

### **Příklad 8**

From the analysis of the costs required to produce and sell one bottle of mineral water, it follows that its unit variable costs amount to CZK 11, and the total monthly fixed costs of production and sales amount to CZK 350,000. Based on a market survey, it was found that the selling prices at which one bottle can be sold are CZK 18, CZK 22 and CZK 24. At a price of CZK 18, 200,000 bottles can be expected to be sold. The price elasticity of demand is estimated at 1.2.

- What price should a business set if its objective is to maximize profit?

#### **Solution:**

The price elasticity of demand ( $e_D$ ) =  $\frac{\text{change in sales (\%)}}{\text{change in price (\%)}}$

#### **Expected sales at a price of 22 CZK:**

The price elasticity of demand ( $e_D$ ) =  $\frac{\text{change in sales (\%)}}{\text{change in price (\%)}}$

$$1,2 = \frac{X}{\frac{22-18}{18}} = \frac{X}{0,222}$$

$X = 0,2666 = 26,7\% \dots 26.7\%$  decrease in quantity sold

New quantity after reduction = (100% - 26,7 %) of 200 000 pcs = 146 600 pcs

Or 73,3 % of 200 000 pcs = 146 600 pcs

Or 26,7 % of 200 000 pcs = 53 400 pcs

200 000 pcs – 53 400 pcs = 146 600 pcs

#### **Expected sales at a price of 24 CZK:**

The price elasticity of demand ( $e_D$ ) =  $\frac{\text{change in sales (\%)}}{\text{change in price (\%)}}$

$$1,2 = \frac{X}{\frac{24-18}{18}} = \frac{X}{0,333}$$

$X = 0,4 = 40\% \dots 40\%$  reduction in quantity sold

New quantity after reduction = (100% - 40 %) of 200 000 pcs = 120 000 pcs

or 60 % of 200 000 pcs = 120 000 pcs

or 40 % of 200 000 pcs = 80 000 pcs

200 000 pcs – 80 000 pcs = 120 000 pcs

The considered alternatives for the number of products sold, sales revenue, cost of products sold and profit on sales are shown in the following table:

Selling price (CZK/bottle)	Number of bottles sold	Sales revenue (CZK)	Cost of goods sold (CZK)	Profit (CZK)
18	200 000	18*200 000 = 3 600 000	(11*200 000) + 350 000 = 2 550 000	3 600 000 – 2 550 000 = 1 050 000
22	146 600	22*146 600 = 3 225 200	(11*146 600) + 350 000 = 1 962 600	3 225 200 – 1 962 600 = 1 262 600
24	120 000	24*120 000 = 2 880 000	(11*120 000) + 350 000 = 1 670 000	2 880 000 – 1 670 000 = 1 210 000

The company achieves its highest profit at a price of CZK 22.