

**Q3 Is the number of experiments
 $N = 1$ all right for each row of the
orthogonal array?**

You can see that B1, B2 and B3 are evaluated 6 times each.

6 times

rearrange

control factor									control factor								
Ex. No.	A	B	C	D	E	F	G	H	Ex. No.	A	H	G	B	F	D	E	C
1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	1	1	2	2	2	2	2	2	2	1	1	2	2	2	2	2	2
3	1	1	3	3	3	3	3	3	3	1	1	3	3	3	3	3	3
4	1	2	1	1	2	2	3	3	4	1	2	1	1	2	2	3	3
5	1	2	2	2	3	3	1	1	5	1	2	2	2	3	3	1	1
6	1	2	3	3	1	1	2	2	6	1	2	3	3	1	1	2	2
7	1	3	1	2	1	3	2	3	7	1	3	1	2	1	3	2	3
8	1	3	2	3	2	1	3	1	8	1	3	2	3	2	1	3	1
9	1	3	3	1	3	2	1	2	9	1	3	3	1	3	2	1	2
10	2	1	1	3	3	2	2	1	10	2	1	1	3	3	2	2	1
11	2	1	2	1	1	3	3	2	11	2	1	2	1	1	3	3	2
12	2	1	3	2	2	1	1	3	12	2	1	3	2	2	1	1	3
13	2	2	1	2	3	1	3	2	13	2	2	1	2	3	1	3	2
14	2	2	2	3	1	2	1	3	14	2	2	2	3	1	2	1	3
15	2	2	3	1	2	3	2	1	15	2	2	3	1	2	3	2	1
16	2	3	1	3	2	3	1	2	16	2	3	1	3	2	3	1	2
17	2	3	2	1	3	1	2	3	17	2	3	2	1	3	1	2	3
18	2	3	3	2	1	2	3	1	18	2	3	3	2	1	2	3	1

Total number of experiments with varying levels of control factors A to H $\rightarrow 2 \times 3^7 = 4,374$



In the L18 orthogonal array, although 18 experiments are **labor-saving**, the effect of the level of each control factor is confirmed **6 times** each. Moreover, the other parameters are evaluated by **randomly changing 6 types**.



18 experiments are OK even with N=1 each