The following experiment is designed to find out if four types of fabric, denoted by A, B, C and D, are different in their resistance to wearing. A standard wear test is used. In a single run, the test machine can accommodate four samples of fabric at positions 1, 2, 3 and 4. From each type of fabric, four samples were taken. The 16 samples thus obtained were compared in the machine with the following results, given in the milligrams of wear:

		run			
	position	I	II	III	IV
.	1	A=20.1	D=22.0	C=34.4	B=24.7
	2	B=30.3	A=34.9	D=37.5	C=45.0
	3	C=32.0	B=23.4	A=27.3	D=31.8
	4	D=34.6	C=32.8	B=21.2	A=22.4

And sample means for positions, runs, and fabrics are given below.

Level of		resp	
fabric	N	Mean	Std Dev
1	4	26.1750000	6.54592749
2	4	24.9000000	3.87900331
3	4	36.0500000	6.04951789
4	4	31.4750000	6.73170360

Level of		resp	
position	N	Mean	Std Dev
1	4	25.3000000	6.35347674
2	4	36.9250000	6.15162580
3	4	28.6250000	4.10396150
4	4	27.7500000	6.92700031

Level of		resp	
run	N	Mean	Std Dev
1	4	29.2500000	6.3511154
2	4	28.2750000	6.5193941
3	4	30.1000000	7.3098108
4	4	30.9750000	10.1700131

An ANOVA analysis was conducted to test if there is any difference between the four types of fabric. Partial SAS output is given below.

Source	DF	Sum of Squares	Mean Square	F Value
Model	9	637.7850000	70.8650000	4.37
Error	6	97.3550000	16.2258333	
Corrected Total	15	735.1400000		

R-Square	Coeff Var	Root MSE	resp Mean
0.867569	13.58560	4.028130	29.65000

Source	DF	Type I SS	Mean Square	F Value
fabric	3	315.7150000	105.2383333	6.49
position	3	306.0350000	102.0116667	6.29
run	3	16.0350000	5.3450000	0.33