

ISEN 315
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Lot Size Reorder Point Systems

(Q, R) model

Assumptions

- Inventory levels are reviewed continuously (the level of on-hand inventory is known at all times)
- Demand is random but the mean and variance of demand are constant. (stationary demand)
- There is a positive leadtime, τ . This is the time that elapses from the time an order is placed until it arrives.
- The costs are:
 - Set-up each time an order is placed at $\$K$ per order
 - Unit order cost at $\$c$ for each unit ordered
 - Holding at $\$h$ per unit held per unit time (i. e., per year)
 - Penalty cost of $\$p$ per unit of unsatisfied demand

The Inventory Control Policy

- Keep track of inventory position (IP)
- $IP = \text{net inventory} + \text{on order}$
- When IP reaches R, place order of size Q

$$IP = \underbrace{\text{inventory on hand} - \text{backorders}}_{= \text{net inventory}} + \text{on order}$$