

```
(ch3-4-blister_MultComp.out)
/* Number of days until fever blister heals for each of 5 different treatments.
Treatment 1 is a placebo
%LET file_n1 = blister.dat;
FILENAME file1 URL "http://www.uvm.edu/~rsingle/stat231/data/other/&file_n1";
```

```
DATA a1;
  INFILE file1 FIRSTOBS=2 EXPANDTABS;
  INPUT trt days;
  RUN;
```

```
PROC MEANS DATA = a1;
  CLASS trt;
  VAR days;
  RUN;
```

```
PROC GLM DATA = a1;
  CLASS trt;
  MODEL days = trt;
  CONTRAST 'T1 vs. T2' trt 1 -1 0 0 0;
  ESTIMATE 'T1 vs. T2' trt 1 -1 0 0 0;
  ESTIMATE 'T1 vs. T2(*2)' trt 2 -2 0 0 0;
  ESTIMATE 'T1 vs. T2(*2Div)' trt 2 -2 0 0 0 / DIVISOR=2;
  MEANS trt / BON;
  MEANS trt / SCHEFFE;
  MEANS trt / BON CLDIFF;
  MEANS trt / SCHEFFE CLDIFF; *output shown below;
  RUN;
```

QUIT;

The MEANS Procedure

Analysis Variable : days						
trt	Obs	N	Mean	Std Dev	Minimum	Maximum
1	6	6	7.5000000	1.6431677	5.0000000	10.0000000
2	6	6	5.0000000	1.2649111	3.0000000	6.0000000
3	6	6	4.3333333	1.0327956	3.0000000	6.0000000
4	6	6	5.1666667	1.4719601	3.0000000	7.0000000
5	6	6	6.1666667	2.0412415	3.0000000	9.0000000

The GLM Procedure

Dependent Variable: days

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	4	36.46666667	9.116666667	3.90	0.0136
Error	25	58.50000000	2.340000000		
Corrected Total	29	94.96666667			

R-Square	Coeff Var	Root MSE	days Mean
0.383994	27.15454	1.529706	5.633333

Source	DF	Type I SS	Mean Square	F Value	Pr > F
trt	4	36.46666667	9.116666667	3.90	0.0136

Contrast	DF	Contrast SS	Mean Square	F Value	Pr > F
T1 vs. T2	1	18.75000000	18.75000000	8.01	0.0090

Parameter	Estimate	Standard Error	t Value	Pr > t
T1 vs. T2	2.50000000	0.88317609	2.83	0.0090
T1 vs. T2(*2)	5.00000000	1.76635217	2.83	0.0090
T1 vs. T2(*2Div)	2.50000000	0.88317609	2.83	0.0090

Bonferroni (Dunn) t Tests for days

NOTE: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	25
Error Mean Square	2.34
Critical Value of t	3.07820
Minimum Significant Difference	2.7186

Means with the same letter are not significantly different.

Bon Grouping	Mean	N	trt
A	7.5000	6	1
B	6.1667	6	5
B	5.1667	6	4
B	5.0000	6	2
B	4.3333	6	3

Scheffe's Test for days

NOTE: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than Tukey's for all pairwise comparisons.

Alpha	0.05
Error Degrees of Freedom	25
Error Mean Square	2.34
Critical Value of F	2.75871
Minimum Significant Difference	2.9338

Comparisons significant at the 0.05 level are indicated by ***.

trt Comparison	Difference Between Means	Simultaneous 95% Confidence Limits	
1 - 5	1.3333	-1.6005	4.2671
1 - 4	2.3333	-0.6005	5.2671
1 - 2	2.5000	-0.4338	5.4338
1 - 3	3.1667	0.2329	6.1005
5 - 1	-1.3333	-4.2671	1.6005
5 - 4	1.0000	-1.9338	3.9338
5 - 2	1.1667	-1.7671	4.1005
5 - 3	1.8333	-1.1005	4.7671
4 - 1	-2.3333	-5.2671	0.6005
4 - 5	-1.0000	-3.9338	1.9338
4 - 2	0.1667	-2.7671	3.1005
4 - 3	0.8333	-2.1005	3.7671
2 - 1	-2.5000	-5.4338	0.4338
2 - 5	-1.1667	-4.1005	1.7671
2 - 4	-0.1667	-3.1005	2.7671
2 - 3	0.6667	-2.2671	3.6005
3 - 1	-3.1667	-6.1005	-0.2329
3 - 5	-1.8333	-4.7671	1.1005
3 - 4	-0.8333	-3.7671	2.1005
3 - 2	-0.6667	-3.6005	2.2671