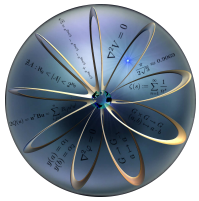

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magic square

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A magic square of order n is an $n \times n$ array using each one of the numbers $1, 2, 3, \ldots, n^2$ once and such that the sum of the numbers in each row, column or main diagonal is the same.

Example:

$$\begin{pmatrix} 8 & 1 & 6 \\ 3 & 5 & 7 \\ 4 & 9 & 2 \end{pmatrix}$$

It's easy to prove that the sum is always $\frac{1}{2}n(n^2+1)$. So in the example with $n = 3$ the sum is always $\frac{1}{2}(3 \times 10) = 15$.

One way to generalize this concept is to allow any numbers in the entries, instead of $1, 2, \ldots, n$.