Orthogonal Polynomial multipliers (equally spaced X)

levels = 3		
X	l	q
1	-1	1
2	0	-2
3	1	1

levels = 4			
X	l	q	c
1	-3	1	-1
2	-1	-1	3
3	1	-1	-3
4	3	1	1

levels = 5				
X	l	q	c	q
1	-2	2	-1	1
2	-1	-1	2	-4
3	0	-2	0	6
4	1	-1	-2	-4
5	2	2	1	1

levels = 6					
1	-5	5	-5	1	-1
2	-3	-1	7	-3	5
3	-1	-4	4	2	-10
4	1	-4	-4	2	10
5	3	-1	-7	-3	-5
6	5	5	5	1	1

levels = 7						
1	-3	5	-1	3	-1	1
2	-2	0	1	-7	4	-6
3	-1	-3	1	1	-5	15
4	0	-4	0	6	0	-20
5	1	-3	-1	1	5	15
6	2	0	-1	-7	-4	-6
7	3	5	1	3	1	1

levels = 8							
1	-7	7	-7	7	-7	1	-1
2	-5	1	5	-13	23	-5	7
3	-3	-3	7	-3	-17	9	-21
4	-1	-5	3	9	-15	-5	35
5	1	-5	-3	9	15	-5	-35
6	3	-3	-7	-3	17	9	21
7	5	1	-5	-13	-23	-5	-7
8	7	7	7	7	7	1	1

levels = 9								
1	-4	28	-14	14	-4	4	-1	1
2	-3	7	7	-21	11	-17	6	-8
3	-2	-8	13	-11	-4	22	-14	28
4	-1	-17	9	9	-9	1	14	-56
5	0	-20	0	18	0	-20	0	70
6	1	-17	-9	9	9	1	-14	-56
7	2	-8	-13	-11	4	22	14	28
8	3	7	-7	-21	-11	-17	-6	-8
9	4	28	14	14	4	4	1	1

For levels of X that are not equally spaced there is a SAS IML instruction that will produce the orthogonal polynomial multipliers. The following statements will do this if you have SAS IML available.

```
OPTIONS PS=60 LS=78;

PROC IML;
   RESET PRINT;
   X={1 , 2 , 3 , 4 , 8};
   O=ORPOL(X,3); RUN;
   QUIT;
```

where the X vector gives the levels of the quantitative variable.
The orpol function needs one parameter specifying the name of the quantitative variable vector and a second parameter specifying the number of orthogonal polynomials levels desired.