NCAA Sweatshirt Solution

Abbreviated Solution (just a limited number of replications) to illustrate solution.

	A	B	C	D	E	F	G	H	I	J	K	L
1	**Problem 11.5**											
2												
3	**Inputs**				**Distribution of demand at regular price**				**Distribution of demand at sale price**			
4	Unit cost	$10			Cum Prob	Demand	Probability		Cum Prob	Demand	Probability	
5	Original price	$25			0.00	7	0.05		0.00	2	0.20	
6	Sale price	$12.50			0.05	8	0.10		0.20	3	0.30	
7					0.15	9	0.25		0.50	4	0.20	
8					0.40	10	0.30		0.70	5	0.15	
9				Try other order quantities	0.70	11	0.20		0.85	6	0.10	
10	**Decision variable**			to see which gives	0.90	12	0.10		0.95	7	0.05	
11	Order quantity	12,250		largest profits								
12												
13	**Summary measures from simulation below**											
14	Number of reps	22										
15	Smallest profit	$102,500										
16	Largest profit	$180,625										
17	Average profit	$149,517										
18	StDev of profit	$18,132										
19	95% confidence interval for mean profit	$141,786	to	$157,248								

	A	B	C	D	E	F	G	H	I	J	K	L	M
19	95% confidence interval for mean profit	$141,786	to	$157,248									
20													
21	**Simulation (each row is a separate replication)**								**Data table for average profit as function of order quantity**				
22	Original demand	Sale price demand	Number sold at regular price	Number sold at sale price	Number leftover	Profit			Order quantity	Average profit			
23	9,000	3,000	9,000	3,000	250	$140,000				$149,517			
24	10,000	2,000	10,000	2,000	250	$152,500			11000	$146,750			
25	9,000	4,000	9,000	3,250	0	$143,125			11500	$150,125			
26	9,000	4,000	9,000	3,250	0	$143,125			12000	$151,375			
27	9,000	4,000	9,000	3,250	0	$143,125			12500	$149,563			
28	10,000	4,000	10,000	2,250	0	$155,625			13000	$154,625			
29	9,000	2,000	9,000	2,000	1,250	$127,500			13500	$147,688			
30	9,000	3,000	9,000	3,000	250	$140,000			14000	$147,000			
31	10,000	3,000	10,000	2,250	0	$155,625							
32	10,000	3,000	10,000	2,250	0	$155,625							
33	10,000	5,000	10,000	2,250	0	$155,625							
34	9,000	4,000	9,000	3,250	0	$143,125			FORMULAS FROM RANGE A23:F23				
35	12,000	2,000	12,000	250	0	$180,625			A23. =VLOOKUP(RAND(),Table1,2)*1000				
36	10,000	2,000	10,000	2,000	250	$152,500			B23. =VLOOKUP(RAND(),Table2,2)*1000				
37	9,000	4,000	9,000	3,250	0	$143,125			C23. =MIN(A23,B11)				
38	10,000	2,000	10,000	2,000	250	$152,500			D23. =MIN(B23,B11-C23)				
39	8,000	6,000	8,000	4,250	0	$130,625			E23. =B11-C23-D23				
40	8,000	2,000	8,000	2,000	2,250	$102,500			F23. =(B5-B4)*C23+(B6-B4)*D23-B4*E23				
41	9,000	6,000	9,000	3,250	0	$143,125							
42	12,000	5,000	12,000	250	0	$180,625							
43	11,000	3,000	11,000	1,250	0	$168,125							
44	12,000	4,000	12,000	250	0	$180,625							
45													