

**1. Define the following concepts:**

- a. Elasticity
- b. Welfare economics
- c. Willingness to pay (WTP)
- d. Consumer surplus (CS)
- e. Producer surplus (PS)
- f. Total surplus
- g. Deadweight loss
- h. Price ceiling
- i. Price floor
- j. Tax incidence
- k. Efficiency
- l. Equality

**2. For a particular good, a 2 % increase in price causes a 12 % decrease in quantity demanded. Which of the following statements is most likely applicable to this good?**

- a. There are no close substitutes for this good.
- b. The good is a luxury.
- c. The market for the good is broadly defined.
- d. The relevant time horizon is short.

**3. For which goods from the following pairs would you expect a higher price elasticity of demand?**

- a. Beethoven recordings or classical music recordings in general
- b. public transportation travel in the time horizon of the next half year or in the time horizon of the next five years
- c. mineral water or water

**4. Studies show that the price elasticity of demand for cigarettes, calculated in a simple manner, is about 0.4.**

(a) If a pack of cigarettes now costs 40 CZK and the government wants to reduce smoking by 20%, how much does the government need to increase the price of cigarettes? How can it do that?

(b) If the government permanently raises the price of cigarettes, will this policy have a greater impact in one year or in five years?

(c) Studies also show that teenagers have a higher price elasticity than adults. Why might this be the case?

5. The demand for pizza is given by  $Q_d = 400 - 2P$ , and the supply is given by  $Q_s = P - 20$ , where  $Q_d$  is the quantity demanded,  $Q_s$  is the quantity supplied, and  $P$  is the price. The government imposes a tax of 60 CZK on each pizza. How much more will consumers now pay for a pizza? How much will producers receive for it? What will happen to the quantity sold? How is the tax burden distributed? What is the elasticity of supply and demand between equilibrium points without the tax and with the tax?

6. Bill is very thirsty. He is willing to pay up to 140 CZK for the first beer, 100 CZK for the second, 60 CZK for the third, and 20 CZK for the fourth.

(a) Derive Bill's demand for beer.

(b) If the price of beer is 80 CZK, how many beers will Bill buy? What consumer surplus will he gain?

(c) How will the demanded quantity change when the price drops to 40 CZK? How will Bill's consumer surplus change?

7. Mike owns a small brewery. Mike is willing to sell one beer for at least 20 CZK, 60 CZK for the second, 100 CZK for the third, and 140 CZK for the fourth; he is not willing to sell any more for any price.

(a) Derive Mike's supply of beer.

(b) Consider Bill's demand and Mike's supply. Which price brings their "market" into equilibrium? What consumer surplus, producer surplus, and total surplus will they gain at equilibrium? Calculate and draw.

(c) What would happen to the total surplus if Mike produced, and Bill consumed one beer less than the equilibrium quantity? What if one beer more?

8. The annual demand for watches in a small town is determined by the equation  $Q_D = 500 - P$ . The supply is given by the equation  $Q_S = P - 100$ , where  $P$  is the price,  $Q_D$  is the quantity demanded, and  $Q_S$  is the quantity of watches offered.

(a) Calculate the equilibrium quantity and price.

(b) Calculate the annual consumer surplus, the annual producer surplus, and the total annual surplus.

(c) The government introduces a price ceiling at a price of 200. How many watches will be missing annually in the market?

(d) By how much will the total surplus decrease with this regulation? Assume that the watches that are actually sold are magically acquired by those who are willing to pay the most for them.

(e) By how much will the total surplus decrease with this regulation if the watches are purchased at the regulated price by resellers who then resell them on the black market? Who will get the watches?

(f) By how much will the total surplus decrease with this regulation if the watches are bought by people with the lowest willingness to pay?