

# Notation using a single column

# Notation using multiple columns

1	Block 1
1	
1	
2	Block 2
2	
2	
3	Block 3
3	
3	

Within-block  
or  
whole-block  
(needs a flag)

-1	+1	1
-1	+1	2
-1	+1	3
-1	+2	4
-1	+2	5
-1	+2	6
-1	+3	7
-1	+3	8
-1	+3	9

Within-block  
but not  
whole-block  
**(a)**

+1	-1	1
+1	-1	2
+1	-1	3
+1	-2	4
+1	-2	5
+1	-2	6
+1	-3	7
+1	-3	8
+1	-3	9

Whole-block  
but not  
within-block  
**(b)**

+1	+1	1
+1	+1	2
+1	+1	3
+1	+2	4
+1	+2	5
+1	+2	6
+1	+3	7
+1	+3	8
+1	+3	9

Within-block  
and  
whole-block  
**(c)**

-1	-1	1
-1	-1	2
-1	-1	3
-1	-2	4
-1	-2	5
-1	-2	6
-1	-3	7
-1	-3	8
-1	-3	9

No permutations  
are possible

Example  
permutations:

1	3	2	2	1
2	2	1	3	3
3	1	3	1	2
4	5	5	4	6
5	4	6	6	5
6	6	4	5	4
7	8	9	9	8
8	9	8	7	7
9	7	7	8	9

Number of possible  
permutations:  $(3!)^3 = 216$ ;  
5 examples shown.

1	4	7	1	7	4
2	5	8	2	8	5
3	6	9	3	9	6
4	1	1	7	4	7
5	2	2	8	5	8
6	3	3	9	6	9
7	7	4	4	1	1
8	8	5	5	2	2
9	9	6	6	3	3

Number of possible  
permutations:  $3! = 6$ ;  
All shown.

1	8	2	6	5
2	7	1	4	4
3	9	3	5	6
4	3	8	1	9
5	2	9	3	7
6	1	7	2	8
7	5	6	7	1
8	6	4	9	3
9	4	5	8	2

Number of possible  
permutations:  $(3!)^4 = 1296$ ;  
5 examples shown.