

A grid that wraps both horizontally and vertically is called a torus. Given a torus where each cell contains an integer, determine the sub-rectangle with the largest sum. The sum of a sub-rectangle is the sum of all the elements in that rectangle. The grid below shows a torus where the maximum sub-rectangle has been shaded.

1	-1	0	0	-4
2	3	-2	-3	2
4	1	-1	5	0
3	-2	1	-3	2
-3	2	4	1	-4

Input

The first line in the input contains the number of test cases (at most 18). Each case starts with an integer N ($1 \leq N \leq 75$) specifying the size of the torus (always square). Then follows N lines describing the torus, each line containing N integers between -100 and 100, inclusive.

Output

For each test case, output a line containing a single integer: the maximum sum of a sub-rectangle within the torus.

Sample Input

```
2
5
1 -1 0 0 -4
2 3 -2 -3 2
4 1 -1 5 0
3 -2 1 -3 2
-3 2 4 1 -4
3
1 2 3
4 5 6
7 8 9
```

Sample Output

```
15
45
```