**Supply - example**

**Solved example:**

The expected annual material consumption (= Annual demand of material in natural units) is 2 500 t, fixed cost per order is 50 000 CZK, inventory holding cost per unit is 1 000 CZK per 1 ton per year. The price per l ton is 80 000 CZK.

Assignment:

Calculate the Optimal Order Quantity, optimal delivery cycle and Total Inventory costs .

Solution:

* Optimal Order Quantity:

 ;

Optimal Order Quantity is 500 tons of material.

* Optimal delivery cycle:

 ;

Optimal Delivery Cycle (the period between two regular deliveries) is 73 days.

* Total Inventory costs:

;

* Total Inventory costs are 500 000 CZK per year and under the given circumstances these represent the minimum costs for the company.

**Examples to practice**

**Example 1:**

The expected annual material consumption (material consumption = purchase of material) is 50 000 pcs., the costs of one delivery are 50 000 CZK, holding and maintenance costs including interest are 200 CZK per 1 pc. of material stock per year. Material price is 800 CZK per 1 piece.

Assignment:

1. Calculate the Optimal Order Quantity, Optimal Delivery Cycle and Total Inventory costs corresponding to Optimal Order Quantity.
2. Calculate the Stock limit in pc., assuming we need to create a safety stock covering 10 days.
3. For this given case, decide on the Optimal Order Quantity assuming that the supplier:
4. grants a 0,5 % material price reduction for purchasing 10 000 pcs. in one delivery,
5. grants a 1,0 % material price reduction for purchasing 10 000 pcs. in one delivery.

Solution:

1. Optimal Order Quantity, Optimal Delivery Cycle and Total Inventory costs:

Optimal Order Quantity:

Optimal Delivery Cycle:

Total Inventory costs:

1. Stock limit:
2. Optimal Order Quantity:
3. while purchasing 10 000 pcs. in one delivery with a 0,5 % material price reduction

(Quantity Discount)  :

1. while purchasing 10 000 pcs. in one delivery with a 1,0 % material price reduction (Quantity Discount):

**Questions:**

1. What is the function of balance-sheet equation in the system of inventory management?
2. What factors influence material consumption in a company?
3. Explain the principle of determining Optimal Order Quantity and its significance for setting inventory standards.
4. Depict the development of supply costs in proportion to changes in number and quantity of orders.