1. A large law firm uses an average of 40 boxes of copier paper a day. The firm operates 260 days a year. Storage and handling costs for the paper are $30 a year per box, and it costs approximately $60 to order and receive a shipment of paper.
   1. What order size would minimize the sum of annual ordering and carrying costs?
   2. Compute the total annual cost using your order size from Part a.
   3. Except for rounding, are annual ordering and carrying costs always equal at the EOQ?
   4. The office manager is currently using an order size of 200 boxes. The partners of the firm expect the office to be managed “in a cost efficient manner”. Would you recommend that the office manager use the optimal order size instead of 200 boxes? Justify your answer.
2. A chemical firm produces sodium bisulfate in 100-pound bags. Demand for this product is 20 tons per day. The capacity for producing the product is 50 tons per day. Setup costs $100, and storage and handling costs are $5 per ton a year. The firm operates 200 days a year. (Note: 1 ton = 2,000 pounds.)
   1. How many bags per run are optimal?
   2. What would the average inventory be for this lot size?
   3. Determine the approximate length of a production run, in days.
   4. About how many runs per year would be there?
   5. How much could the company save annually if the setup cost could be reduced to $25 per run?
3. A mail-order house uses 18000 boxes a year. Carrying costs are .60 cents per box a year, and ordering costs are $96. The following price schedule applies. Determine

a.      The optimal order quantity

b.      The number of orders per year

Number of boxes            Price per box ($)

1000 to 1999                           1.25  
2000 to 4999                           1.20

5000 to 9999                           1.15

10000 or more                        1.10

**Number**