uOttawa

Université d'Ottawa | University of Ottawa
Unité scolaire | Academic Unit
Faculté des sciences sociales | Faculty of Social Sciences

Model A, part 1

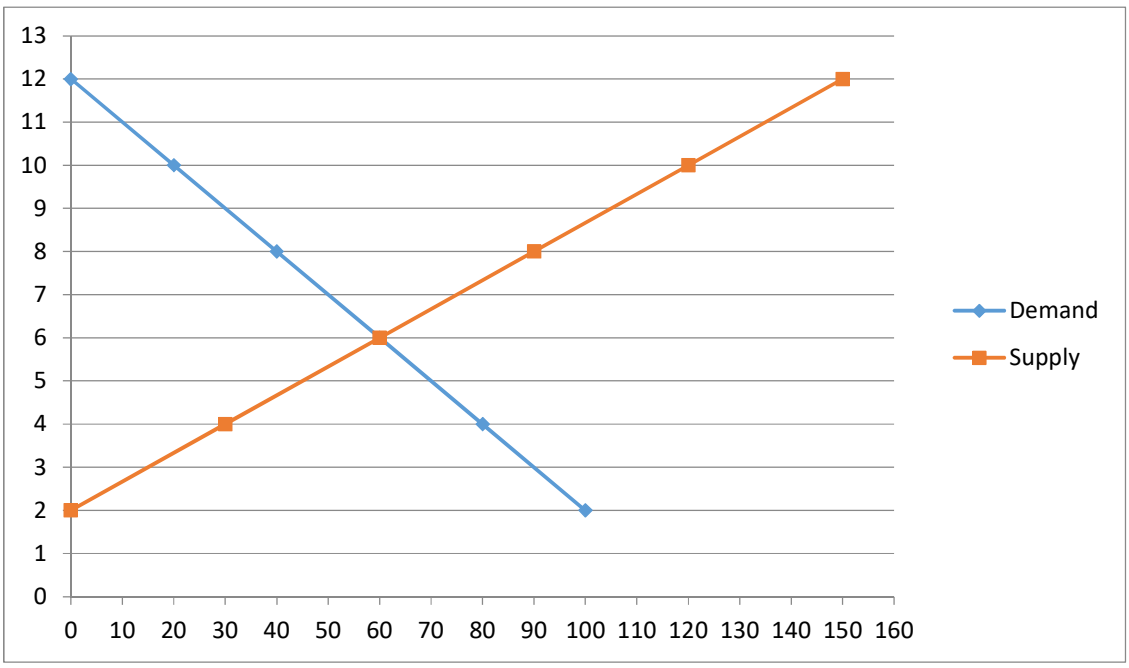
Exercise 1 (40%): Table 1 offers information about the quantity of a good that is supplied and demanded at various prices in a market with perfect competition. Answer the following questions using the information in table 1.

Table 1

Price	Quantity Demanded	Quantity Supplied
2	100	0
4	80	30
6	60	60
8	40	90
10	20	120
12	0	150

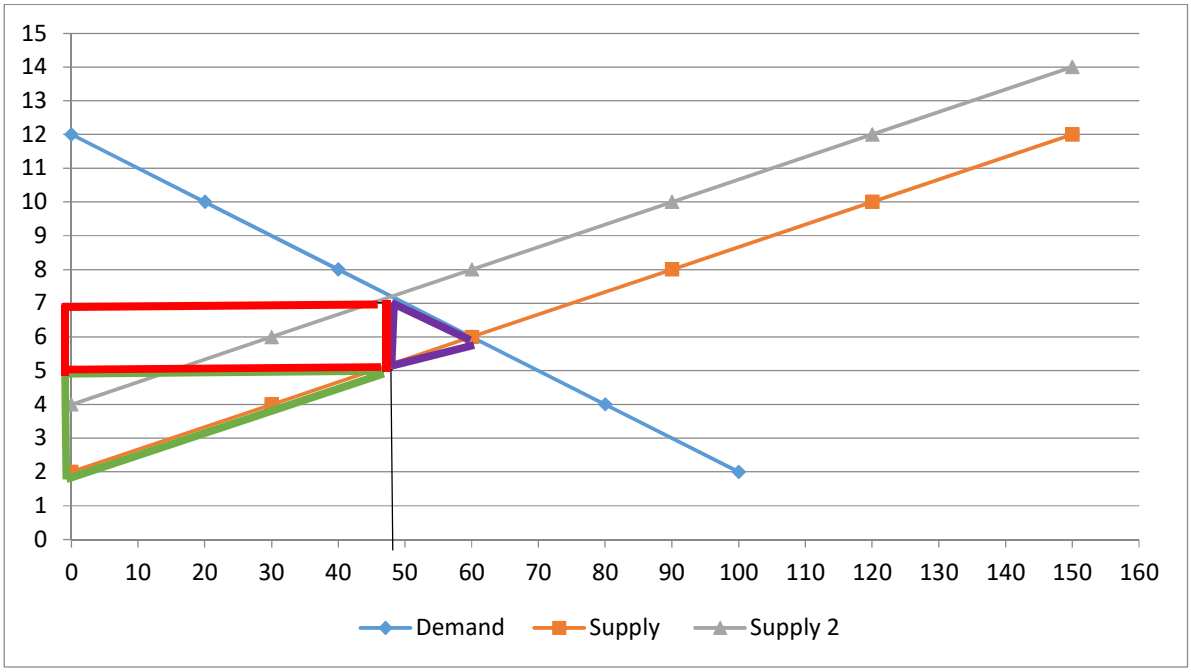
a. Initially the market is in equilibrium; Plot the demand and supply curves on a graph, with price on the y-axis and quantity on the x –axis. Calculate the Consumer Surplus. Show your calculations.

Consumer surplus = (60* (12-6))/2 = 180



b. Suppose that the government imposes a $2 per unit tax on sellers of this good. Draw on the graph the changes that this market experiences because of the tax. Show in the graph the new producer surplus, the tax revenue and the deadweight loss.

Purple: dead weight loss.
Green: producer surplus
Red: tax revenue



c. Explain briefly the relationship between tax incidence and the price elasticity of supply and demand.

Whichever side of the market is more price elastic will shoulder less of the burden. If they are equal elastic they hold the same burden.

Exercise 2 (30%): The following table (Table 2) shows Marc's preferences. Basically, he only cares about eating pizza and going to the movies.

Table 2

Number of pizzas (Total Units)	**Total Utility from consumption of pizzas**	**Number of movie tickets (Total Units)**	**Total Utility from buying movie tickets**	**Marginal Utility of pizzas**
0	**0**	**0**	**0**	-
1	20	1	30	20-0= 20
2	40	2	60	40-20= 20
3	58	3	?	58-40= 18
4	73	4	98	73-58=15
5	85	5	113	85-73=12

6	95	6	127	95-85= 10
7	100	7	140	100-95=5
8	103	8	152	103-100=3
9	103	9	163	103-103=0
10	102	10	173	102-103=-1

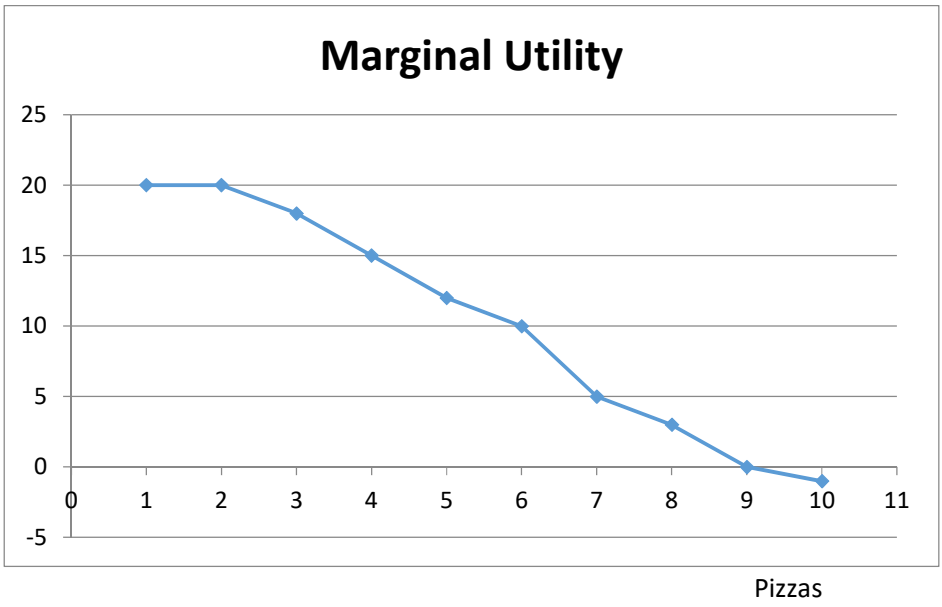
Marc has an allowance of $50 per month to spend only on pizzas and movie tickets (he does not get utility from savings). The pizza price is $10 per pizza, and the price of the movie tickets is $10 per movie.

a. Using the information from Table 2, calculate the marginal utility of Marc of eating pizzas. Write your results in the last column of Table 2. Show or explain how you have obtained it.

Marginal Utility: is the change in total utility from consuming an additional unit of a good or service.

Or the calculations like in the table, or the formula MU= change in total utility/change in units

b. Plot Marc's marginal utility of eating pizzas. Explain what you can see on the graph. Justify your answer.



The graph shows the **diminishing marginal utility**. After the second pizza marginal utility starts to decrease showing that the additional utility gained from consuming successive units of a good or service tends to be smaller than the utility gained from the previous unit or service. It decrease so much that the 10th pizza is negative, meaning that the Total utility starts to decrease.

c. If Marc is a rational consumer, what should be the total utility of buying 3 movie tickets (the cell in Table 2 with "?") to make him to decide to buy the bundle: 2 pizzas and 3 movie tickets per month? Explain and justify your answer.

118- 40 = 78, this will make it indifferent, should be higher than 78

Pizzas	**Movie Tickets**	**utility coming from pizzas**	**utility coming from movie tickets**	**Total Utility of the bundle**
0	5	0	113	113
1	4	20	98	118
2	**3**	**40**	**Higher than 78**	**Higher than 118**
3	2	58	60	118
4	1	73	30	103
5	0	85	0	85

The table above show all the possible combinations of pizzas and movies that Marc can buy with his budget. Calculating the total utility for all the combinations we see that in order to prefer the bundle 2 pizzas and 3 movie tickets, the utility should be "the maximum". The options with higher utility have a total utility of 118, so the total utility for the bundle two pizzas and 3 movie tickets should be higher than 118, meaning that from buying 3 movie tickets should give him a utility higher than 78 (or at least 79).

*5*10+0= 50*

End of the first part of the exam.

Name: _____ **Student Number:** _____ Model A, part 2

Exercise 3 (10%): Fill up the blank with the most suitable economic concept learnt in this course:

1. ***Cross-price elasticity***: is a measure of how the quantity demanded of one good changes (in percentage) when the price of a different good changes (in percentage).

2. A producer is willing to sell a good if the price is above their: ***minimum willingness to sell (or reserve price)***

3. **Missing market (or the market is missing)**: when there are people who would like to make exchanges but cannot, for one reason or another, and opportunities for mutual benefit do not occur.

4. **Utility function**: formula for calculating the total utility that a particular person derives from consuming a combination of goods and services.

5. **Altruism**: is a motive for action in which a person's utility increases simply because someone else's utility increases.

Exercise 4 (20%): In a competitive market in equilibrium, the equilibrium price is $10 and the equilibrium quantity is 200 units. Suddenly, there is a government intervention fixing the price at $15. Now the quantity supplied is 350 units and the quantity demanded 150 units.

a. Find the price elasticity of demand using the midpoint formula for this change. Explain the meaning of this result. Show your calculations.

Q1= 200 Q2= 150
P1= 10 P2= 15

$$\varepsilon = \frac{\%\Delta Q}{\%\Delta P} = \frac{(Q_2-Q_1)\,/\,[(Q_2+Q_1)/2]}{(P_2-P_1)\,/\,[(P_2+P_1)/2]} = \frac{150-200/\,(150+200)/2}{15-10/(10+15)/2} = \frac{-50/175}{5/12.5} = 0.29/0.4 = -0.71$$

Negative, because shows the negative relationship between Price and quantity in the demand. In absolute value it is less than one, so the demand curve inelastic, meaning that a change in price causes a relatively small percentage change in quantity demanded

b. Find the price elasticity of supply using the midpoint formula for this change. Explain the meaning of this result. Show your calculations.

Q1= 200 Q2= 350
P1= 10 P2= 15

$$\varepsilon = \frac{\%\Delta Q}{\%\Delta P} = \frac{(Q_2-Q_1)\,/\,[(Q_2+Q_1)/2]}{(P_2-P_1)\,/\,[(P_2+P_1)/2]} = \frac{350-200/\,(350+200)/2}{15-10/(10+15)/2} = \frac{150/275}{5/12.5} = 0.55/0.4 = 1.4$$

Positive, because shows the positive relationship between Price and quantity of the supply curve. It is more than one, so the supply curve is elastic, meaning that a change in price causes a relatively large percentage change in quantity supplied.