1. Leaky a local retailer of plumbing supplies, faces demand for one of its inventoried items at a constant rate of **30,000 units** per year it cost Leaky **$10** to process an order to replenish stock and **$1** per unit per year to carry the item in stock. Stock is received **4** working days after an order is placed. No backordering is allowed. Assume **300** working days per year.

a. What is Leaky’s optimal order quantity?

b. What is the optimal number of orders per year?

c. What is the optimal interval (in working days) between orders?

d. What is the demand during lead time?

e. What is the reorder point?

f. What is the inventory position immediately after an order has been placed?

2. The Cat Hotel operates 52 weeks per year, 6 days per week, and uses a continuous review inventory system. It purchases kitty litter for $11.70 per bag. The following information is available about these bags.

Demand = 90 bags/week

Order cost = $54/order

Annual holding cost = 27% of cost

Desired cycle-service level = 80%

Lead time = 3 weeks (18 working days)

Standard Deviation of weekly demand = 15 bags

Current on hand inventory is 320 bags with no open orders or backorders

a. What is the EOQ? What would be the average time between orders (in weeks)?

b. What should the *R* be?

c. An inventory withdrawal of 10 bags was just made. Is it time to reorder?

d. The store currently uses a lot size of 500 bags (i.e; Q=500) What is the annual holding cost of this policy? Annual ordering cost? Without calculating the E0Q, how can you conclude from these two calculations that the current lot size is too large?

e. What would be the annual cost saved by shifting from the 500-bag lot size to the EOQ?