

BUDGET CONSTRAINT

Problem #1

During her foreign travels Tammy spent all of her money on 5 dishes of spaghetti and 6 oysters. Spaghetti cost 8 units of the local currency per dish and in her wallet Tammy had 82 units of the local currency. If by s we denote the number of spaghetti dishes bought and by o – the number of oysters bought, the bundle of goods, which Tammy could maximally afford, is given by the formula:

- a) $82 + 6o = 82$
- b) $6s + 8o = 82$
- c) $8s + 7o = 82$
- d) $5s + 6o = 82$
- e) there are not enough data given to solve the problem.

Problem #2

a) Give the formula for the budget constraint and present it graphically knowing that prices $p_1 = 2$ USD and $p_2 = 4$ USD, while income $M = 60$ USD. In what relation can these two goods be exchanged?

b) The budget constraint from point a) will be the initial constraint. Compare the initial state with the changes given below. Specify how the situation of the consumer changes – whether he/she gains or loses following the introduction of these changes. Show this graphically. Note whether the relation, in which the goods are exchanged, changes.

- 1) income doubles;
- 2) price p_1 decreases by 1 USD;
- 3) price p_2 increases by 1 USD;
- 4) price p_1 increases by 1 USD and income increases by 12 USD;
- 5) income increases by 100%, prices p_1 and p_2 each increase by 100%;
- 6) good 1 becomes a free good, i.e. its price is zero;
- 7) a sales restriction has been introduced: it is impossible to buy more than 5 units of good 2;
- 8) the first 10 units of good 1 cost 2.5 USD each, while the following units of good 1 cost 1.5 USD each. Neither price p_2 , nor income change.

Problem #3

There is a new club in the neighborhood. Tom likes the music in this club and, therefore, plans to attend concerts organized there. A single ticket costs 20 USD. There exists another possibility – Tom can buy a yearly club membership card, which costs 200 USD, and then pay 4 USD for every visit in the club. Tom's second leisure activity is the cinema. A single ticket costs 10 USD. Tom spends *ca.* 1000 USD on leisure per year. When will purchasing the club membership card be beneficial for Tom?

Problem #4

Assume that the choice between clothing and food constitutes the choice space of a typical consumer. The average unit price of food is 4 USD, while the average unit price of clothing is 10 USD. The government is planning to impose a sales tax amounting to 20% on clothing. Another possibility is to introduce an income tax for all residents of the country. Find the income tax rate, for which the introduction of the income tax will be a worse solution for all residents than imposing a tax on clothing.