

Exercise 1

The joint-stock company is introducing a new product. Annual production is expected to be 100,000 pieces. Direct material costs per unit are CZK 100, direct wages CZK 20. Variable production overheads amount to 100% of direct wages. In the financial plan requires that the total contribution to cover **common fixed costs and profit generation** be in the absolute amount of **CZK 5,000,000**. The marketing department recommends a price in the range of 190 to 210 CZK, at which the demand will be around 100,000 pieces.

Cost calculation of the price of 1 piece of a new product:

Direct material	100 CZK
Direct wages	20 CZK
Variable production overheads	100 % of 20 = 20 CZK
Specific fixed costs	$500\,000 / 100\,000 = 5$ CZK
Unit contribution for payment	$5\,000\,000 / 100\,000 = 50$ CZK
Suggested price	195 CZK

What will be the price of the product?

The suggested price is 195 CZK/unit

Exercise 2

The following unit cost calculation (CZK / pc) is currently valid for the ABC product in the company:

CZK/unit (piece)	
Sales price of the product	500
- Variable costs	300
= Payment allowance	200
- Fixed costs allocated to the product	120
= Profit per product	80

This calculation is valid for a product (and sale) of 50,000 products.

The company's management is considering a new situation where we managed to acquire a new large customer and agree with existing customers to increase deliveries, which could lead to a **doubling of the number of manufactured pieces**. However, the condition is to reduce the price to CZK 400 / pc.

The increase in production necessitated an increase in total fixed costs by 50%, mainly due to the necessary expansion and modernization of production. Increasing production and modernizing the process (volume discounts and increasing labor productivity) will also have an impact on reducing unit variable costs by 20%.

Assignment:

1. Determine a unit calculation for the new situation

CZK/unit (piece)	
Sales price of the product	400
- Variable costs	240
= Payment allowance (total margin)	$p-v = 400 - 240 = 160$
- Fixed costs allocated to the product	90
= Profit per product	70

Total costs = vc per unit * Q + FC

$120 * 50\,000 = 6\,000\,000 + 50\% = 6\,000\,000 + 3\,000\,000 = 9\,000\,000$ CZK / 100 000 pcs = 90 CZK per unit

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2. Determine the original total profit.

Profit per unit * Q = $80 * 50\,000 = 4\,000\,000$ CZK

3. Determine the new total profit.

$70 * 100\,000 = 7\,000\,000$ CZK

4. Determine the change in total profit.

$7\,000\,000 - 4\,000\,000 = 3\,000\,000$ CZK

5. Calculate the original break-even point.

$BEP = FC / (sales - variable\ costs) = 6\,000\,000 / (500 - 300) = 30\,000$ products (pcs)

6. Calculate the new break-even point.

$BEP = 9\,000\,000 / (400 - 240) = 56\,250$ pcs

7. Calculate the break-even point change.

$56250 - 30000 = 26250$ pcs

8. What factors influenced the change in profit?

Quantity, change in FC, change in VC, price

9. Determine a unit calculation if the unit variable costs could not be reduced.

CZK/unit (piece)	
Sales price of the product	400
- Variable costs	300
= Payment allowance	100
- Fixed costs allocated to the product	90
= Profit per product	10

10. Determine the original total profit.

4 000 000 CZK

11. Determine the new total profit.

10 * 10 000 = 1 000 000 CZK

12. Determine the change in total profit.

3 000 000 CZK decrease

13. Determine a unit calculation with respect to task ad 1), if the increase in total costs will not be 50%, but 70%.

CZK/unit (piece)	
Sales price of the product	400
- Variable costs	240
= Payment allowance	160
- Fixed costs allocated to the product	102
= Profit per product	58

14. Determine the original total profit.

4000000

15. Determine the new total profit.

5800000

16. Determine the change in total profit.

1800000 increase

Exercise 3

The following unit calculation for the provided Service X (CZK for the provided event) is currently valid in the ZETA company.

CZK/unit (piece)	
Sales price of the service	900
-variable costs	400
=allowance for payment I	500
- fixed costs directly attributable to the service	200
= allowance for payment for service II	300
- fixed common costs (per unit of service)	150
= profit per unit of service	150

This calculation, based on the division of costs into fixed and variable, is set for a range of activities of 20,000 shares for a given period.

Based on the market analysis, the company's management came to the conclusion that the overall market potential is in favor of increasing the scope of service provision to 50,000 events. The condition is a reduction in the service to the price of CZK 800 / j. The increase in the scope of service provision entails an increase in direct fixed costs of the service by CZK 4 million, mainly due to the need to add new technology for service provision and service promotion.

At the same time, the acquisition of modern technology will reduce labor in the provision of services, which means a reduction in unit variable costs by 10%. The company's common fixed costs do not change, and therefore the total amount of these costs that this service is to cover in total will not change.

Assignment

1. Determine a new cost calculation per unit of service.

CZK/unit (piece)	
Sales price of the service	800
-variable costs	360
=allowance for payment I	440
- fixed costs directly attributable to the service	160
= allowance for payment for service II	280 (440-160)
- fixed common costs (per unit of service)	60

= profit per unit of service	220
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Total fixed costs = 200 * 20 000 = 4 000 000 CZK + 4 000 000 CZK = 8 000 000 CZK

8 000 000 CZK / 50 000 pcs = 160 CZK /unit

150 * 20 000 pcs = 3 000 000 CZK / 50 000 pcs = 60 CZK /unit

2. Determine the original total profit.

3. Determine the new total profit.

4. Determine the change in total profit.

5. Determine the original break-even point.

$$\text{BEP} = \text{FN} / (\text{p} - \text{vc})$$

$$\text{BEP} = 7\,000\,000 / 500 = 14\,000 \text{ pcs}$$

$$\text{FN} = 350 \times 20\,000 = 7\,000\,000 \text{ CZK}$$

6. Determine a new break-even point.

$$\text{FC} = 220 \times 50\,000 = 11\,000\,000 \text{ CZK}$$

$$\text{BEP} = 11\,000\,000 / 440 = 25\,000 \text{ pcs}$$

7. Determine the break-even point change.

$$11\,000 \text{ pcs} / \text{units/products}$$

8. Calculate the extent to which the service (number of units of service provided) will achieve the same economic result in the new situation as in the initial situation.

Profit = sales – costs

$$\text{Profit} = \text{price per unit} \times Q - (\text{vc} \times Q + \text{FC})$$

$$3\,000\,000 = 800 \times Q - (360 \times Q + 11\,000\,000)$$

$$3\,000\,000 = 800Q - 360Q - 11\,000\,000$$

$$3\,000\,000 = 440Q - 11\,000\,000$$

$$14\,000\,000 = 440Q$$

$$Q = 14\,000\,000 / 440$$

$$Q = 31\,819 \text{ units/ pcs/ products/services}$$

9. Calculate at what price the same economic result will be achieved as in the initial situation.

$$\text{Profit} = \text{price per unit} \times Q - (\text{vc} \times Q + \text{FC})$$

$$3\,000\,000 = 50\,000P - (360 \times 50\,000 + 11\,000\,000)$$

$$3\,000\,000 = 50\,000P - 18\,000\,000 - 11\,000\,000$$

$$32\,000\,000 = 50\,000P$$

$$P = 32\,000\,000 / 50\,000$$

$$P = 640 \text{ CZK}$$

CZK/unit (piece)	
Sales price of the service	
-variable costs	
=allowance for payment I	
- fixed costs directly attributable to the service	
= allowance for payment for service II	
- fixed common costs (per unit of service)	
= profit per unit of service	

Exercise 4

An easy-to-manufacture industrial plant produces only one type of product. Its production process is characterized by the fact that there is no work in progress and all products put into production are completed and sold in the current period. In the current period, the following costs were incurred (in CZK):

Direct material	64 000
Direct wages	13 660
Power consumption	18 380
Depreciation	10 000
Other purchased services	3 580
Total	109 620

The company produced 1900 tons of product.

Assignment:

1. Determine the final calculation per 100 kg of product.

2. Determine the final calculation per 100 kg of product in the items direct material, direct wages and production overheads.

Solution 1)

CZK/100kg		
Direct material	$(64\,000 \text{ CZK} / 1\,900\,000) \times 100$	3.36
Direct wages	$(13\,600 / 1900000) \times 100$	0.71
Power consumption		0.96
Depreciation		0.52
Other purchased services		0.18
Total		5.73

1 ton = 1 000 kg

1900 x 1 000 kg = 1 900 000 kg

Solution 2)

Direct material	3.36	
Direct wages	0.71	
Production overheads	1.66	
Total	5.73	

Exercise 5

Retail intends to expand its offer with a new kitchen appliance; the purchase price is CZK 2,000. The usual 20% surcharge (trading margin) is CZK 400. Direct selling costs represent 10% of the selling price (commissions, discounts). The survey found the elasticity of demand for the price:

Price	2 800	2 600	2 500	2 400	2 300
Quantity	15	25	37	48	60

- Complete the following table on the prices of the kitchen appliance or the usual calculation of full costs + profit
- Find out the most favorable selling price of the product

Solution a)

Price per unit= sales price	2 800	2 600	2 500	2 400	2 300
-10 %	-280	-260			
subtotal	2 520	2 340			
-purchase price	-2000	- 2000			
= profit per unit	520	340	250	160	70
x Quantity	15	25			
= total profit	7 800	8 500	9 250	7 680	4 200

Solution b)

The most favorable selling price of the product is

Exercise 6

The company produces one type of product A. Preliminary calculation of full costs is based on the assumption that the volume of production and sales will be 50,000 pieces in the period under review and includes the following items:

Items	CZK/unit
Direct material	30
Direct wages	10
Production overhead (CZK 2 500 000 / 50 000 pcs)	50
Full production costs (Total costs)	90

In a more detailed analysis of production overheads, it was found that only a fifth of them have a variable character. The remaining part consists of fixed costs, which are an expression of the created production capacity. This enables maximum production for the monitored period in the range of 60,000 pieces.

- Find out how much the average cost of production per piece of product A produced and sold will be 40,000 pieces and 60,000 pieces.

Exercise 7

The company produces one type of product A. Preliminary calculation of full costs is based on the assumption that the volume of production and sales will be 50,000 pieces in the period under review and includes the following items:

Items	CZK/unit
Direct material	30
Direct wages	10
Production overhead (CZK 2 500 000 / 50 000 pcs)	50
Full production costs (Total costs)	90

In a more detailed analysis of production overheads, it was found that only a fifth of them have a variable character. The remaining part consists of fixed costs, which are an expression of the created production capacity. This enables maximum production for the monitored period in the range of 60,000 pieces. The selling price of product A is CZK 100 and the company has produced 50,000 pieces of products in three consecutive periods. However, the sales volume fluctuated: in the first period the company sold the entire production volume (50,000 pieces), in the second only 40,000 pieces and in the third 60,000 pieces. In the production of products, the company did not save or exceed the estimated costs set out in the previous part of the tender.

- Find out the results of the company's management
 - a) When valuing performance at the level of full costs
 - b) When valuing them at the level of variable costs

Exercise 8

Trade organizations export products A, B, C. Data on exports and costs are given in the table.

	A	B	C
Quantity	60	50	45
Unit price	85	75	60
Unit variable costs	20	25	30
The fixed costs	5 700		

- Calculate the payment fee per piece of product and the total contribution.
- Determine the order of advantage of exporting products.
- Recommend which product is not suitable for trading.

Exercise 9

Calculate the economic result of a company producing 3 products using a multi-stage method of calculating variable costs. The data in the table are given, as well as data on special fixed costs: for product A = CZK 1,100, for product B = CZK 1,400, for product C = CZK 2,000. The general fixed costs amount to CZK 2,300.

	A	B	C
Total Sales	5 800	6 400	7 600
Total Variable Costs	2 700	3 400	4 100