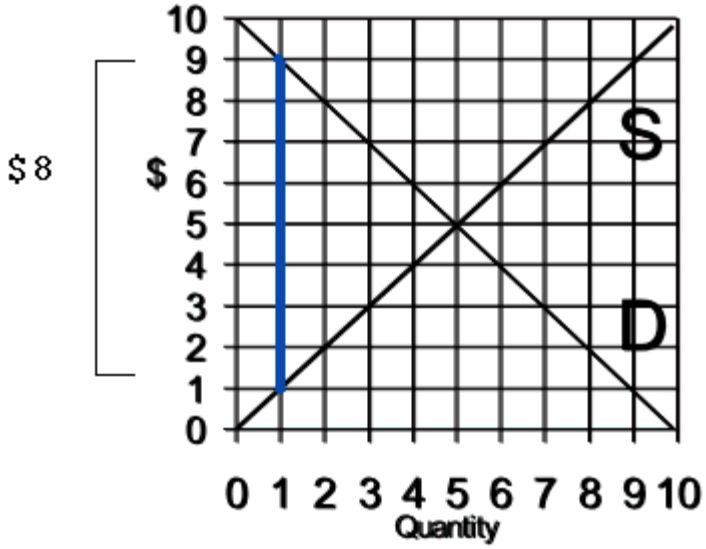
22) Consumer surplus is represented as the area above Pd and under demand curve. The answer is D.

23) Producer surplus is represented as the area below Ps and above supply curve. The answer is E.

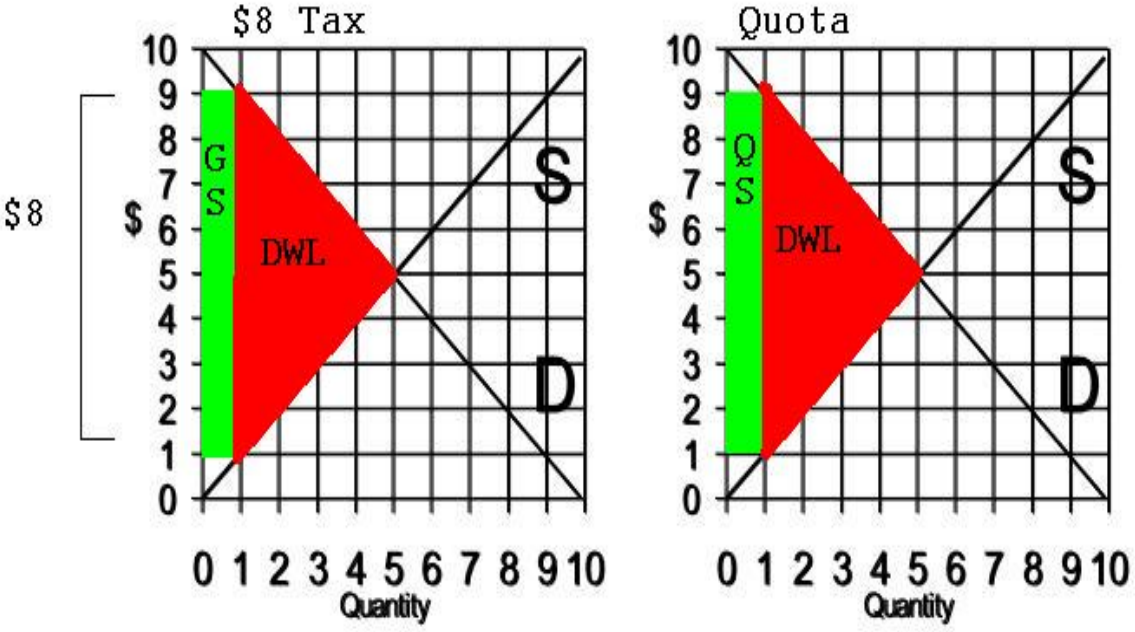
24) Government expenditure (or negative of revenue) is represented by the rectangle, mapped as (b+c+e+f+g+h+i+j). The answer is A.

25) The deadweight loss, or difference on Total Surplus, is represented by (i+j) The answer is D.

26) With a quota of 1, we need to find the price at which consumers will consume exactly one unit of the good. This is at $9. Since we want only one producer to be producing the good, we simply need to find the point at which this producer, the one with the lowest marginal cost, is indifferent between producing and not producing. Since the first producer's marginal cost is $1, this point is at $9-$1, giving us a quota price of $8. The answer is D.



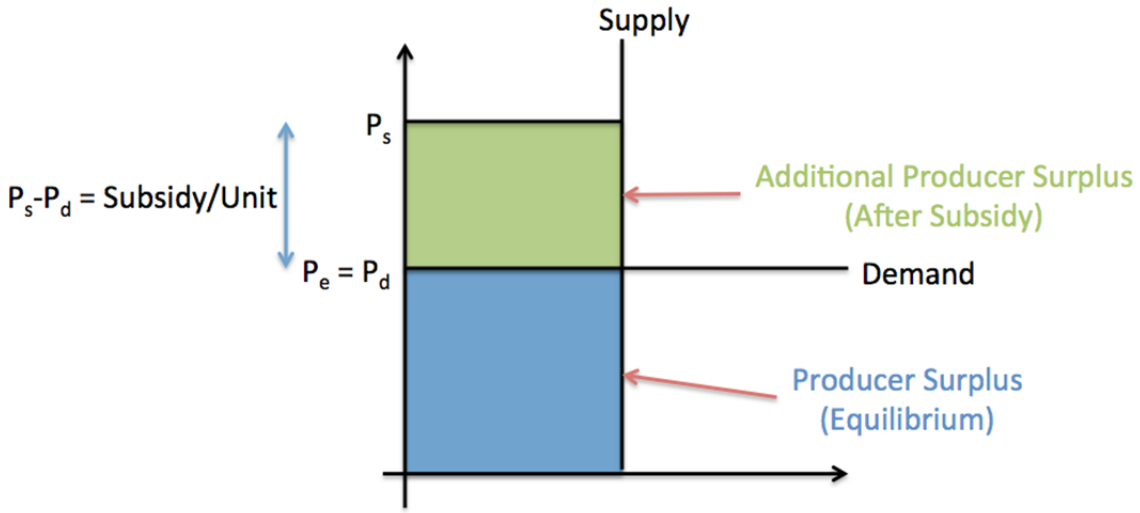
27) Looking at the graph below, we see that the only difference in terms of surplus between an $8 tax and a quota of 1 is who receives the green area, while the size of the deadweight loss is the same between them. Under a tax, the government gets the green area, but under the quota, suppliers who sell the quote get the green area. In either one, the red area is the deadweight loss. The answer is B.



28) Because the price ceiling is binding, we know that there will be a **shortage** of goods in the market, meaning that marginal reservation price will not equal marginal cost. We also know that perfectly efficient rationing means that consumers with the highest reservation price consume first, so if rationing is not perfectly efficient then principle (1) cannot hold. So we know (1) and (3) hold. Since there's no artificial rules placed on producers, we know that the producers with the lowest marginal costs will be

producing, since if the marginal cost of a producer is high they will not produce. So (2) still holds. So we have (1) and (3) violated but not (2). The answer is A.

29) The key to this question is to remember what a subsidy does to the price that consumers and producers pay. A subsidy means that the price that producers receive will be larger than the price that consumers pay. So we draw our subsidy wedge starting at the equilibrium price, straight up the supply curve.



In equilibrium the consumer surplus is zero, and the producer surplus is the blue box shown above. After the subsidy is added, producers receive and even larger price and their surplus goes up. Notice that consumer surplus is zero before and after the subsidy, so producers receive all of the benefit of the surplus. The answer is D.

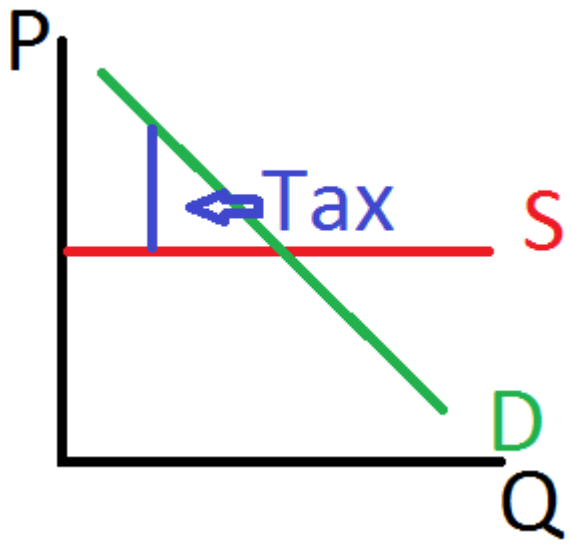
30) Remember, from the reading that the price of electricity was changing throughout the day, and when demand was high, price was also high. The answer was not a) because this is the exact opposite of what was observed in the reading. The answer was not c) because even though demand and price were changing, the relationship between the two did not change. In other words, changing the price was just a movement along the demand curve, not a change in the relationship between demand and price. D is not the correct answer either because the relationship between price and demand is always positive – a high demand means a high price. However, we feel like this option may have been confusing, since a large proportion of students thought D was the answer. We ended up accepted both the correct answer (B) and this confusing answer (D) as the correct answer. The answer is B (and D was accepted too).

31) In this situation, the government is taxing widgets and subsidizing smidgets. As a result, both markets will have a dead weight loss. In other words, the total dead weight loss will be the sum of the dead weight loss in the widget market and the smidget market. They do not cancel each other. The answer is B, False.

32) From our analysis of price ceilings with a resale market, we saw that with resales, the total surplus in the market will increase back to the case when there is efficient rationing. However, even in the case of efficient rationing, the total surplus will not be as high as it was in the free market, since the quantity in the market is less than the efficient quantity. There will pretty much always be a deadweight loss, though there are some cases that may not be entirely clear what that area of deadweight loss is, so the answer avoids that confusion and says that there will likely be less deadweight loss.

Summarizing with unregulated resale there will likely be less deadweight loss than when resales are not allowed and the answer is A.

33) Notice that the slope in the equation is close to 1. That means that if the gas tax increases by one dollar, gas price will also increase by one dollar. Since the gas price is paid by consumers that means they pay for the entirety of the tax. So (1) is true. (2) is shown in the graph below, which proves it is true as well.



The answer is C.