**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 = 20CZK |
| 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

…………………………………………………….

1. Determine the original total profit.

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

1. Determine the new total profit.

70 \* 100 000 = 7 000 000 CZK

1. Determine the change in total profit.

7 000 000 – 4 000 000 = 3 000 000 CZK

1. Calculate the original break-even point.

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

1. Calculate the new break-even point.

BEP = 9 000 000 / (400 – 240) = 56 250 pcs

1. Calculate the break-even point change.

56250-30000=26250 pcs

1. What factors influenced the change in profit?

Quantity, change in FC, change in VC, price

1. 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 |

1. Determine the original total profit.

4 000 000 CZK

1. Determine the new total profit.

10 \* 10 000 = 1 000 000 CZK

1. Determine the change in total profit.

3 000 000 CZK decrease

1. 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 |

1. Determine the original total profit.

4000000

1. Determine the new total profit.

5800000

1. 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 |

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.

BEP = FN / (p-vc)

BEP = 7 000 000 / 500 = 14 000 pcs

FN = 350 x 20 000 = 7 000 000 CZK

6. Determine a new break-even point.

FC = 220 x 50 000 = 11 000 000 CZK

BEP = 11 000 000 / 440 = 25 000 pcs

7. Determine the break-even point change.

11 000 pcs /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

Profit = price per unit x Q – (vc x Q + FC)

3 000 000 = 800 x Q – (360xQ + 11 000 000)

3000 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 units/ pcs/ products/services

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

Profit = price per unit x Q – (vc x Q + FC)

3000 000 = 50 000P – (360x50 000 + 11 000 000)

3000 000 = 50 000P – 18 000 000 – 11 000 000

32 000 000 = 50 000 P

P = 32 000 000 / 50 000

P = 640 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 CZK/1 900 000) x 100  | 3.36  |
| Direct wages | (13 600 / 1900000)x100 | 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 |

1. Complete the following table on the prices of the kitchen appliance or the usual calculation of full costs + profit
2. 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 |