

Chapter 2, Problem 22

Material A 200 kg/box
 Material B 100 kg/box
 Material C 50 kg/box

Material A interarrival time	Probability	cumulative probability	start	random number assignment	finish
3	0.2	0.2	0.2	0	0.2
4	0.2	0.4	0.4	0.2	0.4
5	0.2	0.6	0.6	0.4	0.6
6	0.2	0.8	0.8	0.6	0.8
7	0.2	1	1	0.8	1

Box	random number	interarrival time	clock time
1	0.106	3	3
2	0.619	6	9
3	0.511	5	14
4	0.811	7	21
5	0.473	5	26
6	0.939	7	33
7	0.444	5	38
8	0.774	6	44
9	0.856	7	51
10	0.187	3	54

Material B Box	interarrival time	Clock time
1	6	6
2	6	12
3	6	18
4	6	24
5	6	30
6	6	36
7	6	42
8	6	48
9	6	54
10	6	60

Material C	Probability	cumulative probability	start	random number assignment	finish
interarrival time	2	0.33	0.33	0	0.33
	3	0.67	1	0.33	1

box	random number	interarrival time	clock time
	1	0.339	3
	2	0.712	3
	3	0.642	3
	4	0.441	3
	5	0.846	3
	6	0.796	3
	7	0.45	3
	8	0.874	3
	9	0.845	3
	10	0.628	3
	11	0.225	2
	12	0.167	2
	13	0.771	3
	14	0.061	2
	15	0.348	3
	16	0.175	2
	17	0.689	3
	18	0.028	2
	19	0.391	3
	20	0.06	2
	21	0.87	3
	22	0.215	2

42 arrival B	1	1	2	400								
42 elevator leaves	0	0	0	0	42	46	24	0	29	7	7	14
42 arrival C	0	0	1	50								
44 arrival A	1	0	1	250								
44 arrival C	1	0	2	300								
46 elevator returns												
47 arrival C	1	0	3	350								
48 arrival B	1	1	3	450								
48 elevator leaves	0	0	1	50	48	52	28	0	37	8	8	16
49 arrival C	0	0	2	100								
51 arrival A	1	0	2	300								
52 elevator returns												
52 arrival C	1	0	3	350								
54 arrival A	2	0	3	550								
54 elevator leaves	0	0	3	150	54	58	31	0	51	10	8	16
54 arrival B	0	1	3	250								
54 arrival C	0	1	4	300								
57 arrival C	0	1	5	350								
58 elevator returns												
59 arrival C	0	1	6	400								
59 elevator leaves	0	0	0	0	59	63	31	5	73	10	9	22
60 arrival B				0								

average transit time of Box A 6.1 (total waiting time + (time to 2nd floor + unload time)*# A boxes)/# A boxes

average waiting time of Box B 0.555556 total time in queue/# B boxes

Number of C boxes processed 22