

Solution

1. Locate plant at Winston-Salem:

	x (mi mark)	d (mi)	FG (tons)	BOM f (ton/yr)	r (\$/ton-mi)	w (\$/mi)	TC (\$/yr)	cum w
NF	189.999957						13700	
Asheville	50	140		2	120	0.33	40.00	5599.998
Statesville	150	40	10		10	1.00	10.00	399.9996
Winston-Salem	190	4.3E-05	20		20	1.00	20.00	0.000868
Durham	270	80		0.5	30	0.33	10.00	800.0004
Wilmington	420	230	30		30	1.00	30.00	6900.001
Total			60				110.00	
						W/2=	55.00	

2. Locate at Winston-Salem:

	x (mi mark)	d (mi)	FG (tons)	BOM f (ton/yr)	r (\$/ton-mi)	w (\$/mi)	TC (\$/yr)	cum w
NF	190.002728						24105.5	
Asheville	50	140.003	41		41	1.00	41.00	5740.112
Asheville	50	140.003		0.5	90.5	0.20	18.10	2534.049
Statesville	150	40.0027	28		28	1.00	28.00	1120.076
Winston-Salem	190	0.00273	40		40	1.00	40.00	0.109106
Durham	270	79.9973	32		32	1.00	32.00	2559.913
Raleigh	295	104.997	22		22	1.00	22.00	2309.94
Raleigh	295	104.997		1.5	271.5	0.20	54.30	5701.352
Wilmington	420	229.997	18		18	1.00	18.00	4139.951
Total			181				253.40	
						W/2=	126.70	

3. Locate tool crib at $(x, y) = (38, 59)$: $W = 163$, $W/2 = 81.5$

	x	y	d	f	r	w	TC
NF	38	59					8,047.00
1	38	2	57	13	1.00	13.00	740.99
2	68	19	70	10	1.00	10.00	699.99
3	9	59	29	21	1.00	21.00	609.01
4	4	6	87	32	1.00	32.00	2,783.98
5	61	37	45	26	1.00	26.00	1,169.98
6	61	63	27	43	1.00	43.00	1,161.03
7	2	72	49	18	1.00	18.00	882.01
						163	
						81.50	