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Suppose maximum inventory level M is 11 units and review period N is 5 days, estimate by simulation, average ending units in inventory and no. of days when a shortage condition occurs. Initial simulation has started with inventory level of 3 units and an order of 8 units scheduled to arrive in 2 days time. Simulate for 3 cycles (15 days). The probability for daily demand and lead time is given in table.

Demand	0	1	2	3	4	
P	0.1	0.25	0.35	0.2	0.1	

Lead time	1	2	3	
Prob	0.6	0.3	0.1	

RD for demand 24, 35, 65, 81, 54, 3, 87, 27, 73, 70, 47,
RD for lead time: 5, 0, 3 45, 48, 17, 9

Step 1: RD for daily demand distribution

Demand	Prob.	Cumulative Prob.	Random digit Assignment
0	0.1	0.10	01-10
1	0.25	0.35	11-35
2	0.35	0.70	36-70
3	0.2	0.91	71-91
4	0.1	1.00	92-00

Step 2: Lead time distribution

Lead time	Prob.	Cumulative Prob.	RDA
1	0.6	0.6	1-6
2	0.3	0.9	7-9
3	0.1	1.0	00

RD for demand: 24, 35, 65, 25, 8, 85, 77, 68, 28, 5, 92, 55,
49, 69, 70.

RD for lead time: 5, 0, 3

Solu

Max Inventory level M is 11 units

Review period $\rightarrow N$ is 5 days

Avg ending units $\rightarrow ?$

No. of shortage days $\rightarrow ?$

Initial Inventory level $\rightarrow 3$ units

Order of 8 units scheduled to arrive in 2 days time
[i.e. of 3rd day]

To Stimulate: 3 Cycles.

Simulation for M*N Inventory s/m.

1st Write

Day	Cycle	Day with cycle	Beginning Inventory	RD for Demand	Demand	Ending Inventory	Shortage Quantity	Order Qty	RD for lead time	Lead Time	Day until order arrives
1		1	3	24	1	2	0				
2		2	2	35	1	1	0				
3	1	3	1+8=9	65	2	7	0				
4		4	7	81	3	4	0	11-2=9	5	1	1
5		5	4	54	2	2	0				
6		1	2	03	0	2	0				
7		2	9+2=11	87	3	11-3=8	0				
8	2	3	8	27	1	7	0				
9		4	7	73	3	4	0	11-2=9	0	3	3
10		5	4	70	2	2	0				
11		1	2	47	2	0	0				
12		2	0	45	2	0	2				
13	3	3	0	48	2	0	2+2=4				
14		4	9	17	1	9-5=4	0	11-4=7	3	1	1
15		5	4	09	0	4	0				

Same values

$$\text{Average Ending Inventory} = \frac{\text{Total no. of Ending Inventory}}{\text{No. of days}}$$

$$= \frac{47}{15}$$

$$= 3.133$$

$$\text{No. of day shortage units} = 2$$