

Example 17.4 pages 1058-1060

```

data ouch;
input technician sunscreen $ y @@;
cards;
1      S1      8.2    1      S1      7.6
2      S1      3.6    2      S1      3.5
3      S1     10.7    3      S1     10.3
4      S1      3.9    4      S1      4.4
5      S1     12.9    5      S1     12.1
6      S1      5.5    6      S1      5.9
7      S1      9.1    7      S1      9.7
8      S1     13.7    8      S1     13.2
9      S1      8.1    9      S1      8.7
10     S1      2.5   10     S1      2.8
1      S2      6.1    1      S2      6.8
2      S2      4.3    2      S2      4.7
3      S2      9.6    3      S2      9.2
4      S2      2.3    4      S2      2.5
5      S2     12.4    5      S2     12.8
6      S2      4.8    6      S2      4.0
7      S2      8.3    7      S2      8.6
8      S2     12.9    8      S2     13.6
9      S2      8.0    9      S2      7.5
10     S2      2.1   10     S2      2.5
;
run;

proc mixed;
class sunscreen technician;
model y = sunscreen;
random technician sunscreen*technician;
estimate 's1 vs s2' sunscreen 1 -1;
run;

```

Type 3 Tests of Fixed Effects

Effect	Num DF	Den DF	F Value	Pr > F
sunscreen	1	9	6.76	0.0287

Estimates

Label	Estimate	Standard Error	DF	t Value	Pr > t
s1 vs s2	0.6700	0.2577	9	2.60	0.0287

```

proc glm;
class sunscreen technician;
model y = sunscreen technician sunscreen*technician;
random technician sunscreen*technician / test;
estimate 's1 vs s2' sunscreen 1 -1;
run;

```

The GLM Procedure

Tests of Hypotheses for Mixed Model Analysis of Variance

Dependent Variable: y

Source	DF	Type III SS	Mean Square	F Value	Pr > F
sunscreen	1	4.489000	4.489000	6.76	0.0287
technician	9	517.486000	57.498444	86.59	<.0001
Error	9	5.976000	0.664000		
Error: MS(sunscreen*technician)					

Source	DF	Type III SS	Mean Square	F Value	Pr > F
sunscreen*technician	9	5.976000	0.664000	5.03	0.0013
Error: MS(Error)	20	2.640000	0.132000		

Dependent Variable: y

Parameter	Estimate	Standard Error	t Value	Pr > t
s1 vs s2	0.67000000	0.11489125	5.83	<.0001

NOTE --- Wrong Standard Error!! In the comparison ...