

ANTI-MAGIC SQUARES

Proposed by Zhang Zaiming, Yuxi Normal University, Yunnan, China.

An $n \times n$ square whose cells are filled with consecutive distinct numbers $1, 2, \dots, n^2$ is called *anti-magic* if the sums of its rows, its columns and all of its diagonals (including the broken diagonals that wrap around the edges) are all distinct numbers.

Here is one example of a 4×4 anti-magic square with the corresponding sums contained in shaded squares :

32		25	35	34	42
39	1	3	2	6	12
27	7	10	5	4	26
38	13	15	12	14	54
	16	8	11	9	44
	37	36	30	33	

Notice that in the above example, the sums contain eight consecutive numbers, namely 32 to 39 inclusive.

Question. Give an example of a 4×4 anti-magic square containing more than eight consecutive numbers in its sums. How many consecutive numbers can you get?

