Exercises 6

The rational consumer

Classroom exercises: Exercises 6.1 to 6.8

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Classroom exercises

Exercise 6.1

Problem 6 (Krugman and Wells 3rd edition, pg. 288)
Bruno, the consumer in Problem 5, is best friend with Bernie, who shares his love for notebooks and Beyoncé 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

a) Which consumption bundles of notebooks and CDs can Bernie consume if he spends all his income? Ilustrate Bernie's budget line with a diagram, putting notebooks on the horizontal axis and CDs on the vertical axis.

b) 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 CDs.

c) Draw a diagram in which both the marginal utility per dollar spent on notebooks and the marginal utility per dollar spent on CDs are illustrated. Using this diagram and the optimal consumption rule, predict which bundle – from all the bundles on his budget line – Bernie will choose.

Exercise 6.2

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.

Exercise 6.3

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

Exercise 6.4 (Exam 11-09-2008)

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.

Exercise 6.5 (Exam 09-06-2008)

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.

Exercise 6.6 (Class Question 06-11-2013)

Why can a fall in mortgage rates lead to an increase in the quantity demanded of some goods (and not just houses) and to a fall in the quantity demanded of some other goods?

Exercise 6.7 (Final exam 26-01-2009)

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.

Exercise 6.8

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 go to each weekend?

Home exercises

Exercise 6.9 Check Your Understanding 10-2, 1. a) (pg. 290);
Exercise 6.10 Check Your Understanding 10-4 (pg. 297);

Exercise 6.11 (In-term test December.2008 (version A)/ **2.**)

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

a) 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.
b) What is the optimal consumption bundle?
c) 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?

Exercise 6.12 (Exam 25-6-2014)

Anthony consumes goods *X* and *Y* only, and his income is €18. The unit prices of goods *X* and *Y* are respectively €4 and €2. The table below shows Anthony's marginal utilities.

Quantity of *X*	Marginal Utility of X (*MUX*)	Quantity of *Y*	Marginal Utility of Y (*MUY*)
1	20	1	16
2	16	2	14
3	13	3	13
4	8	4	10
5	6	5	8
6	4	6	6

a) Find the expression for Anthony's budget line, and show it in a graph (with good *Y* on the vertical axis). Explain the meaning of the budget line.

b) Find Anthony's optimal consumption bundle (assume you have all the relevant information).

c) What is the total utility Anthony gets from the consumption of the two goods?

d) Suppose the price of good *X* increases to €6. How much income would Anthony need to buy his previous optimal bundle (assume the price of good *Y* does not change).

Mrs. Cunningham sets aside €3 to spend on tea and biscuits for her daily tea. Cups of tea and biscuits both cost €1 each. Mrs. Cunningham's utility is shown I the table below.

Number of cups of tea	Total utility from tea	Number of biscuits	Total utility form biscuits
0	0	0	0
1	14	1	16
2	26	2	30
3	36	3	42
4	44	4	52
5	44	5	52

a. Draw Mrs. Cunningham's budget line with the number of cups of tea measured along the horizontal axis.
b. What is Mrs. Cunningham's optimal consumption bundle? Explain.
c. What is the marginal rate of substitution of biscuits for tea at the bundle you found in part b)?
d. Mrs. Bucket occasionally joins Mrs. Cunningham for tea. The price of a cup of tea increases to €1.50, and everything else remains the same.
 I. Describe (without calculations) the substitution and income effects on Mrs. Bucket's consumption arising from the change in the price of tea.
 II. Mrs. Bucket spends only a small fraction of her income on tea. How much would you expect her tea consumption to change? Explain.
 III. How will Mrs. Bucket's consumption of biscuits change if biscuits are an inferior good for her? Explain.

Exercise 6.14 (Midterm test 10-12-2012)

If prices and income increase by the same percentage, the budget line will:
 a) Shift to the right in a parallel fashion
 b) Shift to the right and become steeper.
 c) Remain unchanged.
 d) Shift to the right and become less steep.

Exercise 6.15 (Midterm test 19-10-2012)

Bernard has a weekly budget for beer and orange juice. He is obtaining a marginal utility of 30 from his last beer and 60 from his last orange juice. One beer costs €2 and one juice €3. Then Bernard:
 e) Is consuming his utility-maximising amounts of beer and orange juice.
 f) Would increase his utility by consuming more orange juice and less beer.
 g) Would increase his utility by consuming more beer and less orange juice.
 h) Is paying more than necessary for the beer and orange juice.

Exercise 6.16 (Exam 15-6-2015)

At his optimal consumption bundle a consumer's marginal utility from good *X* is 20, and that from good *Y* is 10. The consumer's income is €40. The vertical intercept (good *Y*) of the budget line is 20. Then the optimal consumption bundle is:
 a) *X* = 8 and *Y* = 12.
 b) *X* = 5 and *Y* = 10.
 c) *X* = 6 and *Y* = 4.
 d) *X* = 12 and *Y* = 12.

Exercise 6.17 (Exam 15-6-2015)

If income and substitution effects work in opposite directions and the former is weaker than the latter, then the good is:
   a) An ordinary good.
   b) An inferior but not Giffen good.
   c) A Giffen good.
   d) A normal good.

Exercise 6.18 (Exam 15-6-2015)

Anne spends all her income on goods *X* and *Y*. When the price of good *X* increases she buys less of both goods. This means that:
   a) Both goods are normal.
   b) Both goods are inferior.
   c) Good *Y* is normal, and we cannot tell whether good *X* is normal or inferior.
   d) Good *X* is normal, and we cannot tell whether good *Y* is normal or inferior.