

PRACTICE CLASS Nr6

The rational consumer

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Classroom exercises

AP6-1-

We have the following information:

- António's income is 18 m.u.
- The price of good X is 4 and the price of good Y is 2.
- The Marginal Utilities (MU) of the consumption of each good are given in the table:

Units of X	Marginal Utility of X (MU_x)	Units of Y	Marginal Utility of Y (MU_y)
1	20	1	16
2	16	2	14
3	13	3	13
4	8	4	10
5	6	5	8
6	4	6	6

- Determine the expression of the consumer's budget line and graph it, with X on the horizontal axis and Y on the vertical axis. What is the economic meaning of the budget line?
- What is António's optimal consumption?
- What is the total utility level associated with António's optimal consumption, considering that total utility is the sum of the total utilities got from the consumption of each good? (0,75v)

- d) Suppose that the price of X is now 6 and the price of Y did not change. What income would the consumer need in order to be able to purchase the previous optimal bundle (discovered in alinea b)?

(PF 25/06/2014 B.2)

AP6-2-

A consumers's utility function is decreasing when:

- a) The consumer has no money to buy the good.
- b) The consumer's marginal utility is negative.
- c) The consumer's marginal utility is decreasing.
- d) The consumer's income increases.

AP6-3-

If a consumer's income increases, and prices remain unchanged, the budget line

- a) Shifts to the right in a parallel fashion.
- b) Shifts to the right and becomes steeper.
- c) Shifts to the right and becomes less steep.
- d) Shifts to the right, and may become more or less steep

AP6-4-

In microeconomic analysis the "consumer's optimal bundle" is:

- a) The bundle he prefers the most.
- b) The cheapest bundle among those he likes.
- c) The most expensive bundle among those he likes.
- d) The bundle he prefers the most among those he can afford.

(Final Exam 11/9/2008)

AP6-5-

When the price of an inferior good falls, and everything else remain the same:

- a) The substitution and income effects reinforce each other to cause quantity demanded to increase.
- b) The substitution and income effects reinforce each other to cause quantity demanded to fall.
- c) The substitution effect tends to increase the quantity demanded, whereas the income effect tends to decrease it.
- d) The substitution effect tends to decrease the quantity demanded, whereas the income effect tends to increase it.

(FE 9/6/2008 E.M.7)

AP6-6-

Decreasing marginal utility implies that when consumption of a good increases:

- a) Total utility falls.
- b) Total utility will be negative.
- c) Marginal utility falls, so total utility falls as well.
- d) Marginal utility falls, but total utility may increase

AP6-7-

Joe has €7 to spend every weekend. He typically spends this amount on pizzas and movies. Marginal utility of pizzas and movies is respectively $MU_p = 10 - p$ and $MU_m = 21 - 2m$ (where p stands for pizzas, and m , for movies). A pizza and a ticket to the movies cost €1 each. How many pizzas will he eat and how many movies will he watch each weekend?

AP6-8-

Each day, Berta has 3 euros to spend in tea and toasts. A cup of tea costs the same as one toast: 1 euro. Berta's utility depends on the number of cups of tea and toasts in the following way:

Cups of tea	Total Utility Cups of tea	Toasts	Total Utility Toasts
0	0	0	0
1	14	1	16
2	26	2	30
3	36	3	42
4	44	4	52
5	44	5	52

- Draw Berta's budget line with the cups of tea on the horizontal axis.
- What is Berta's optimal consumption bundle?
- Maria, a friend of Berta, sometimes joins for tea. Considering that the price of the cup of tea rises to 1,5 euros, *ceteris paribus*, answer the following questions about Maria's optimal consumption bundle:
 - Describe (without calculus) the substitution and income effects present in Maria's consumption, as a consequence of the change in the price of tea.
 - Considering that the expenditure on tea is only a very small proportion of Maria's budget, how will her consumption of tea change? Justify.
 - If toasts are an *inferior good*, how does the consumption of toasts by Maria change? Justify.

Home exercises

AP6-9- Check Your Understanding 10-2, 1. a) (pg. 290, 4th edition);

AP6-10- Check Your Understanding 10-4, todo. (pg. 297, 4th edition);

AP6-11-

Peter has a budget of €120 to spend on CDs and books. A CD costs €15 and a book costs €10. The table below shows Peter's marginal utility for different levels of consumption:

CDs		Books	
Q	MU	Q	MU
0		0	
2	60	3	90
4	40	6	70
6	30	9	40
8	20	12	20

- Draw Peter's budget line with the quantity of CDs on the vertical axis, and that of books on the horizontal axis. Explain the meaning of the line and the factors that influence its position and slope.
- What is the optimal consumption bundle?
- Draw the new budget line Peter will face if the price of a book increases to €15 and that of CDs stays the same. Will Peter be better off or worse off?

(Intermediate test 2008 (version A)/ 2.)

AP6-12-

Problem 6 (pg. 288, manual – 3rd edition)

Bruno is best friend with Bernie, who shares his love for notebooks and music CD's. The accompanying table shows Bernie's utilities from notebooks and Beyoncé's CD's. The price of a notebook is \$5, the price of a CD is \$10, and Bernie has \$50 of income to spend.

Quantity of notebooks	Utility from notebooks (utils)	Quantity of CDs	Utility from CDs (utils)
0	0	0	0
2	70	1	80
4	130	2	150
6	180	3	210
8	220	4	260
10	250	5	300

- Which consumption bundles of notebooks and CD's can Bernie consume if he spends all his income? Illustrate Bernie's budget line with a diagram, putting notebooks on the horizontal axis and CDs on the vertical axis.
- Calculate the marginal utility of each notebook and the marginal utility of each CD. Then calculate the marginal utility per dollar spent on notebooks and the marginal utility per dollar spent on CD's.
- Draw a diagram in which both the marginal utility per dollar spent on notebooks and the marginal utility per dollar spent on CD's are illustrated. Using this diagram

and the optimal consumption rule, predict which bundle – from all the bundles on his budget line – Bernie will choose.

AP6-13

A consumer buys goods X and Y. His income is 1000 euros/month. We know that $p_x=10$ and $p_y=20$.

a) Draw this consumer’s budget line.

b) If the consumer’s income rises to 1200 euros/month and, simultaneously the price of good X rises to 15 graph the new budget line using the graph of alinea a). how much did the relative price of X in terms of Y (p_x/p_y) change?

c) Now consider also the table with the marginal utilities (MU) for each level of consumption of the goods. Determine the optimal consumption bundle (using the initial conditions about the budget line, alinea a).

X	MU(X)	Y	MU(Y)
10	100	20	320
20	80	25	280
30	60	30	240
40	40	35	200
50	20	40	160
60	10	45	120

d) Using the information of alinea b) [new budget line] and knowing that the optimum consumption bundle is $(X; Y) = (17,5; 42,5)$, what is the change in the quantity demanded of X caused by a change in the relative price, comparing with the initial situation?

(Prova Intercalar 30/11/2009, 1)

AP6-14-

Explain why a fall in the interest rate of housing loans may lead to the increase in the demand for several goods and services (not just housing) or to the decrease in the demand for other goods and services.

(QT10 - 6/11/2013)

AP6-15-

Bernard consumes only two goods (X and Y). X is an inferior good and Y is a normal good. The price of X increases and the price of Y does not change. We know that the substitution effect is greater than the income effect. What can you say about the following statements?

1 – The consumption of X will necessarily decrease;

2 – The consumption of Y will necessarily decrease.

- a) Statement 1 is false and Statement 2 is true.
- b) Statement 1 is true and Statement 2 is false.
- c) Both statements are false.
- d) Both statements are true.

(Intermediate test 10/12/2012, Q.6)

AP6-16-

If the consumer's income increases and the prices of the goods he consumes increase in the same proportion as the income, *ceteris paribus*, then the budget line:

- a) follows a parallel shift to the right.
- b) shifts to the right, becoming steeper.
- c) does not change.
- d) shifts to the right, becoming less steep.

(Intermediate test 10/12/2012, Q.2)

AP6-17-

Bernard defines in advance how much he will be spending each week in beers and juices. The marginal utility of the last beer consumed is 30 and the marginal utility of the last juice is 60. The price of beer is 2 Euros and the price of juice is 3 Euros. Bernard:

- a) is consuming the number of beers and juices that maximize his utility.
- b) should consume more juices and less beers, to obtain the maximum utility.
- c) should consume more beers and less juices, to obtain the maximum utility.
- d) is paying more than necessary for the juices and the beers.

(Prova Intercalar 29/10/2012, Q.10)

AP6-18-

In the optimum situation of a certain consumer, the marginal utility of good X is 20 and the marginal utility of good Y is 10. The consumer has an income of €40 to spend on these two goods. Additionally, we know that the budget line crosses the vertical axis (Y) at the level of 20. Which of the following alternatives corresponds to the optimal consumption bundle?

- a) X=8 and Y=12.
- b) X=5 and Y=10.
- c) X=6 and Y=4.
- d) X=12 and Y=12.

AP6-19-

If the price of a *Giffen* good increases, then:

- a) The substitution effect is positive and the income effect is positive, with the first larger than the second.
- b) The substitution effect is positive and the income effect is negative with the first larger than the second, in absolute value.
- c) The substitution effect is negative and the income effect is negative, with the second larger than the first in absolute value.
- d) The substitution effect is negative and the income effect is positive, with the second larger than the first in absolute value.

(Intermediate test 06/12/2010, Prova B; EM.6)