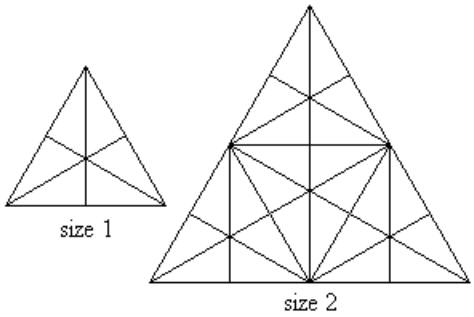
Project Euler #163: Cross-hatched triangles

This problem is a programming version of Problem 163 from projecteuler.net

Consider an equilateral triangle in which straight lines are drawn from each vertex to the middle of the opposite side, such as in the *size 1* triangle in the sketch below.



Sixteen triangles of either different shape or size or orientation or location can now be observed in that triangle. Using *size 1* triangles as building blocks, larger triangles can be formed, such as the *size 2* triangle in the above sketch. One-hundred and four triangles of either different shape or size or orientation or location can now be observed in that *size 2* triangle.

It can be observed that the *size 2* triangle contains 4 *size 1* triangle building blocks. A *size 3* triangle would contain 9 *size 1* triangle building blocks and a *size n* triangle would thus contain n^2 *size 1* triangle building blocks.

If we denote $T(n)$ as the number of triangles present in a triangle of size n, then

$$T(1) = 16$$
$$T(2) = 104$$

You are given n. Find $T(n)$.

Input Format

One integer is given on first line representing n.

Constraints

- $1 \leqslant n \leqslant 100$.

Output Format

Print one integer which is the answer.

Sample Input

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2
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Sample Output

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104
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