

# Operation magement

[Economics](#)



**ASSIGN  
BUSTER**

## PROBLEMS

Lead time for one of Montegut Manufacturing's fastest moving products is 4 days. Demand during this period averages 100 units per day. What would be an appropriate re-order point? Re-order point = demand during lead time =  $100 \text{ units/day} * 4 \text{ days} = 400 \text{ units}$ .

Montegut Manufacturing produces a product for which the annual demand is 10,000 units. Production averages 100 per day, while demand is 40 per day. Holding costs are \$1.00 per unit per year; set-up costs \$200.00. If they wish to produce this product in economic batches, what size batch should be used?

What is the maximum inventory level? How many order cycles are there per year? How much does management of this good in inventory cost the firm each year? This problem requires economic order quantity, noninstantaneous delivery. [pic]or 1826 units. The maximum inventory level is [pic]or 1095 units. There are approximately [pic] cycles per year. Annual inventory management costs total [pic]= \$2,190.89 or \$2,191.

Central University uses \$123,000 of a particular toner cartridge for laser printers in the student computer labs each year. The purchasing director of the university estimates the ordering cost at \$45 and thinks that the university can hold this type of inventory at an annual storage cost of 22% of the purchase price. How many months' supply should the purchasing director order at one time to minimize the total annual cost of purchasing and carrying? First, calculate the EOQ from the data provided. In this problem, the "units" are dollars, and the "price" of each is 1. [pic]

One month's usage is  $123000/12 = \$10,250$ .  $EOQ = 7094$ . Month's usage =  $7094/10250 = 0.9$ , or about three week's usage. (This is supported by the order frequency of 17 per year). The soft goods department of a large department store sells 175 units per month of a certain large bath towel. The unit cost of a towel to the store is \$2.50 and the cost of placing an order has been estimated to be \$12.00. The store uses an inventory carrying charge of 27% per year. Determine the optimal order quantity, order frequency, and the annual cost of inventory management. If, through automation of the purchasing process, the ordering cost can be cut to \$4.00, what will be the new economic order quantity, order frequency, and annual inventory management cost? Explain these results. Annual demand is  $175 \times 12 = 2100$ . At  $S=\$12$ , the EOQ is 273 units, and there are about 8 orders per year. Annual costs of inventory management are \$184.

These results are detailed in the calculations below. [pic]; [pic] [pic] At  $S=\$4$ , EOQ falls to 158, and order frequency rises to 13. Annual inventory management costs fall to \$106. The lower order cost encourages smaller, more frequent orders. [pic]; [pic] [pic] A printing company estimates that it will require 1,000 reams of a certain type of paper in a given period. The cost of carrying one unit in inventory for that period is 50 cents. The company buys the paper from a wholesaler in the same town, sending its own truck to pick up the orders at a fixed cost of \$20.00 per trip. Treating this cost as the order cost, what is the optimum number of reams to buy at one time? How many times should lots of this size be bought during this period?

What is the minimum cost of maintaining inventory on this item for the period? Of this total cost, how much is carrying cost and how much is ordering cost? This is an EOQ problem, even though the time period is not a year. All that is required is that the demand value and the carrying cost share the same time reference. This will require approximately 3.5 orders per period. Setup costs and carrying costs are each \$70.71, and the annual total is \$141.42. [pic]; [pic] Carrying cost = [pic]; setup cost = [pic]